2nd INDIAN PHARMACEUTICAL ASSOCIATION STUDENTS’ CONGRESS

SOUVENIER & ABSTRACTS

ORGANIZED BY

Indian Pharmaceutical Association, IPA - Students Forum,
IPA - Education Division, IPA - Karnataka Branch, IPA - Peenya Branch

VENUE: ACHARYA & B.M.REDDY COLLEGE OF PHARMACY, BANGALORE-90

9-11th July 2009
MESSAGE

Ghulam Nabi Azad
Minister of Health & Family welfare
Govt. of India

MESSAGE

I am glad to know that the Indian Pharmaceutical Association – Students’ Forum (IPASF) is organizing the 2nd Congress from 9-11, July, 2009 at Acharya Institutes, Bangalore. The two day function by the Forum is being held in association with IPA – Karnataka. The theme of Congress is “Quality by Design in Pharma Education”.

There has been a consistent effort on the part of the Government to standardize the pharma education by putting in quality ingredients so that marginalized sections of society particularly in rural areas get better healthcare.

I request the Pharma industry to come forward in improving pharmaceutical education in India.

I wish IPASF and congress great success.

(Ghulam Nabi Azad)
MESSAGE

Dr. B. Suresh
President
Indian Pharmaceutical Association

Dear Students,

It gives me immense pleasure to know that the Student Division of Indian Pharmaceutical Association is holding its second students’ congress in Bangalore. The theme of the congress is “Quality by Design in Pharma Education”. According to International Pharmaceutical federation, Pharmacy education refers to the educational design and capacity to develop the workforce for a diversity of settings (e.g. community, hospital, research and development, academia) across varying levels of service provision and competence (e.g. technical support human resources, pharmacist practitioners, pharmaceutical scientists, pre-service students) and scope of education (e.g. undergraduate, post-registration, continuing professional development, practitioner development, life-long learning). Education is the vision for one's eyes to see the world. Education encompasses teaching and learning specific skills, and also something less tangible but more profound: the imparting of knowledge, positive judgment and well-developed wisdom.

The practice of pharmacy has now come full-circle to exemplify the community pharmacist of yesteryear, who not only dispensed tablets and elixirs, but was an integral part of a family’s health care. Tomorrow will bring many new challenges. The Pharmacy profession is rapidly changing in response to environmental and societal factors such as longer life expectancy, increased number of drug prescriptions and a greater divide between economic classes. IPA is addressing these demands and looking further into the future to investigate emerging health care issues that are moving to the forefront.

Access to essential medicines is one of the most basic health services. To ensure access and appropriate use of medicines, there is a need for an appropriately-trained pharmacy workforce. Unfortunately, pharmacists and pharmaceutical human
resources in many countries are too few in number and trained at a critically insufficient scale. The scaling up and quality improvement of pharmacy education and training is essential for tackling workforce shortages and for meeting basic health needs. Hence, I feel there is a need for Pharmacy Education Taskforce in India. The task force should be dedicated to three domains of action: quality assurance in education, developing academic and institutional capacity, and competency and vision for pharmacy education. There is a need to set educational objectives aligned with competencies and develop a framework that considers the entire pharmacy education continuum from undergraduate education through to continuing professional development at the post-graduate level. This Congress is a platform for ongoing dialogue, sharing of evidence, practices, lessons learned, resources and tools for pharmacy education and workforce planning.

You are the earth's most valuable resource. Your efforts, your thoughts, and your dreams will carry us all to places we can only imagine today.

Isaac Newton once said: "If I have seen further than others, it is because I have stood on the shoulders of giants." Your parents and your teachers, along with the millions of people who have lived and learned before you have provided the shoulders. You have the opportunity and the responsibility to see further, to learn more, to make a better world.

With the right resources today we can expand our impact to affect more lives in more places with a greater depth of solutions, while educating and preparing pharmacists for tomorrow. I look forward to the journey and invite all advocates of pharmacy health care to join me in creating a place of quality pharma education, partnerships and a belief in health access for all.

Prof. B.Suresh
IPA -President
MISSION

The Indian Pharmaceutical Association (IPA) is the national professional body of pharmacists engaged in various facets of the profession of pharmacy. The IPA is committed to promote the highest professional and ethical standards of pharmacy, focus the image of pharmacists as competent healthcare professionals, sensitize the community, government and others on vital professional issues and support pharmaceutical education and sciences in all aspects.

OBJECTIVES

- To promote the science and art of Pharmacy in all aspects.
- To impart suitable education and training to the members preparing for the profession of pharmacy and to those already engaged in the profession.
- To undertake, carry on or promote scientific and technical research, experiments and tests of all kinds in pharmaceutical and allied sciences. To edit and publish, journals, books, magazines, documents and other publications for promoting the cause of the profession of Pharmacy.
- To hold seminars, symposia, conferences and exhibitions for promoting the cause of profession of Pharmacy.

OVERVIEW

Indian Pharmaceutical Association (IPA) is the premier professional association of pharmacists in India, with a member base of over 10,000, spread across the length & breadth of the nation. IPA operates in India through 17 state branches & more than 33 local branches. The members represent various facets of pharmaceutical profession viz. Industry, regulatory, community pharmacy, hospital pharmacy & education. IPA is also actively associated in managing several academic programmes. IPA is affiliated with international pharma associations like FIP, FAPA, CPA, AAPS, AAIPS, IPSF & WHO, for carrying out various collaborative professional activities which include organizing training programmes for professional form industry, academics, regulatory & Practice, making representations to the authorities on matters of professional interest & working towards constantly upgrading the standards of professional services offered by the pharmacists. IPA is connected with national pharmaceutical association of SEA region through SEARPharm Forum.
**IPA STRUCTURE**

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Vice Chancellor, J.S.S University, Mysore

**Immediate Past President**  
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Colorcon Asia Private Limited Mumbai

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**IPA Community Pharmacy Division**  
Chairman: Mr. Raj Vaidya  
Secretary: Mrs. Manjiri S. Gharat

**IPA Students Division**  
Chairman: Mr. Chitoory S. Murthy  
Secretary: Mr. Karan Shroff
ACHARYA & B.M.REDDY COLLEGE OF PHARMACY, BANGALORE

2nd INDIAN PHARMACEUTICAL ASSOCIATION STUDENTS’ CONGRESS

ACHARYA & B.M.REDDY COLLEGE OF PHARMACY, BANGALORE

2009

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Chairman, Acharya Institutes
Bangalore

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Vice Chancellor
JSS University, Mysore

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Co-chairman : Prof. Shyamala Bhaskaran
Members : Miss. Hemalatha K
          Mr. Udayraj Sharma
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<thead>
<tr>
<th>Date</th>
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<th>Speaker Name</th>
<th>Number</th>
<th>Topic</th>
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<tr>
<td>09/July/2009</td>
<td>Inauguration</td>
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<tr>
<td>10/07/2009</td>
<td><strong>DAY-2 (10/July)</strong></td>
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<tr>
<td>09:00am – 10:00am</td>
<td>01</td>
<td>Dr. B. Suresh</td>
<td>Quality by design in pharmacy education</td>
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<tr>
<td>10:00 am – 10:45am</td>
<td>01</td>
<td>Dr. KRP Shenoy</td>
<td>Indian Pharmaceutical Industry Present &amp; Future</td>
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<td>10:45am – 11:15 am</td>
<td>01</td>
<td>Dr. Pradeep V Desai</td>
<td>Demystifying innovation</td>
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<td>11.30 – 12.00 am</td>
<td>01</td>
<td>Mr. Prabhashankar</td>
<td>Industry Expectations from Students</td>
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<td>12:00am – 12.30 pm</td>
<td>01</td>
<td>Dr. Shanmuganandan</td>
<td>Swine flu</td>
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<td>12:30am – 01:30pm</td>
<td>Lunch Break</td>
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<td>01:30pm – 02:00pm</td>
<td>02</td>
<td>Mr. Sachin Itkar</td>
<td>Opportunities in Clinical research</td>
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<td>02:00pm – 3.00 pm</td>
<td>Mr. Ajit Kaikini</td>
<td>Inspiration – Motivation – Professionalism</td>
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<td>03:15 – 03:45 pm</td>
<td>Mr. P.D. Sheth</td>
<td>QBD in Pharmacy Practice in India</td>
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<td>03:45 – 04:45 pm</td>
<td>Students Presentations</td>
<td>Mrs. Radha Shekar</td>
<td>Bio-analysis in clinical research</td>
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<td>Students Presentations</td>
<td>Mr. S. Roy</td>
<td>NCK Solutions</td>
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<td>08:00 pm – onwards</td>
<td>Dinner</td>
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<td>11/07/2009</td>
<td><strong>DAY-3</strong></td>
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<td>09:00am – 09:45am</td>
<td>03</td>
<td>Dr. Hemadhri Sen</td>
<td>Pharma Industry &amp; Education</td>
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<td>09:45am – 10:15am</td>
<td>Dr. BG Nagavi</td>
<td>Opportunities Beyond USA</td>
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<td>10:15am – 11:00am</td>
<td>Mr. K. Anand</td>
<td>Global Melt Down and Pharmacy</td>
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<tr>
<td>11:15am – 11:45am</td>
<td>03</td>
<td>Prof. N. Udupa</td>
<td>Pharmacoeconomics and Pharmacy administration</td>
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<td>11:45am – 12:30pm</td>
<td>Dr. Vadlamudi S. Rao</td>
<td>Opportunities in R &amp; D and Drug Discovery</td>
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<td>12:30pm – 01.00 pm</td>
<td>Mr. Kaushik Desai</td>
<td>How to write your resume and facing an interview</td>
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<td>02:00pm – 03:00pm</td>
<td>Valedictory</td>
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<tr>
<td>03:00pm – 03:30pm</td>
<td>High Tea</td>
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Mr. Prafull D. Sheth
Vice President
International Pharmaceutical Federation (FIP)

Prafull D. Sheth has been serving the Pharmaceutical Profession in India for the past 30 years. He is Vice President of the FIP and Professional Secretary of SEARPharm Forum, the South East Asian FIP-WHO Forum of National Pharmaceutical Associations, committed to promote pharmacists and pharmaceutical scientist’s role in WHO's Health Agenda in South East Asia. He is Fellow of the FIP, Eminent Pharmacist and Fellow of the Indian Pharmaceutical Association. He was honored with the prestigious Acharya P C Ray Memorial Gold Medal for outstanding contribution to pharmacy profession in India. He is a member of the Governing Council of Ranbaxy Community Healthcare Society and Governing Board of the Indian Pharmacopoeia Commission. He is a non executive director on the boards of Unichem Laboratories ltd, RFCL Ltd. and Pharmasecure Inc., USA. He has been an advisor for UNDCP, UNIDO, WHO, India’s National Human Rights Commission, Delhi Society for Promotion of Rational Use of Drugs, India’s Drug Technical Advisory Board and a Committee on new structure for drug regulatory system and measures required for dealing with counterfeit medicines. He is the Past Vice President of FAPA and Former President of Indian Pharmaceutical Association. He served Ranbaxy laboratories Ltd for 25 years before retiring as Executive Vice President and Member of Board of Directors in 1997.
Dr. B. Suresh is presently the Vice-Chancellor, J.S.S University, Mysore, President of Pharmacy Council of India, New Delhi and President, Indian Pharmaceutical Association, Mumbai. Starting his career in 1982 as a Lecturer in J.S.S. College of Pharmacy, Ooty, he was, within 3 months, elevated to the post of Principal in-charge, and later the Principal on the basis of his unmatched hard-work, performance, sincerity and dedication. He completed his B. Pharm with Gold medal from Madras Medical College, Masters from Government College of Pharmacy, Bangalore and profession and academic career has been bejeweled bodies of the Govt. of India, State of Tamil Nadu and the pharmaceutical industry as an academician and membership in their scientific committees and industrial consultancy projects. He is the youngest President in the history of Pharmacy Council of India. His efforts to highlight Indian Pharmacy Profession in the various bilateral research programmes particularly with USA, UK, Germany and South Australia. He was instrumental in organizing the International Conference of Health Sciences for the first time in the country, and mooted the concept of forming an Indian Alliance of Health Sciences bringing together all health councils as part of the alliance to provide better health care to the country. He is the First Indian Academician to be awarded FAPA Ishidate Award – 2004 (International Award) for the valuable services rendered in the field of Pharmaceutical Education. He was also the First Indian to be elected as the President of Asian Association of Schools of Pharmacy with its headquarters at Singapore and Chairman of Education Division of Federation of Association Pharmaceutical Association. He was the President of 58th Indian Pharmaceutical Congress-2006 held at Mumbai. Prof. Dr B Suresh was conferred Doctor of Science (Honoris Causa) for his contribution in the field of Pharmaceutical Sciences during by The Tamil Nadu Dr MGR Medical University, Chennai. He has been the Syndicate Member and Board of Management Member of three universities namely, The Tamil Nadu Dr M.G. R. Medical University, Chennai: Bharathiar University, Coimbatore and Sri Ramachandrapuram (Deemed University) Medical College and Research Institute, Chennai. He has been elected thrice as the Governing Council Member of the Tamil Nadu Dr. M.G.R. Medical University, Chennai. He has 193 National and 63 International Scientific Publications to his credit, besides 48 general publications.
B.G. Nagavi graduated in Pharmacy from Bangalore University India, in 1976 and gained Master degree in 1979 and Ph.D. in 1983 from BITS, Pilani. He has spent most of his time as teacher, researcher and administrator. As Principal of JSS College of Pharmacy, Mysore for 22 yrs, he led 40 Faculty and 60 staff dedicated to provide best Pharm. education, training and research. In 1994, he established a comprehensive clinical pharmacy program in JSS Hospital through PG education and practice in collaboration with RGH Adelaide and University South Australia. He has been recognized nationally and internationally for his contributions to Indian Pharmacy Practice education & research.

He was vice president of Indian Pharmaceutical Association (IPA) from 2000 to 2006. He was Editor of Indian Journal of Pharmacy Education and Research (IJPER) from 1997 to 2007. He has about 62 national and 11 international publications. He has addressed around ten international and more than one hundred national level conferences and meetings. He has widely traveled around the globe.

He is a recipient of Distinguished Teacher Award of Assoc. of Pharm Teachers of India (APTI) in 1998 and has a patent to his credit. He is a fellow of IPA (2000) and Indian Society of Ethnopharmacology (2003). He is an honorary member of Saudi Pharmaceutical Society (2007)

He has been responsible for establishing JSS community Pharmacy in 2003 and developed academic based comprehensive Community pharmacy programme to provide Pharma-care mainly patient counseling, drug information, ADR reporting and monitoring and health screening services in a community setup. He has guided 32 PG’s and 04 Ph.D’s. He wrote regularly in Editorial column of IJPER.

He is a member of Board Directors of Asian Association of schools of pharmacy (2005-2009). He is also Execom member (2005-2009) of Academic Section of International Pharmaceutical Federation (FIP). Since Jan 2007 he is working as Dean, RAK College of Pharmaceutical Sciences, RAK Medical & Health Sciences University, RAK, UAE. Dr Nagavi is currently involved in the establishment of a Practice based undergraduate & PG Pharmacy and Research programs in Ras Al Khaimah with the assistance of multinational, multiracial and multiethnic team of experts.
Mr. Kaushik Desai is a Pharmacy graduate from Manipal, Masters in Pharmaceutical Technology and a Diploma in Industrial Management from Bombay University. He has published 4 research papers during post graduation. He has over 26 years of multifunctional experience in reputed Pharmaceutical multinationals like Hoechst (Sanofi Aventis), Wyeth, Johnson & Johnson & with an ayurvedic company, Charak. In his career span of 26 years, he has been actively involved in management of plant operations, international audits, projects, product development, technology transfer, contract manufacturing etc. Presently, Mr. Desai is associated with a leading EU compliant contract manufacturing organization, Global Pharmatech as its Director and CEO.

Mr. Desai has been actively associated with professional activities of Indian Pharmaceutical Association (IPA) for the past 27 years. He has held several key positions at State as well as National level in IPA. He has been Secretary of Maharashtra State Branch, Central executive council member, Hon. Treasurer of Central council & Vice Chairman of Industrial Pharmacy division of IPA. Mr. Desai was Hon. Joint Secretary of 41st Indian pharmaceutical congress & also Co-chairman of Registration committee of 50th Indian pharmaceutical congress, Mumbai. He has been awarded fellowship of IPA in the year 1998. Currently, Mr. Desai is the Editor of ‘Pharma Times’, a magazine published by IPA with a circulation base of 10,000 copies. He is a member of the World Health Editor’s Network (WHEN) Advisory Council, UK. He is also Editor of ‘APA Forum’, a quarterly publication of Association of Pharmaceutical Analysts; the member of the Technical committee of the Indian Drug Manufacturers’ Association (IDMA) and Examiner for post graduate studies for Mumbai University. Mr. Desai has been recently awarded ‘Excellence in Pharma Profession’ award by Indian Express group of publications in a Pharmaceutical Leadership Summit 2009. He is also a member of Acharya Research Advisory Board for Post graduate studies of Acharya & B N Reddy College of Pharmacy, Bangalore. Mr. Desai has been invited speaker on technical & management subjects at various forums. Mr. Desai is a keen sportsman & has represented College & University at several sports activities.
Dr. Rao V. S. V. Vadlamudi is currently working as Vice President, Research, Nektar Therapeutics India Pvt. Ltd., Hyderabad. He completed his Ph.D. in 1983, from the University of British Columbia, Canada after completing his Masters in the same university. His Bachelors & Masters degrees in Pharmacy were from Andhra University. He was the Director, Bombay College of Pharmacy, Kalina, Mumbai from 2004-2007. His research interest includes new drug discovery and development research. He has guided 2 Ph.D. students. He has 25 research publications to his credit. He is an examiner for post graduate & doctoral candidates of several Indian Universities. He has also served as resource person for several national and international conferences. He has 12 patents and his current activities include management of pharmaceutical discovery, R&D design, propose and execute research projects, co-ordination of multidisciplinary activities, scientific writing and role of pharmacists in total health care. He is serving as Editor, Indian Journal of Pharmaceutical Sciences from 1987 and Visiting Scientist to the University of British Columbia.
Ajit Kaikini is a motivational trainer who has in-depth 15 experiences in sales/marketing, production and admin/training in companies at top positions in blue chip pharma companies.

He is the Founder Director of Buoyancee, (www.buoyancee.com), a successful Soft Skill Training Institute, in charge of Growth & Corporate Training. Buoyancee, launched in 1992, has been recognized nationally by Sir Ratan Tata Trust as ‘India Leaders for Tomorrow’.

Ajit conducts training programmes all over India in six languages. Ajit is a consultant to many professional institutes such as Acharya, Auden, Bishops, Carmel, Cathedral, Christ, TASMAC, Krupanidhi, and many Engineering/MBA colleges in over 5 states. He conducts life skills and soft skills programmes to large corporations such as adidas, Accenture, Cisco, Stanchart, SBI, CanBank, LGSoft nd ITC to name a few. He is invited as a keynote speaker in many Lions and Rotary meets & conferences. He trains their office bearers in over 5 states. Through Lions Leadership Institute, Rotary & Times Foundation, he has trained over 100,000 teens and youth all over India. He has written booklets for his participants on ‘Choose Your Attitude’ & ‘Leadership – Be Inspired & Stay Motivated which is a resounding success. Over 50,000 copies have been sold. Under Buoyancee’s project ‘Build India’, Ajit and his team train the underprivileged & needy in slums and villages in 5 states of India. For this, they have been recognized internationally by GKP at Malaysia and Ogunte at UK, as Social Entrepreuners.
Dr. Premnath Shenoy, is a PhD and Diploma in Management Studies from Bombay University. He has over two decades of experience in Indian & Multinational Pharmaceutical companies in the areas of Pharmaceutical Research, Regulatory Affairs and Quality Assurance.

Research interests:
Solid dosage forms, Pharmaceutical analysis, Evaluation of herbal products and Validation.
Published over 22 research papers and over 50 general articles related to Pharmaceutical industry.
Invited speaker for seminars and workshops in the area of QA, Audit and Regulatory affairs.

Professional interests:
Hon. Secretary of Indian Pharmaceutical Association Karnataka State Branch,
Member of Central Executive council of IPA.
Life member of Quality circle forum of India & Association of pharmaceutical Teachers of India.
Industrial guide for post graduate students of Pharmacy and PhD scholars. Over 25 students have worked for M.Pharm project.
Dr. Pradeep Desai has over two decades of experience in the field of Information Technology. He specializes in setting up Global R&D and Innovation Centers. He is an expert in the area of developing strategies for innovation. He provides thought leadership and pursues strategic engagements with the senior executives on Innovation in Business and Technology. He is the founder of Innovation for Value Creation (I4VC) an innovation intermediary.

At present, he works for Tata Consultancy Services, Bangalore, India, as the Head of Software Product Performance Engineering Center and Center for User Experience.

Prior to joining Tata Consultancy Services he worked for Royal Philips Electronics as the Founder-Director for Philips Research and subsequently as the Founder-Director for Technology and Innovation Management at Philips Innovation Campus, Bangalore. During this period he developed the innovation ecosystem that has lead to many innovations for Philips products in Consumer Electronics, Medical Systems, and Semiconductors. He is a certified assessor for the Philips Business Excellency Award.

He has a Doctorate in Computer Science and a MBA with specialization in Information Technology. He did his Post-Doctoral from University of Dauphine, France.

He is the senior member of IEEE, Computer Society of India, and Institute of Engineers. He is on the expert committees of various Technical and Management Institutes.
Mr. Sachin C Itkar is a graduate pharmacist and a postgraduate with distinction, in International Business. He is a member of IPR committee formed by Indian Drugs Manufacturers Association (IDMA). He is a Council member of Indian Pharmaceutical Association and Joint Secretary of the Maharashtra Branch of Indian Pharmacy Graduates Association in addition to being actively involved with many other organizations working in the professional and academic areas.

He has delivered lectures in various forums represented by industry, regulatory, university departments & educational institutes on topics related to WTO (World Trade Organization), IPR (Intellectual Property Rights), Clinical Trials Management and Issues & Concerns of Pharmaceutical Industry at national & international symposia. The Scientific Services Committee of Indian Pharmaceutical Congress had invited him to deliver lectures on “Export Potential of Novel Drug Delivery Systems” in the symposia of 55th Indian Pharmacy Congress, at Chennai and on “Globalization of the Pharmaceutical Industry – Challenges & Opportunities” in the symposia of 56th Indian Pharmacy Congress, at Kolkata. He has also been invited to deliver a plenary lecture on “Changing Dynamics of The Pharmaceutical Business – strategies for survival & growth” in 57th IPC at Hyderabad.

He is a recipient of the ‘Young Achievers Award’ for the year 2006 instituted by University of Pune (Management Department).

He has authored two books, on ‘Forensic Pharmacy’ & on ‘Pharmaceutical Management’, which have received wide acclaim from the industry & academia. He has also published articles on varied topics of importance like Intellectual Property Rights, Pharma Business Scenario, Emerging Opportunities for Indian Pharmacos etc. in reputed journals. He holds five patents to his credit in the area of Pharmaceutical Packaging.

He is a guest faculty to post graduate programmes in Pharmacy & also to faculty developments programmes conducted in Kakatiya University (Warangal), MS University (Baroda), JSS University, Rajiv Gandhi Health University Karnataka, Bharti Vidyapeeth (Pune), Pune University and in few other institutions.

Presently, he is working with Bilcare Research as General Manager – Business Development, Clinical Research Services. His responsibilities includes business development with leading Pharma & Biotech companies worldwide in the area of Clinical Research, networking with leading hospitals & investigators for conducting clinical trials, to name a few. He is also actively contributing in the management of intellectual property rights & in the area of training.
Dr. Himadri Sen is the President of R&D (Generics, NDDS) & Global Quality Ranbaxy, India (Mar’07 – 16th Feb 09). He is also the Scientific Advisor of Pharma Research, NDDS, Innovation & Compliance Ranbaxy, 20th Feb 09 onwards. He is the Ex-President of Lupin, Pune (Nov’99-Mar’07). He is the Ex-VP of Ranbaxy, India (90 – 99).

His Qualification is B. Pharm. (BHU, India); M.Sc. (Manchester, UK); Ph.D. (Bundelkhand University, India). He has the Experience of >36 years in pharma research, technology development/transfer, plant support & regulatory affairs. He is Expertise in Conventional and Novel Drug Delivery Systems both for Generic Drug Products and New Chemical Entities. He has Process and Product Development capability for advanced and emerging markets. He has great ability in Understanding of international quality and regulatory issues for Generic Drug Products. He have experience of 18 years in UK MNCs (Including 13 years in MNC and 11 years in BMS) and he have 18 years in Indian MNCs (Ranbaxy and Lupin).

His achievements are immense. He was awarded distinguished Scientist Award 2007 by AAIPS, Research Scientist Award 2004 by Pharma Business & Technology, Outstanding Performance Award 2005-06 by Institute of Pharmaceutical Education & Research (IPER), Pune. He had Developed & made approval of 100+ INDs, NDAs & ANDAs for US / EU including OCRS pmts. He had Out-licensed 2 NDDS products/Platform technologies to EU/US co’s. He acquired more than 50 patents and publications.

His is a Member of International Oral Drug Delivery Award Committee - 2008, Controlled Release Society, Member, Nano Applications and Technology Advisory Group (NATA) ’07 onwards, Co-Chairmen for the forthcoming Indian Pharmaceutical Congress, 08 scheduled to be held from 12-14th Dec, 08 at New Delhi, Member, Annual Planning Development Committee (APDC) of National Institute of Pharmaceutical Education & Research (NIPER) - ’08 onwards, Advisory Board Member, Bilcare Research Academy, ’07 onwards, Vice Chairman – 59th IPC.
Varanasi '07, President, Vice President / Patron - Controlled Release Society, India. Chapter - '97 onwards, Trustee & Co-Chairman – 54th I.P.C. Pune, '02, President - Indian Pharmaceutical Association (IPA), Delhi Branch, ‘98 - '00, Board Member, All India Council For Technical Education, (AICTE) 97 - 01., Academic Planning And Development Committee Member, NIPER (National Institute Of Pharmaceutical Education & Research), 2000-03, Member, OPPI Technical Committee '01 onwards, Member Of The Advisory Council, Department of Pharmaceutical Sciences, Chandigarh and Hissar University, 97 – 00, Member of The Scientific Committee, IPC‘98 - ‘00 (Indian Pharmaceutical Congress), Chairman - Scientific Committee, 45th IPC, New Delhi, ‘93., International Advisory Board Member, Member Of The Editorial Advisory Board, Pharma Times ‘98 - '00, Ex-board Member Of Lilly - Ranbaxy a Joint Venture Company.
Dr. N. Udupa is the Professor and Principal, Manipal College of Pharmaceutical sciences, Manipal, Karnataka. He has a teaching experience of 31 years besides guiding Ph.D. candidates. Dr. Udupa has been awarded with numerous fellowships; has held several honorary positions and bestowed with several awards. In 2008 he was awarded “The Pharmaceutical Scientist of the Year” award by the Indian Association of Pharmaceutical Scientist and Technologists. He has been awarded with the Dr. P.C. Dandiya Endowment Trust Research Award for Pharmaceutical Sciences 1994-1996 and Best Research paper Award in Pharmaceutical Conferences for 12 times and “Principal of the Year” award 2001 by APTI India. Several workshops were organized under his able supervision. Dr.Udupa has 353 papers published in referred journals. He has 5 books to his credit and has delivered several guest lectures. He has received 48 research grants and has successfully guided 22 Ph.D. candidates and has 7 patents to his credit. He has an expertise in novel and targeted drug delivery systems like developing liposomes, neosomes, microspheres, transdermal drug delivery systems, systems for dental diseases, ocular drug delivery, polyherbal drug formulations, nutraceuticals and nasal drug delivery systems. He is examiner for post graduate & doctoral candidates of several Indian Universities like Mangalore University, Mangalore; Rajiv Gandhi University of Health Sciences, Bangalore; The Tamilnadu Dr. MGR Medical University, Chennai, Banaras Hindu University, Varanasi, etc. He has also served as resource person for several national and international conferences.
Mr. Radha Shekar has a Doctorate in Computer Science and a MBA with specialization in Information Technology. He did his Post-Doctoral from University of Dauphine, France.

He is the senior member of- IEEE, Computer Society of India, and Institute of Engineers. He is on the expert committees of various Technical and Management Institutes.

Graduated in 1982, from UDCT, Mumbai University with a distinction.
Completed a course in Business Management.
Trained Lead Asessor for ISO 9001 Quality Systems
Completed a course on Advance Biopharmaceutics and Pharmacokinetics from Kansas University
Mr. K. Anand

K. Anand is the asst. vice president - project management in star: strides arcolab limited, opp. iim bilekahalli, bannerghatta road, bangalore. His qualification is B. Pharm [Hons] from BITS Pilani, PGDBA from Pondicherry University, PGDIPR from ICFAI University (Ph.D - BITS Pilani) [Pursuing currently and will be submitting thesis in 2010]. His professional career was involved in Ranbaxy Laboratories Ltd. Dewas (M.P) - 1985 – 1988 as production supervisor IPCA Laboratories Ltd. Ratlam (M.P) 1988 – 1992 as production officer / production executive, Micro Labs Ltd. Hosur (T.N) 1992 – 1996 as production manager; strides arcolab ltd. (Global remedies) 1996 - 2001 as plant head of Hosur plant, strides arcolab ltd. 2001 till date as head/AVP - technology transfer: 2001 - 2006 AVP - project management: 2006 till date. He has a broad field of research interests with specific area of involvement in organizational behaviour and leadership: R&D metrics and kpis: it enablement of pharmaceutical processes. He did his paper presentation on "Project management challenges in certain areas of pharmaceutical development" @ PMPCE 2007 Bangalore. His academic activities are he works as BITS off campus faculty for the course "production and operations management" for the M.S students. (2006)
HOW PHARMACY STUDENTS CAN PROMOTE PHARMACY PRACTICE IN INDIA IN LIGHT OF FIP’S 2020 VISION

Prafull D. Sheth

The presentation will examine a strategy for pharmacy students’ role in strengthening and building IPA as an organization in the backdrop of FIP’s 2020 Vision which is articulated in its three strategic objectives, four tactical approaches and six core operating principles.

The articulation of the Pharma Vision 2020 has its foundation in the basic premise: “How Pharmacists as Health System workforce can change their role for adding value of medicines to the society”? To do so, Pharmacists as Human Resources for Health must develop a more meaningful role in delivering pharmacy services in the national health system. It is estimated that there are 15-20 lac healthcare providers in the country. Among them, India has approximately one pharmacist, for 2000 population.

The gap between demand for medicines and available resources is widening. Not only due to higher birth rates but also due to increase in life expectancy, populations are living longer. The patients are also getting better educated and informed and becoming knowledgeable about their own healthcare. In such a scenario, the pharmacists should be able to prioritize and implement healthcare needs of the society and provide pharmaceutical care with strategic focus and direction.

FIP is a signatory to a collaborative practice joint statement at global level with other Health Care Professional Associations (HCPAs) in reaching WHO’s MDGs 4 & 5. It would be useful to examine how IPA is proposing to associate with Indian HCPAs in supporting MDG’s 4 and 5.

The pharmacy students would find such a case study interesting in its utility in implementing pharmacy practice objectives in the country. It is hoped that the pharmacy students will work in collaboration with other health care professional associations and play a meaningful role as professionals in bringing about a paradigm shift in the pharmacy practice scenario in India.
OPPORTUNITIES IN RESEARCH AND DEVELOPMENT,
DISCOVERY RESEARCH

Rao V. S. V. Vadlamudi

Career opportunities for graduates of Pharmacy exist under three very broad categories; in academics and research, in pharmaceutical industry and in the pharmacy practice. In this presentation, the opportunities that are available for pharmacy graduates in the pharmaceutical industry specifically in the area of research and development with a focused emphasis on drug discovery have been presented. In the pharmaceutical industry, research and development activities focus on pharmaceutical development (drug product development), analytical research and development, drug discovery and development (NCE research), pharmaceutical biotechnology research and development, herbal product research and development, and clinical research. It is essential to understand that each and every pharmaceutical industry might not focus on all the areas that have been listed above. All these research areas offer opportunities to pharmacy graduates with a minimum of Masters Qualification. However, it is also necessary to get trained in certain key core competency areas in addition to a basic Master's degree in pharmaceutical sciences to stand better chances of gaining employment in the research and development field. Better still would be to obtain a Ph. D. to start higher with in the R and D career ladder. An overview of most of the core competencies required for establishing a firm R and D career in different areas of pharmaceutical research and development including drug discovery research forms the main theme of this presentation. Pharmacy graduates must evaluate their aspirations and interests before selecting a specialization that they wish to pursue at the M. Pharm level. This forms the important first step to build a successful career. It is necessary for all students to understand that Bachelors in Pharmacy degree is only the initial stepping stone for building a successful and bright professional career and the process of career building needs additional qualifications.
HOW TO WRITE YOUR CV / RESUME AND FACE AN INTERVIEW

Dr. Koushik Desai

The Phenomenal growth of Pharmaceutical sector globally as well as nationally, has offered immense employment opportunities to pharmacy professionals. The pharmaceutical industry is expected to grow at the rate of 13% annually. India has highest number of US FDA approved facilities other than USA. The CRAM sector is growing by leaps and bounds. There are number of pharmacy institutions churning out enough number of pharmacy students. In today’s competitive environment, the challenge to a student is much more in getting a right placement in the area of his choice. One has to sell himself on paper first so as to qualify for an interview call. In addition to in depth knowledge in the concerned subjects, understanding the nature of interview is a pre-requisite to get the desired job. An interview is a business conversation in which both people ask and respond to questions. The best interviewees are thoughtful, answer questions & give a full picture of themselves. It primarily depends upon one’s understanding of the expectations of the employers, evolving an interview strategy, paying attention to minute details, practicing for interview, preparing for customary questions and planning for the follow up after the interview. The presentation will briefly discuss the important aspects of CV / Resume writing and also will provide practical tips on how to prepare for an interview.
INDIAN PHARMACEUTICAL INDUSTRY PRESENT AND FUTURE

Dr Premnath Shenoy

The Indian Pharmaceutical Industry today is in the front rank of India’s science-based industries with wide ranging capabilities in the complex field of drug manufacture and technology. A highly organized sector, the Indian Pharma Industry is estimated to be worth $ 4.5 billion, growing at about 8 to 9 percent annually. It ranks very high in the third world, in terms of technology, quality and range of medicines manufactured. From simple headache pills to sophisticated antibiotics and complex cardiac compounds, almost every type of medicine is now made indigenously. Playing a key role in promoting and sustaining development in the vital field of medicines, Indian Pharma Industry boasts of quality producers and many units approved by regulatory authorities in USA and UK. International companies associated with this sector have stimulated, assisted and spearheaded this dynamic development in the past 53 years and helped to put India on the pharmaceutical map of the world.

The Indian Pharmaceutical sector is highly fragmented with more than 20,000 registered units. It has expanded drastically in the last two decades. The leading 250 pharmaceutical companies control 70% of the market with market leader holding nearly 7% of the market share. It is an extremely fragmented market with severe price competition and government price control. The pharmaceutical industry in India meets around 70% of the country’s demand for bulk drugs, drug intermediates, pharmaceutical formulations, chemicals, tablets, capsules, orals and injectibles. There are about 250 large units and about 8000 Small Scale Units, which form the core of the pharmaceutical industry in India (including 5 Central Public Sector Units). These units produce the complete range of pharmaceutical formulations, i.e., medicines ready for consumption by patients and about 350 bulk drugs, i.e., chemicals having therapeutic value and used for production of pharmaceutical formulations.

Following the de-licensing of the pharmaceutical industry, industrial licensing for most of the drugs and pharmaceutical products has been done away with. Manufacturers are free to produce any drug duly approved by the Drug Control Authority. Technologically strong and totally self-reliant, the pharmaceutical industry in India has low costs of production, low R&D costs, innovative scientific manpower,
strength of national laboratories and an increasing balance of trade. The Pharmaceutical Industry, with its rich scientific talents and research capabilities, supported by Intellectual Property Protection regime is well set to take on the international market.

DEMYSTIFYING INNOVATION

Dr. Pradeep V. Desai

The talk clearly articulates the meaning of innovation. Further it brings out the various aspects of innovations.

Innovation is successful exploitation of ideas to produce artifacts that has value to the users and stakeholders. In the organizational context, innovation may be linked to performance and growth through improvements in efficiency, productivity, quality, competitive positioning, market share, etc.

It is seen that delivering successful innovations has always been a major challenge.

The talk covers-

- Why and what is innovation
- Value of innovation
- Innovation process
- Innovation type
- Challenges for innovation

Need for innovation in India
INDIA NEEDS ENTHUSIASTIC LEADER

Mr. Ajith Kiakani

Dhirubhai Ambani was not born with influence but he created influence. He was a poor boy but, he not only created wealth but also brought out a lot of wealth from the people around him. He never complained about circumstances but, created circumstances conducive for productivity - 'product activity'. Remember, be it Dhirubhai or Amitabh Bacchan – they both like us, have 24 hours. What is more important is how you spend it or waste it! What Dhirubhai did was - he first learnt to lead himself. He was disciplined. He was duty oriented. He was devoted! He was driven from ‘inside-out’. Awaken the leader in you and when that happens in any individual / company, that individual/ company becomes unstoppable.

The whole business is nothing but relationship. People don't buy a product but are attracted by relationships. Communication is the grease, which lubricates this. People, who invest their time on themselves, working on their communication, are those who create an impact on the society.

Dhirubhai Ambani, a school drop out, was able to get the best out of the best people for a revolution in India - an impact on the world. The fire in his belly attracted the best around him. The fire in his belly made him creative and think of those industries, which the educated ones could not. The fire in his belly made him to see things which none of the so-called double graduates and PhD.s could see. The fire in his belly helped him to produce world-class products and in turn made him world class.

Enthusiasm comes from ancient Greek. It means "having God in you" "Aham Bhramasmi". I am sure, looking at the way many behave, you can understand who they could be. They don't walk they dance, they have a special glow on their face.

These enthusiasts make a mark in a society wherever they go. Unfortunately, many enthusiasts tend to go overboard leading to over Enthusiasm, which could be frowned at. Enthusiasm by itself isn't enough! We have some such people entering our offices to sell something in between our meetings, thrusting their hands in our car selling something and sometimes we have to hide in fright if they think an enthusiastic salesperson is approaching! So where is this going?
So what is this rational enthusiasm when you are not called mad and people do not run away from you? Whey you are excited and committed and you do it with "Godlike" characteristics of the sort you choose.

People with enthusiasm make the difference. You know from your experience that people with passion are the leaders and achievers. No enthu in whatever you do is like food without salt - bland! It is like flower without fragrance – nobody wants one.

We badly need to work on our enthusiasm as; this God given gift gets destroyed in our being brought up - at home, school and college. Did you not get snubbed every time you got enthusiastic in these places? We all do and know that probably it is not the way but, the tit for tat game is really interesting.

Enthusiasm creates a burning desire - the fire in the belly when somebody has something that they feel is important. If people can see why one is fired up - they see a leader in them. This fire awakens the leader in an individual and the required qualities of leadership surge in them. This fire is contagious which helps them to do their best and bring out the best in others too. The fire’s attribute is to engulf everything around and thus, people prefer to be around and be lead by them.

You will never see a manager take risks like a leader. So can we say that a leader is a manager who is fired by enthusiasm? A leader uses creativity and not only implements but inspires others to do what he thinks is right! A pure manager has to be told everything. So much so, many a times the manager finds himself out of work for want of direction. Thus, a leader is a manager with a broader vision, innovation, strategizes, risk taker, and many more.

Would you then like to be a progressive leader or a mediocre manager?

Today, the business is dynamic - that which is new today becomes obsolete. The business environment is volatile - and that is why we see so many mergers and acquisitions. Only the best survive. People have to be kept on their toes to keep up with the changing times. Intrinsic motivation and enthusiasm is the name of the game - and that name is TRAINING!

What our businesses require is leaders who can inspire and motivate people and mentor them to do their best for the good of the business. Especially, the need now is dire.

India has never seen such opportunities, which we have today. Jobs are in plenty – only for those who have worked on their qualities! The salaries are good too.
In fact, never in the history on India have we seen the opportunities that we have been offered on a silver platter. There is plenty and more for all those who can lead themselves and others. Gear up and get yourself trained. Work on your human excellence to support your academic excellence to bring out your best.

Ajit Kaikini – Director – Growth & Corporate Training BUOYANCEE
A motivational speaker who inspires his participants to better their Best! www.buoyancee.com.

PREPARING HUMAN RESOURCE FOR LEVERAGING INDIA’S GLOBAL CLINICAL TRIAL OPPORTUNITIES

Mr. Sachin Itakar

Clinical trials today have become one of the most important aspects of modern medical research & drug development. The global clinical trials industry is currently worth an estimated $10 billion and has the potential for considerable growth in the future.

Clinical trials are now performed in many regions of the world. The major Pharmaceutical companies are now outsourcing clinical trials to developing countries like India & China. The drivers for this outsourcing trend are cost effectiveness, availability of large pool of subjects & speed in conducting clinical trials. The cost of running a trial in Asia has been estimated at 40-60% less than an equivalent trial in the US & Europe. In Asia, India is fast emerging as successful model for rapid growth in the clinical trial industry. The Indian Govt. intends to encourage international interest in its Pharmaceutical & biotech sectors. A large part of its strategy is to promote the growth of its clinical trial industry. All the leading Pharmaceutical companies e.g. Pfizer, GSK, Novartis, Eli Lily, Aventis, Roche to name a few are investing substantially in clinical facilities in India. In addition to, all the top global CROs already have a presence in India. There is also a well established healthcare infrastructure. The country has over 15000 general hospitals out of which approximately 300 have approved as sites for clinical trials. The language of communication in healthcare industry is English; which helps in better understanding of study protocols. India has a well established IT industry which is capable of
developing technological solutions to the organization of clinical trials such as Electronic Data Capture (EDC).

Clinical trial industry in India is showing multiple digit growth in terms of revenues generated since last few years. Today the industry’s turnover is over a billion dollar & is expected to grow multiply in the near future. India has a very unique opportunity to leverage the potential of outsourcing global clinical trials. However there are certain glaring gaps like non availability of the required number of trained clinical research professionals. There is a huge demand supply gap in terms of the trained human resource required for this industry. The clinical trial industry in India alone requires over 50,000 trained CR professionals by 2010 & around 2.5 lacs globally. There lies a great challenge in preparing the trained human resource for meeting the ever growing demand of this industry. We need to convert physicians into ICH GCP trained investigators, support staff into trained CR professionals.

The presentation will give a good understanding of the current scenario of clinical trials, India’s advantage & will also address certain glaring gaps in the growth of the industry. The presentation will also discuss strategies to prepare the human resource for leveraging India’s global clinical trial opportunities.

PHARMACOECONOMICS AND PHARMACY ADMINISTRATION: NEW HOPE OF TOMORROW

Prof. N. Udapa

In the emergence of super specializations in the field of Pharmaceutical Sciences, Pharmacoeconomics is a buzzword today. Pharmacoeconomics refers to the scientific discipline that compares the value of one pharmaceutical drug or drug therapy to another. It is categorised as sub-discipline of Health economics. A pharmacoeconomic study assess the cost and effects (expressed in terms of monetary value, efficacy or enhanced quality of life) of a drug. We can distinguish several types of pharmacoeconomic evaluation: cost-minimization analysis, cost-benefit analysis, cost-effectiveness analysis and cost-utility analysis. Pharmacoeconomic studies serve to guide optimal healthcare resource allocation, in a standardized and scientifically grounded manner. Under the study of pharmacoeconomic we can decide the institutional or societal perspective from which the analysis should be conducted. As the awareness about health is spreading widely, many countries are initiating to evaluate and implement the hormonised guidelines pharmacoeconomic.
agencies of individual government are seriously thinking to promote the concept of Pharmacoeconomics in their respective countries. Several researches have shown that framework of Pharmacoeconomics is helpful to improve efficiency and efficacy of health services by reducing the cost and time involved in it.\(^3\)

Pharmacy Administration is another emerging area in the field of Pharmaceutical Sciences. Pharmacy Administration and Pharmacoeconomics can go parallel in hand by hand. Pharmacoeconomics and Pharmacy Administration holds a promise for students in Pharmacy about their bright future opportunities in coming future.

PHARMACY EDUCATION IN INDIA: EXPECTATIONS AND REALITY

Aakash Shroff, Bhavesh Jethra

Every educational institution is trying to create a corporate image with huge extravaganzas and not concentrating on the basic inputs of quality in teaching and practical orientation to students. The objectives of Pharmaceutical education are to provide scientific and technological training in all aspects use of the drugs and medicines. There is a severe shortage of qualified and competent faculty in the pharmacy colleges in the country. Also, there is a mismatch between knowledge and skills received by pharmacy graduates and the job requirements. Non-uniformity in the distribution of pharmacy colleges in the country is causing regional imbalances and inter-state migration of students. Students graduated from several pharmacy colleges are unable to work in a team and lacks inter-disciplinary knowledge, enough practical orientation and oral and written skills. Pharmacy education lays more emphasis on industrial pharmacy than pharmacy practices. The chemist shops have yet to be evolved into pharmacies-internet pharmacies should be encouraged. Apart from whatever else is taught in pharmacy colleges under the garb of "Pharmacy Practice"-Pharmaco-therapeutics, Communication skills and Hands down training on computer operations be made mandatory subjects. Harmonisation in the pharmacy education is a global agenda and India should actively participate in it. The pharmacy teacher’s community should take notice of this critical and important issue and involve a cross section of practicing pharmacists to review and suggest a relevant curriculum. The education system should enable a graduate to apply scientific knowledge in such a manner that can provide maximum healthcare services to the society.
QUALITY BY DESIGN IN PHARMA EDUCATION

Roydon

The profession of pharmacy in India has seen an exponential growth since the independence of the country. However so, there has been one particularly huge void. The void is 'QUALITY'. One must have realized this fact considering a country with a billion people lags behind in the field of pharmacy. Well the root of the problem could be traced to the roots, that is the pharmacy education in the country. Although students might agree to the fact that the pharmacy education in the country isn't a mediocre one, many would say that it lacks quality. Quality by design through various applicable steps is what can be done now with the education. The experiment would divide the pharmacy students based on their excellence in academics, sports and other features. The experiment, is to ask a couple of questions to the student volunteers and this would be part one. Part two, Would take 10 Lecturers in various pharmacy departments and a couple of questions would be asked on the quality aspects of the education. Also, in the experiment would be other factors affecting the quality in education i.e. number of pharmacy colleges, training facilities and other parameters. On the deduced conclusions, various models of a revived pharmacy education structure will be obtained. There will be three such models. We water our roots to get better fruit, We improve the quality of pharmacy education by design.
THEME: QUALITY BY DESIGN IN PHARMACY EDUCATION

QUALITY CRITERIA IN PHARMACY EDUCATION

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In recent years, pharmacy practice has undergone an unprecedented change as the role of a pharmacist as part of the health care team has been increasingly recognized. A professional arena involves a dynamic interplay between practice and education. It is evident that developments or initiatives in one area will drive change in others. The issue of quality in education becomes therefore an essential concern. This in turn has generated a necessity for interdependence and partnership amongst all stakeholders in pharmacy education. Quality educational structures, processes and outcomes will lead to graduates who are competent and capable of performing effectively in their practice setting. The very purpose of quality education is to assure that specific outcomes are achieved and core quality elements in terms of structure and process are maintained to support the achievement of desired outcomes. The three pillars of quality can be summarized as: outcome, structure and process. With respect to the outcome, the competencies that must be achieved by graduates should be clearly stated. The educational structure encompasses an environment that promotes harmonious relationship between administrators, faculty, staff, preceptors and students. It takes into account the administrative structure, content of pharmaceutical education, physical and financial resources. The process implies the development and implementation of strategic plan to facilitate the advancement of the missions and goals of the institute. It incorporates the academic policies, student enrollment, teaching methodologies, evaluation and assessment, student representation, curricular revision. All the above must be considered important for formation of well-rounded pharmacists.
PHARMACY EDUCATION IN INDIA EXPECTATIONS VS. REALITY

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Objectives: It is necessary to study bottlenecks of academia and industry so that we may find a balanced mechanism to promote industry-academia collaboration by focusing on knowledge transfer. The education system in the country did not have much scope for this type of collaboration to sprout. The research done in academic institutions is not translated in industrial realities; hence the institutes keep on starving for the funds. Major changes have to occur in the institutional structures to make the technology based growth feasible. The Pharmaceutical Industry needs multi-disciplinary teams of high caliber skilled science graduates to prosecute its work across all levels. The commonest areas of skills deficiencies at entrant level are, poor basic knowledge of the key principles of the discipline, inability to apply learning's and low levels of practical skills.

Conclusion: It's high time now that academia-industry partnership is translated from the slogan to the reality. The key to this change would be interaction and partnership between industrial firms, academic institutes, research institutes and Government, who are becoming engines of innovation. This will fulfill the Pharma vision 2020.
PHARMACY EDUCATION IN INDIA: EXPECTATIONS AND REALITY

Gurunath Padgaonkar

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The Pharma industry is expanding at a great pace. So are its demands in general and expectations in particular from pharmacy students. The syllabus set by any university is the “minimum” requirement for qualification. This implies that there is a need to do more than what is prescribed. The syllabi of the different pharmacy courses do possess some lacunae. The apex bodies fail to deal with these shortcomings. However, a student must not stop from learning what he desires to if it is going to prove beneficial during the long run of his career or in simply using his knowledge for helping himself and the layman in day-to-day life. Unfortunately, most students keep themselves curriculum oriented. A job interviewer from quality control department would not entertain you if you don’t know the method for validation of the U.V. spectroscopic technique, if that is what he wants you to work on in the factory. Also, are you worth a B.Pharm or M.Pharm degree if you cannot render proper first aid to a road accident victim or decide what drug to administer for your grandmother’s motion sickness? These are seemingly practical circumstances our pharmacist society comes across regularly. And the solution lies in students’ hands. Going beyond borders of the curriculum is needed. An eager, ferreting intellect keeps no limits. Pharmacy education is infinite. It is unfeasible to absorb everything around you. The college days are the most valuable of all and the perfect time to learn, or else students may repent later on that they did not squeeze out maximum from their student life!
DREAMS TO DESTINATION

THEME: PHARMACY EDUCATION IN INDIA:
EXPECTEDIONS&REALITY

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Student means someone who is in process of learning and has a zeal for learning regularly throughout his life. a famous quote from Henry Ford which reflects the importance of learning states “Anyone who stops learning is old, whether at twenty or eighty. Anyone who keeps learning stays young. The greatest thing in life is to keep your mind young.” As a student you have the freedom to learn, explore and experiment with various prospects of life and nature. The article revolves around making student and education best friends

Analytical approach for determining the expectations, reality and reforms in pharmacy education India:

PEST analysis: PEST analysis stands for "Political, Economic, Social, and Technological analysis" and describes a framework of macro-environmental factors used in the environmental scanning component of strategic management of pharmacy education in India.

1. BCG Matrix: helps the Pharmacy education governing body to allocate resources and is used as an analytical tool in brand marketing (Increase the brand value of Pharmacy in India), product management (Various Innovative courses to support the new Industrial demand), strategic management of education system, and portfolio analysis of pharmacy education and the pharmacist.

SWOT analysis: SWOT analysis stands for “Strength, Weakness, Opportunity and Threats analysis and describes the over all strategic framework required to uplift the pharmacy education in India.

Pharmaceutical sector is a most important and critical link of the total global healthcare system, it not only coordinates with other components of the healthcare system to make this globe and people of this globe healthy and strong.

Pharmacy Education: The New approaches

- Pharmacy education awareness and understanding the various healthcare components
- Organising the Pharmacy education System in India
- Centralizing the Pharmacy education system in India
- Scholarship programs for the bright and financial week students
- Government aided training programs, counsellor centers, helpline phone centers; websites
- Establishment of national common entrance test for pharmacy courses
- Proper and common orientation of the Pharmacy education system throughout the nation with help and coordination of the various regulatory bodies like PCI and AICTE

Now it’s the call of time that the intellectuals, corporate and other important authority of pharmacy should come together and work in a revolutionary way to fulfill the dreams of INDIA and equip the young India with required tools to become a giant in healthcare Jai Hind
TITLE: PHARMACY EDUCATION IN INDIA EXPECTATION AND REALITY

Mihir R Upadhyay

Many years ago pharmacy was a daydream of every student of an India. Reason is everyone knew the splendid future of pharmacy in India. They were correct too, because you even see the pharmaceutical growth right now in period of global crises. That proves that pharmacy education never goes on diminished day by day but instead it grows on. During time of independence many few pharmacy institutes were established. But fact is authentication of education was maintained by those institutes. They were trying to get newer techniques for encouraging pharmacy education. Authorities were expecting that future pharmacy education will be 100 folds better than what actually situation was there. They were correct too because you can see the no. of colleges goes on increasing now. Along with institutes’ newer techniques, applied pharmacy programs like Pharm.D, Pharmaceutical MBA are also developed. This uprising is amazing for an India but unfortunately this may bring privatization of institutes and business of pharmacy profession. That may bring black era of pharmacy education in future. Because education regulatory authority cannot see the situation what exactly taking place inside the campus, what actually is going on in the institutes if large no. of institutes being established. Regarding students’ point of view if proper counseling is not done then in future we will get pharmacist who came in the field of pharmacy not by choice but they have forced by their parents and relatives. Particularly I do not want such pharmacist in my India that they have chosen the profession by power of any other person. Institutions should treat and motivate the future pharmacists to transform sound theoretical knowledge in to effective realities, to orient student’s aptness in right direction. Then only we can achieve the needs of global health challenges.
Contemporary pharmacy practice has moved away from an essential product-orientation towards an approach where a patient is the centre of the practice. Given such clinical focus with greater demands made on clinical problem solving abilities, it is timely for the regulators to review the philosophical and technical related issues pedagogic methods. The reality is that pharmacy education with few exceptions is made subject-oriented and didactic in method. While this approach is a necessary in educational enterprise, it is not able to meet the increasing complexity of proliferating therapeutic problems in today’s practicing pharmacist. Educational process is no longer a nation building exercise but a commercial activity for profit making. In recent years the expectations have raised. A more global attempt by the colleges of pharmacy to introduce practical applications of pharmacy curricula content has been through experimental programs like externship, internship and clerkship. Students of pharmacy law and ethics have also been challenged to test their newly acquired knowledge for clinical decision making skills. This can be done by group-discussion, role play and case study. Industrial approach in the academics will immensely help the student in terms of his knowledge of the current trends in practice. Events like seminars, presentation may also improve his technical skills and the zeal to participate in the above. There is a dual control of Pharmacy Council of India (PCI) and the All India Council for Technical Education (AICTE) to lead the pharmacy education in the country. The Pharmacy Council of India (PCI) should be made the only statutory body to govern pharmacy education at Diploma, Degree, PG and Research levels. The pharmacy act should be amended to give necessary powers for PCI for giving approvals for starting new pharmacy colleges. The role of AICTE should be scrapped. Dual control by two regulatory authorities will lead to confusion. Thus even though the reality of pharmacy education is a subject-oriented, the expectation of a new era of skillful, problem-solving study along with practical application are on the rise.
PHARMACY EDUCATION IN INDIA: EXPECTATIONS AND REALITY

Rohit M Bagri

When a Strength-Weakness-Opportunity-Threat analysis is done for the Pharmacy education in India, it showed.

**Strength:** large student base, respect for profession, challenges cropping up due to diversity in healthcare.

**Weakness:** less practical involvement, students are not enlightened to understand their role in the industry.

**Opportunity:** there is the growing importance of healthcare, enlightened people are spending both time and money as an investment for better health, great returns on the investment in pharmacy education.

**Threats:** increasing number of pharmacy colleges, falling standard of the education, doubts about qualification and experience of the staff, no industry-academia interaction to bridge the gap.

The aim of the review is to determine the factors which transpire the difference between expectations and reality, and factors contributing are not utilizing the opportunities resulting in increased threats. Education is a commodity. Hence if this commodity has to move fast in the market, it should have traits that a profit oriented business will have. No stakeholder of pharmaceutical industry will ever say that over a period of years, pharmaceutical industry has not given any new products for betterment of health of patients. But, somehow pharmaceutical industry cannot translate perceptions and expectations of millions of people into actions. This applies to pharmacy education. The right to expect something is there only when we choose pharmacy education as our first choice rather than second preference to MBBS. A system where expectation equals reality is theoretical; the students can raise their voices at the right time and play a role to pave a way between expectations and reality.
PHARMACY EDUCATION- EXPECTATIONS VS REALITY

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Man used his imagination to extreme conditions and developed this world into a technological park, Carrying out different professions and then fell sick for a million reasons as he never bothered about his body. Then a few started working on this cause and used the gifts of nature and made them into colorful, attractive, polished, shaped healers which he called medicines now these healers are then made into different forms for the ease of usage. People were very delighted and with all respect called him a PHARMACIST. God is the creator and pharmacist is the protector. The field of pharmacy is almost covering 75% of global economy. Though there is development there are still some uncovered areas which lack development in India especially, pharmacy universities in India would provide quality education to Indian pharmaceutical society, improvement in hospital, clinical pharmacy would create a pharmaceutical hub in improving the status of the profession and also the quality of dispensing. The developing fields such as medical transcriptase must be given importance and a lot of boost, The pharma industries must be given a strict instruction and also proper guidance regarding the patent rights as their preparations may be duplicated, which may cause the decrease in quality of the medication. Pharmaceutical students should be called pharmaceutical technologists which would create a passion towards their profession. Young pharmacists should be the future entrepreneurs and I hope with this pace of progress we could achieve it in near future.
TO IMPLEMENT INTERNATIONAL EDUCATIONAL STANDARDS IN INDIA

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The Pharmacy council of India defines pharmacy as a profession which is concerned with the art and science of preparing natural and synthetic sources, suitable and convenient materials for distribution and use in the treatment and prevention of disease. It embrace a knowledge of the identification, preservation, combination, analysis and standardization of drugs and medicines besides synthesis of new drug molecules, manufacturing of various dosage forms, (Liquid orals, powders, tablets, capsules, ointment, injections, ophthalmic products, etc.) quality control, clinical trials, bio-availability, research, side effects, compatibility, in-compatibility, indications, contra-indications, pharmacokinetics, pharmacodynamics, toxicology etc. In our day-to-day life pharmacists play an important role, as they are very much into research and manufacture of drugs. Thus pharmacy is closely associated with scientific study. Due to technological innovation and improve communication, drastic changes are taking place, but the pharmacy field was kept aside from those changes. Overall, the education system is based not only on infrastructure but also on the teaching, immorality and mismanagement has taken over education. Many experts feel that it is necessary to lay down a clear policy to better the quality of pharmacy education in the country. For this, promotion of postgraduate education and research in higher pharmacy institution and maintenance of standards like accreditation and quality assurance are a must. Apart, it is felt that it is necessary to plan for a substantial increase in the pharmaceutical teaching community, particularly in the new emerging areas of the study, to turn India an international acclaimed pharmaceutical centre.

“Success cannot be harvested until and unless its seed is sown”
THEME: PHARMACY EDUCATION IN INDIA EXPECTATIONS AND REALITY

PRIYANK PARIKH, Gargi Redkar
(VES College Of Pharmacy, Mumbai), The Makeover Of Pharmacy Education In India

India is facing considerable challenges arising from rapid advances in pharmaceutical world. The image of a pharmacist can be changed only by raising educational standards. Pharmacy degrees are awarded by faculties of science, technology or medicine, but rarely by the faculty of pharmacy. Education is a Commodity and to move in fast lane it should match the rapidly changing global pharmaceutical scenario. Pharmacy colleges should offer Advanced Pharmacy Practice Experiences (APPE) in the community setting. Present B-Pharm syllabus can be bifurcated into industry oriented, governed by AICTE and clinical oriented, governed by PCI. Upcoming fields like proteomics, clinical epidemiology, pharmacoinformatics, pharmacogenomics, etc. must be integral part of syllabus along with traditional subjects, thus placing emphasis on maximum exposure for subjects by having 5 subjects at a time. The Pharm D course initiated will herald a new era in pharmacy practice in India giving more emphasis to patient-centered approach. While professional pharmacy, hospital and clinical pharmacy are gaining importance in the western world, Indian pharmacy education continues to emphasize on industrial pharmacy. There must be a paradigm shift from present industry-centered curriculum to patient-centered. Few institutions already have understanding with industries at national and international level for collaborative research programs Modernization of education is essential but not at the expense of losing its basic essence to false means. The future relies on education and curriculum design which infuses a broad minded approach essential to overcome challenges lying ahead and serve as a patient care.
QUALITY BY DESIGN IN PHARMA EDUCATION

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The pharma profession in India is still in growing stages that reflects the state of pharma education in India. The present state of pharma education system in India can be deduced from the fact that India being the fourth growing pharma country still doesn’t has a single molecule of its own. The present education system in India has some advantages but there are a lot more lacunae that are to be filled to make our pharma education a more promising field. The drawbacks related with the industrial, social, clinical, academic aspects are the pores in our education system. The aspects such as communication skills, health care activities are not taken into account in the present curriculum that makes a pharmacist a mere drug seller instead of a health care professional. By considering and working on the aspects of industrial academic interface, pharmacovigilance, clinical and social we can raise our education standard that can pace with the fast moving industries and research. Innovative ideas are needed to reinforce the pharma education. In this era of globalization there is need to upgrade the standards of education by harmonization and for this the main driving force will have to come from pharmacists themselves. Education must be of highest standard so that the upcoming pharmacists should not be a liability, but should be able to deliver excellence at national and international levels.
QUALITY BY DESIGN IN PHARMACY EDUCATION

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Quality of any system or product is the reflection of the design. This holds true for the pharmacy education also. So a good quality education can be ensured by considering various aspects during design stage. Current design of pharmacy education consider research and managerial aspects. Implementation of this design has resulted into a good quality education which has created both managers and scientists. Along with this, the design needs to consider more practical approach and frequent updates in curriculum. Such changes will equip the pharmacy students to tackle current challenges in this field. Considering enormous investment needed in research, which only industry can provide healthy tie ups between industry and universities are needed. During the design phase, we need to consider viewpoints of both universities and industry. This will result in more industry sponsored research work at the universities. Considering the importance faculty in the quality of education, we need to provide more freedom to faculty while designing the curriculum. This will help in creating an opportunistic and supportive environment for students who want to take up different projects in addition to the basic curriculum. Pharmacy education can contribute to the enhancement of Regulatory systems in India by incorporating corresponding syllabus. Proper design and successful implementation of syllabus related to regulatory affairs will achieve this objective. Thus, incorporation of above aspects during the design stage will result in high quality education which would bridge the gap between expectations and reality in the Pharmacy education.
PHARMACY EDUCATION IN INDIA - REALITY AND EXPECTATIONS

Simran Kaur

In India, the profession of pharmacy is still in its developing stages and is yet to bloom to its fullest extent. Here the pharmacist performs a job of a drug seller and does not practice the profession independently and depends on a doctor who is the decision maker. The community expects more professional services from pharmacists and not as just drug sellers. The Pharmacy education in our country has witnessed tremendous expansion in last one decade. However, the standard in education have been eroded by rising tides of mediocrity. We have to strike balance between patient and industry oriented courses and bring out very effective and rewarding curriculum for our graduate course of pharmacy. Our present system has produced half a million "qualified" pharmacists but not many "trained" professionals. To confront the new challenges I suggest the necessity to revamp the Pharma Education that is mainly related to regulatory bodies, Industry–Institute Interaction, different teaching technologies along with collaboration with foreign Pharmacy Institutes and Distance education. Industry-institute interaction is essential. Institutions are having expert, experienced human resources having innovative patentable ideas. Industry should collaborate with institutions to avail these ideas. In return, institutes should acquire the latest technological know-how from the industry. Benefits that can be expected from this symbiotic relationship are multifold. Also in future, drug treatment will be individual specific and tailored to individual's need through specific diagnostics. Therefore, in coming years pharmacy education should be integrated with fields like biotechnology, nanotechnology, proteomics and clinical epidemiology. There must be a paradigm shift—from present industry centered curriculum to patient centered—so as to achieve the ultimate objective to produce a seven star pharmacist (WHO consultative group on “Preparing the Future Pharmacist” (Vancouver 1997); like the caregiver, decision-maker, communicator, community leader, manager, life-long learner and role model with a social commitment.
**AST-001**

**MICROBIAL INACTIVATION AND SHELF LIFE OF APPLE JUICE TREATED WITH HIGH PRESSURE CARBON DIOXIDE**

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Apple juice prepared from ‘Annurca’ apple puree was treated with a HPCD batch system. The pH, °Brix, color parameters and microbial load of the treated apple juice were compared with those of thermally processed juice. Thermal processes were carried out at 35, 50, 65, 85°C and treatment times ranging between 10 and 140 minutes. Microbial inactivation kinetics indicated that 5-log reduction of natural flora in apple juice was achieved at 85°C and 60 minutes of treatment time for conventional thermal process and at 16.0 MPa, 60°C and 40 minutes for HPCD process. Results suggested that temperature played a fundamental role on HPCD treatment efficiency, with inactivation significantly enhanced when it increased from 35 to 60°C. Less significant was the role of the pressure at the tested levels of 7.0, 13.0 and 16.0 MPa. Also, 5-log reduction of natural flora in apple juice was obtained at lower temperatures by cyclic treatments of six compression and decompression steps. There were no significant differences between treated and untreated samples in °Brix (α = 0.05). Significant differences were detected in pH values between the untreated and HPCD treated samples (α = 0.05). There was a significant decrease in 'L*' and 'b*' values and also differences were detected in 'a*' values between the untreated and the HPCD treated samples (α = 0.05). Statistical analysis for °Brix, pH and color data showed no differences between the untreated and HPCD treated samples in the first 2 weeks of storage at 4°C. These results emphasize the potential use of HPCD in industrial applications.

**AST-002**

**THE GLOBAL THREAT OF COUNTERFEIT DRUG**

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Counterfeit drugs represent a real and growing danger to global health. According to the World Health Organization, “counterfeit medicine is one which is deliberately and
fraudulently mislabeled with respect to identity, composition and/or source.” An analysis conducted by International Medical Product Anti-Counterfeiting Taskforce (IMPACT) shows that counterfeiting is greater in those areas where regulatory and legal oversight is weaker. This easy and lucrative business has attracted organized crime and in most of the countries, the punishments is not sufficient strong to deter criminals. The world’s largest producers of counterfeits are believed to be China and India, as well as Southeast Asia, Nigeria, Russia, Mexico, Brazil and Latin America. The most widely cited estimate is that 10% of the world’s drug supply is counterfeit and the counterfeit drug industry’s sales are expected to reach $75 billion by 2010, representing a 92% increase from 2005. This article defines the problem of counterfeit drugs in its many forms and discusses the extent of the problem, with particular attention to the respective rates of counterfeiting across the globe and the origins of counterfeit drugs.

AST-003

MODERN METHODS USED FOR ANALYSIS OF DRUGS

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The development of electrospray ionization (ESI) and matrix-assisted laser desorption ionization (MALDI) in the late 80s enabled the simple and sensitive generation of “intact” peptide and protein ions. Since then, mass spectrometry based identification of proteins has become a key technology in modern biochemistry and molecular biology. Investigations at the protein level are essential to decipher biochemical pathways and protein functions, since protein concentrations and post translational modification events are not predictable from genomic or transcriptomic data. However, the enormous complexity and the extreme concentration range of proteins within typical proteomes are challenging. In the recent years, the development of new types of mass spectrometers combined with enhancements of chromatographic and gel-based separation strategies has driven mass spectrometry based protein analysis to a high throughput technique, allowing the analysis of complex protein mixtures such as cell lysates, organelles, biological fluids or multi-protein complexes. Furthermore, the development of new bioinformatic tools has enabled the computational analysis of huge datasets generated in large scale proteomic studies. An overview of state-of-the-art mass spectrometry based proteome analysis will be given, and the capabilities of this fascinating technology will be discussed and illustrated by results obtained from various studies performed in our lab.
AST-004

FORCED DEGRADATION STUDY OF CEFTAZIDIME IN DRY POWDER PARENTRAL FORMULATION BY RP-HPLC

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The Cephalosporins are β-lactam antibiotics that are closely related both structurally and functionally to the penicillins. Most of the Cephalosporins are produced semi synthetically by the chemical attachment of the side chains to 7-amino Cephalosporic acid. Cephalosporins and Cephamycins have the same mode of actions like penicillins and are affected by the same resistance mechanisms, but they tend to be more resistant than the penicillins to β-lactamases. Ceftazidime is a third generation cephalosporin which has activity against the Pseudomonas aeruginosa. As per current scenario of ICH, the forced degradation and stress studies acting an important role in the quality control analysis and also in method development. With the reference of above trend the RP-HPLC method had been developed to quantify the Ceftazidime in dry powder parenteral (DPP) formulation and the study showed the stability of Ceftazidime with different stress like acid, alkali, peroxide and thermal. The developed method quantified the Ceftazidime in DPP from 254 mg/vial (101.61%) to 254.6 mg/vial (101.83%). The R2 value was found to be 0.9999. The forced degradation study was carried out for the sample subjected to oxidative hydrolysis and thermolytic degradation, after 24 hrs showed the content of drug reduced up to 15.16% and 0% respectively according to the peak area response. Where as in the acid and alkali hydrolysis after 24 hrs degradation showed 93.24% and 89.36% of drug content respectively. The proposed method can be successfully applied to the determination of ceftazidime in all the formulations.

AST-005

ESTIMATION OF COPPER, ZINC AND LEAD IN CHOORNAS BY FLAME ATOMIC ABSORPTION SPECTROSCOPY

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Choornam is one of the most common dosage form used in Ayurveda and Siddha system of Medicine. A common misperception is that medicaments of natural substances may not cause toxicity. A variety of herbal preparations and dietary
supplements are accepted worldwide. The WHO estimates that 80% of the World population relies on “Alternative” plant-based medicines as their primary medical intervention. However, the safety of natural substances has been questioned recently due to the presence of heavy metals above the permissible range. In this study, an attempt was made to estimate the concentration of Cu, Zn and Pb in Choornas. Samples of seven different types of Choornas were prepared as per IM-COPS procedure and digested by a Microwave-assisted method in closed vessels. The solvent used to digest the samples were HNO3 and H2O2 in the ratio of 4:6 with an irradiation power of 900W and time of 2.5 min. The Instrument used was Flame Atomic Absorption Spectroscopy (FAAS-Shimadzu AA6300 model). The linearity was plotted for each standard in concentration range of Cu (0.5-2.5µg/ml), Pb (1.0-5.0µg/ml) and Zn (5.0-25.0µg/ml). The prepared samples were subjected to analysis. The concentration of Cu, Zn and Pb in the seven formulated Choornas where in the range of Cu (7.0-42.0µg/gm), Zn (393-1604.4µg/gm) and Pb (35.7 – 41.8 µg/gm). Thus the present analysis of laboratory prepared authentic formulations reveals the presence of lead beyond the limits specified by WHO and FDA [10 ppm]. Copper and Zinc were found within the permissible limits. The contamination may be due to improper selection, identification, collection, variation in the weight and processing conditions.

AST-006

DEVELOPMENT AND VALIDATION OF GLICLAZIDE 80MG TABLETS
BY RP-HPLC

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A simple, selective, rapid, precise and economical and reverse phase high pressure liquid chromatographic method has been developed for the estimation of Gliclazide tablets. The method was carried out on a Kromasil C18 (250cm x 4.6mm i.d, 4µ) column with a mobile phase consisting of acetonitrile: 0.1% formic acid (adjusted to pH 7.5 using orthophosphoric acid) (55:45%v/v) at a flow rate of 1.0 ml/min. Detection was carried out at 225nm. Glimepride was used as an internal standard. The retention time of Gliclazide and internal standard was 4.12, 8.12 min, respectively. Linear regression analysis of the calibration data revealed a good linear relationship between response and concentration in the range 10.0 – 80.0 ng/ml. The developed method was validated in terms of accuracy, precision, linearity, limit of detection, limit of quantitation and stock solution stability. Hence the present RP-HPLC method can be used for the estimation of drug in formulations. KEY WORDS: Gliclazide tablets; RP-HPLC; Validation
AST-007

A SECOND DERIVATIVE SPECTROPHOTOMETRIC METHOD FOR THE ESTIMATION OF ELLAGIC ACID IN NEUTRACEUTICALS

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Derivative spectrophotometry offers a convenient solution to a number of analytical problems like resolution of multicomponent systems, elimination of matrix interference. This technique was employed to develop a simple, sensitive and reproducible method for estimation of ellagic acid in pomegranate fruit extract neutraceutical capsule preparation. Ellagic acid is present in many red fruits and berries, including raspberries, strawberries, blackberries, cranberries, pomegranate and some nuts including pecans and walnuts. In plants ellagic acid is present in the form of ellagitannin, which is ellagic acid bound to a sugar molecule. Ellagic acid has antioxidant, anti-mutagen and anti-cancer properties. The method is based on the measurement of peak height in the second derivative spectra of the sample solution at 254 nm. Calibration curves were constructed for the concentration range of 2.0 to 10.0 µg/mL. The correlation and regression coefficient for ellagic acid was found to be $y = 0.8775x - 0.745$ and $R^2 = 0.9999$. The sample was refluxed with methanol and separated using solid phase extraction technique before analysis. The recorded UV spectra for the standard and the sample solution were then derivatized and the peak height at 254 nm was recorded. The method was successfully validated with respect to accuracy, repeatability and intermediate precision. Recovery studies were carried out and good recovery was obtained.

AST-008

ESTIMATION OF LEAD AND ARSENIC IN AYURVEDIC FORMULATIONS BY FLAME ATOMIC ABSORPTION SPECTROSCOPY

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Ayurvedic medicine originated in India more than 2000 years ago and relies heavily on herbal medicine products. Herbs, minerals, and metals are used in Ayurvedic HMPs. A common misperception is that medicaments of natural substances may not cause toxicity. A variety of herbal preparations and dietary supplements are accepted world wide. The WHO estimates that 80% of the World population relies on “Alternative” plant-based medicines as their primary medical intervention. However, the safety of natural substances has been questioned recently due to the presence of heavy metals above the permissible range. In this study, an attempt was made to estimate the concentration of Arsenic and lead in ayurvedic formulations. Samples of
Three different formulations were selected from the market and digested by a Microwave-assisted method in closed vessels. The solvent used for digestion were HNO3 and H2O2 in the ratio of 4:6 with an irradiation power of 900W and time of 2.5 min. The Instrument used was Flame Atomic Absorption Spectroscopy (FAAS-Shimadzu AA6300 model), equipped with a hydride vapour generator for the estimation of arsenic. The linearity was plotted in concentration range of lead (1.0-5.0µg/ml) and Arsenic (5.0-25.0ng/ml). The prepared samples were subjected to analysis. The concentration of lead and arsenic in the formulations were in the range of lead (3.2322–16307.27.421 µg/capsule) and arsenic (3.1029–194.421 ng/capsule). Thus the present analysis of three ayurvedic formulations reveals the presence of lead and arsenic beyond the limits specified by WHO and FDA. The contamination may be due to improper selection, identification, collection, variation in the weight and processing conditions.

AST-009

SIMULTANEOUS ESTIMATION OF COLORANTS SUNSET YELLOW AND TARTRAZINE IN FOOD PRODUCTS BY RP HPLC

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An accurate, rapid and sensitive RP-HPLC method was developed and validated to simultaneously estimate sunset yellow and tartrazine in food products. Sunset yellow is chemically designated as 6–hydroxy–5–[(4-sulfophenyl)azo] – 2 napthalenesulfonic acid disodium salt, 1-p- sulfophenylazo – 2 – naphthol – 6 – sulfonic acid disodium salt, Tartrazine is chemically designated 4,5-dihydro–5–oxo–(4-sulfophenyl)4–[(4-sulfophenyl)azo]–1H–pyrazole–3-carboxylic acid trisodium salt. They are basically water soluble dyes used as coloring agents in food products. A waters 1515 isocratic HPLC system (pump), with a Waters 2487 dual wavelength detector was used for analysis with a Waters Breeze version 3.3 data station for data collection and processing. Separation was achieved using a Phenomenex 18 column, (250 × 4.6mm, 5µ) a solvent system of 50mM potassium dihydrogen phosphate buffer (adjusted to pH 7.5): acetonitrile (80 : 20v/v) was pumped at 0.7 mL/min for separation. The eluents were monitored at 244 nm. A solution containing 0.5gm of both Sunset yellow and Tartrazine were prepared from a commercially available food product and then used for evaluation. 15µg/ml solution of riboflavin was used as internal standard. The developed method was validated as per ICH guidelines. The separation with the above said conditions gave a sharp and symmetrical peak. Linearity for Tartrazine and Sunset yellow were observed in the concentration range of 0.5 – 3.0 µg/mL for both. The recoveries were found to be 80 and 82. In conclusion a simple, sensitive and rapid RP HPLC method
was developed for simultaneous estimation of Tartrazine and Sunset yellow in food products.

AST-010

SIMULTANEOUS ESTIMATION OF SUMATRIPTAN SUCCINATE AND NAPROXEN SODIUM IN PHARMACEUTICAL FORMULATION BY RP HPLC

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An accurate, rapid and sensitive RP HPLC method was developed and validated to simultaneously estimate sumatriptan succinate and Naproxen sodium in pharmaceutical formulation. Sumatriptan succinate is chemically designated as 3-[2-(dimethylamino) ethyl]-N-methyl-indole-5-methanesulfonamide succinate, which is a 5-HT1 receptor agonist, used for the relief of migraine headache. Naproxen sodium is chemically designated (S)-6-methoxy-α-methyl-2-naphthaleneacetic acid sodium salt, is an NSAID with analgesic and antipyretic activity. A waters 1515 isocratic HPLC system (pump), with a Waters 2487 dual wavelength detector and Rheodyne 7725 injector with 20µL loop volume was used for analysis with a Waters Breeze version 3.01 data station for data collection and processing. Separation was achieved using a Phenomenex Gemini C18 column (150 x 4.6 mm i.d., 5µ), a solvent system of 25mM potassium dihydrogen ortho phosphate (adjusted to pH 6.6 with triethyl amine): acetonitrile: methanol (50:25:25 v/v) was pumped at 1.0 mL/min for separation. The eluents were monitored at 228 nm. A tablet formulation containing 60 mg of sumatriptan succinate and 250 mg of naproxen sodium were prepared and then used for evaluation. The developed method was validated as per ICH guidelines. The separation with the above said conditions gave a sharp and symmetrical peak. Linearity for sumatriptan succinate and naproxen sodium were observed in the concentration range of 2.4 – 9.6 µg/mL and 10 – 40 µg/mL respectively. The recoveries were in the range of 98 to 100%. In conclusion a simple, sensitive and rapid RP HPLC method was developed for simultaneous estimation for sumatriptan succinate and naproxen sodium in pharmaceutical formulation.
RNA INTERFERENCE - GENE SILENCING BY DOUBLE STRANDED RNA

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This is a review article on the Discovery of Gene Silencing by double Stranded RNA, called as RNA Interference which was discovered by Andrew Fire and Craig Mello for which they got the Nobel Prize in Medicine in 2006. The RNA Interference mechanism is activated when RNA molecules occur as double-stranded pairs in the cell. Double-stranded RNA activates biochemical machinery which degrades those mRNA molecules that carry a genetic code identical to that of the double-stranded RNA. When such mRNA molecules disappear, the corresponding gene is silenced and no protein of the encoded type is made. It is of great importance for the regulation of gene expression, participates in defense against viral infections, and keeps jumping genes under control. Andrew and Craig had used the nematode worm Caenorhabditis elegans for the discovery of RNA Interference. Injecting mRNA molecules encoding a muscle protein led to no changes in the behaviour of the worms. The genetic code in mRNA is described as being the 'sense' sequence, and injecting 'antisense' RNA, which can pair with the mRNA, also had no effect. But when Fire and Mello injected sense and antisense RNA together, they observed that the worms displayed peculiar, twitching movements. Similar movements were seen in worms that completely lacked a functioning gene for the muscle protein. Thus they analysed the Gene expression process by the use of double stranded RNA.

NEW DRUG DISCOVERY BY MICROBIAL BIOTRANSFORMATION USING NATURAL DRUGS AS SUBSTRATES

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The study deals with the microbial transformation of natural drugs and its importance in corresponding metabolisms of animal systems and in the structural modification of complex drug molecules. Importance is given to the potential micro organisms which mimic the path pathways of mammalian metabolism and which involve selective conversions of natural drugs to their derivatives by micro organisms which are more useful and difficult to synthesize. This presentation deals with the possibilities of the
microbial transformation of the natural drugs. It compares microbial transformation with mammalian metabolism to produce novel molecules, which are difficult to synthesize.

**BTBI-005**

**ROLE OF BIOTECHNOLOGY IN DRUG DELIVERY SYSTEM**

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The lungs are an attractive route for non-invasive drug delivery with advantages for both systemic and local applications. Incorporating therapeutics with polymeric nanoparticles offers additional degrees of manipulation for delivery systems, providing sustained release and the ability to target specific cells and organs. However, nanoparticle delivery to the lungs has many challenges including formulation instability due to particle-particle interactions and poor delivery efficiency due to exhalation of low-inertia nanoparticles. Thus, novel methods formulating nanoparticles into the form of micron-scale dry powders have been developed. These carrier particles exhibit improved handling and delivery, while releasing nanoparticles upon deposition in the lungs. This review covers the development of nanoparticle formulations for pulmonary delivery as both individual nanoparticles and encapsulated within carrier particles.

**BTBI-006**

**STEM CELLS A THERAPEUTIC APPROACH**

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Stem cell is the unspecialized or undifferentiated cell of the human body with the ability to develop into any of the cell types during early life and growth. These cells serve as the internal repair systems, dividing essentially without limit to replenish other cells as long as the person or animal is alive. These are distinguished from other cells by two important characteristics, they are unspecialized cells capable of renewing themselves to other cell types for long periods and they can be induced to become tissue or organ with specific cells and functions under certain conditions. There are two kinds of stem cells, embryonic stem cells and adult stem cells. Embryonic stem cells are derived from the embryos of blastula phase when they are few days old. At this stage they have the capability to divide and develop into any human organ. These cells are derived by conducting experiments on the mouse. Adult
stem cells are the undifferentiated cells, which has the ability to renew itself and differentiate to any tissue or organs under certain conditions. This is explained in cardiac diseases and diabetics. It is also known as somatic stem cell. The wide use of stem cells therapy is the bone marrow transplantation which is used in leukemia. The new technologies have desired stem cell therapies to treat wide variety diseases like cancer, Parkinson disease, diabetics, spinal cord injuries, multiple sclerosis, muscle damage, tissue repairs and kidney repairs. Stem cell therapy can dramatically change the treatment of human diseases and the details will be discussed.

BTBI-008

BIOLOGICAL SENSORS FOR PATHOGENS

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Biological sensors are need of the hour when possibility of biological warfare can not ruled out, Smallpox Anthrax plague are the possibilities, scientists at Massachusetts Institute of Technology have developed canary sensors using DNA of jelly fish and high voltage electrical charge. This machine pulls in air through disk containing cells that detect pathogens. This technology is called canary technology. Commercially it is called panther device; the air taken in is passed through the cells in the device each group of cells are designed to act to specific pathogens as soon as pathogen is detected cells release photon of light. Depending on the wavelength of light device output list the dangerous pathogens that are detected. The device has been successful in detecting E.coli infection in plants. In medical field it can be used to detect the pathogens from the sample of patients without sending them to laboratory.

BTBI-013

STEM CELL THERAPY THE HOLY GRAIL

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Stem cells are the body's "master cells" whose normal function is to repair and replace damaged tissue. Stem cells will completely alter the way we practice medicine. These are amazing unspecialized cells, that the world is discovering new uses for it every day. These cells are capable of performing three important functions with unique
abilities: Plasticity: Potential to change into other cell types like nerve cells. Homing: To travel to the site of tissue damage. Engraftment: To unite with other tissues. Stem cell research is a paramount of development, where only minimum treatments are available. It is an outright solution for common illnesses associated with old age, as well as rarer types of disease that tend to strike people in the prime of their lives. These diseases include breast cancer, lupus, multiple scleroses, Lou Gehrig’s disease, and arthritis.

**BTBI-015**

**STRUCTURE PREDICTION AND LIGAND INTERACTION STUDIES OF BREAST TUMOR NOVEL FACTOR 1 PROTEIN**

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The protein sequence of Breast Tumor Novel Factor 1 (BTNF1) was retrieved from NCBI database (Q6WN34) which has 429 amino acids. BTNF1 may inhibit BMP’s activity by blocking their interaction with their receptors. It has a negative regulator effect on the cartilage formation or regeneration from immature mesenchymal cells by preventing or reducing the rate of matrix accumulation. It may play a role during myoblast and osteoblast differentiation and maturation. The target sequence was searched for similar sequence using Basic Local Alignment Search Tool (BLAST) against Protein Database (PDB). The homology model of BTNF1 was made using Swiss PDB server. The proteins conservity has been verified by performing Multiple Sequence Alignment (MSA) using Bioedit and Conserved Domain Database (CDD). An attempt was made to identify the potential drug targets and inhibit the enzyme as well as to modify their side chain to improve the binding efficiently. Hence, an effort was taken to modify the active sites. The 3D structure of ligand was generated by using Chemsketch and it is used to dock it by Flex X.

**BTBI-016**

**STUDIES ON PONGAMIA PINNATA FOR ITS LARVICIDAL POTENTIAL AGAINST MOSQUITO VECTORS**

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A study has been conducted to evaluate the larvicidal potential of the various extracts of the plant Pongamia pinnata. L belonging to the family Fabaceae. The methanolic and hydroalcoholic extracts were evaluated by larvicidal bioassay against three vectors, Anopheles stephens, Culex quinquefusciatus and Aedes aegypti. Preliminary phytochemical studies of these extracts revealed the presence of tannins, saponins, triterpenoids and flavanoids. The LD50 and LD90 values from the larvicidal bioassay showed that the Pongamia pinnata. L methanolic extract has larvicidal potency in
order of Culex quinquefusciatus, Aedes aegyti and Anopheles stephens with LD 50 values 84.8 (78.3 – 91.6), 118.2 (106.9 – 129.3) and 151.7 (140.7 – 161.9) and LD 90 values 184.7 (165.3 – 211.6), 227 (201.3 - 267.7) and 299.4 (284.7 – 316.6) respectively. The hydroalcoholic extract has the larvicidal potency in order of Culex quinquefusciatus, Aedes aegypti and Anopheles stephens with the LD 50 values 97.7 (93.9 – 101.3), 128.3 (121.6 -134.9) and 513 (465.8 - 559.1) and LD 90 values 175.5 (167.8- 184.6), 278.9 (261- 299.9) and 944.7 (868.7 - 1048.3) respectively. Aedes aegypti is four times highly susceptible than Anopheles stephens to hydroalcoholic extract and 1.3 times more susceptible than Anopheles stephens to methanolic extract. The study favours the probable usage of the Pongamia pinnata. L extracts as a larvicidal agent.

BTBI-017

IN VITRO EVALUATION FOR CYTOTOXICITY AND SHORT TERM ANTI-TUMOUR ACTIVITY OF JATROPHA CURCUS.

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From the dawn of civilization the importance of plants in the treatment of human ailments is more immense. A large number of researchers are engaged in the search of active ingredients from plants. In our present study, the plant Jatropha curcus belonging to family Euphorbiaceae was selected for the evaluation of its cytotoxicity and short term anti-tumor activity. Various extracts were prepared from leaf. Preliminary phytochemical evaluation on these extracts showed the presence of alkaloids, tannins, proteins and volatile oils. The hydroalcoholic (hot), hydroalcoholic (cold) and methanolic maceration extracts showed antioxidant activity where as the aqueous extract did not show antioxidant activity. The four extracts were tested for in vitro cytotoxicity against Vero, HEp-2, L-6 and A-549 cell lines. The potent activity was seen in methanolic extract in all the cell lines the values ranged from 12 to 23µg/ml. The hydroalcoholic (cold) extract showed the moderate activity in all the cell lines the value ranged from 27 to 45µg/ml. All other extract showed CTC50 value from 67 to 122 µg/ml. In short term anti-cancer studies using Ehrlich Ascitic Carcinoma (EAC) cells all the extracts showed high % of growth inhibition at concentrations from 250 to 1000µg/ml. These test extracts can be selected as a suitable candidate for further screening for in vivo cytotoxicity and anti tumor activity.
BTBI-018

MOLECULAR MODELING AND IN SILICO DRUG DOCKING STUDIES OF VIRAL REV/CRM1 PROTEIN IN HUMAN IMMUNODEFICIENCY VIRUS-1

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A single transcript in its unspliced and spliced forms directs the synthesis of all HIV-1 proteins. Although the nuclear export of intron contains cellular transcripts is restricted in mammalian cells. HIV-1 has evolved the viral Rev protein to overcome this restriction for viral transcripts. Viral Rev/CRM1 activity utilizes the DEAD box helicases, a diverse family of proteins involved in ATP dependent RNA unwinding. This domain was found in a wide variety of helicases and helicase related proteins. Since the ATP dependent DEAD box RNA helicase (NCBI database - o00571) is yet to be structured, the authors have generated 3D model using Fold recognition approach through 3DPSSM. The protein conservity has been verified by performing multiple alignments by using Clastal W. An attempt was made to identify the potential drug targets by using HTS method. Among KIAA1196 and Vinculin, the Vinculin (ID- 145869) has been chosen as ligand for docking analysis using Flex X and Hex. Docking between 1 HV8 + I DUQ showed, center of origin with A-1058: TRP-CD2 and A-1058: TRP-CE3, H-424: G-C5* and H-424:G-C4 for 1HV8 and Ligand (1DUQ) respectively. Further the binding of Rev Protein (1DUQ) H-424: G-C5* and H-424: G-C4 to DDX3 (1FUU) and DDX3 (1GM5) showed center of origin with B-173: GLU-CD and B-173: GLU-OE2 and A-726: GLY-N and A-726: GLY-CA respectively. These results showed that Vinculin has competitive inhibition activity against DDX3 enzyme.

BTBI-019

PRODUCTION OF 5'-RIBONUCLEOTIDES BY ENZYMATIC HYDROLYSIS OF RIBONUCLEIC ACID

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5' Ribonucleotides are highly added value products used as flavour enhancers in food industries (5'-IMP, 5'-GMP). These components can be obtained in several ways, but the aim of this work was to study the production of 5' Ribonucleotides by enzymatic hydrolysis of RNA. Study of optimal operational conditions for RNA enzymatic hydrolysis to obtain 5' Ribonucleotides has been carried out. RNA has been isolated from yeast (Saccharomyces cerevisiae) by hot acid phenol extraction where the temperature of 35ºc and pH 6.0 has been determined as the best operational conditions.
for the production of RNA. Hydrolyzing enzyme 5' Phosphodiesterase has been isolated from different species of bacillus (Bacillus subtilis, Bacillus pumilis, and Bacillus cerus) by Sonication, followed by the enzymatic hydrolysis of the RNA to produce 5' Ribonucleotides. High yields and productivity are obtained working at low RNA concentration (1gl⁻¹) and reaction time ~1 h. Selectivity of 5' ribonucleotides at these conditions is about 82%, which is high enough to consider this process suitable for producing 5' ribonucleotides.

BTBI-020

IN VITRO CYTOTOXICITY, ANTIOXIDANT AND ANTIMICROBIAL ACTIVITYm, OF PHYSALIS PERUVIANIA LINN.

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Physalis peruviania linn belongs to the family Solanaceae grows widely in India. The studies such antioxidant, antimicrobial, cytotoxicity of Physalis peruviania were performed using various parts of the plant as well the whole plant as such. It showed very less antioxidant activity. Except the stem part all the other parts of plant showed activity against all the gram positive as well as gram negative selected tested microorganisms where as stem part was active against Staphylococcus aureus and Bacillus coagulans. Regarding the antifungal studies, the activity was good for all the parts of the plant against all the selected tested organisms except Aspergillus niger. Compared to the individual parts of the plant extracts, whole plant extract of physalis peruviania showed good cytotoxic activity against both the normal and cancer cell cultures which ranged from 60-200 μg/ml.

BTBI-021

WRINKLES REMOVED WITH PROTEIN RHAMM

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Research at berkeley Lab suggests that a protein linked to the spread of several major human cancers may also hold great potential for the elimination of wrinkles and the rejuvenation of the skin. If this promise bears fruit, controlling concentrations of the RHAMM protein could one day replace surgical procedures or injections with neurotoxins that carry such unpleasant side-effects as muscle paralysis and loss of facial expressions. RHAMM plays in regulating the signaling of adipocytes (fat cells) during the repairing of tissue wounds from injuries such as skin cuts, heart attacks and stroke. Earlier research by Turley, who discovered RHAMM, had shown that over-expression of this protein points to a poor patient outcome for such human cancers as breast, colon, rectal and stomach. This technique could be developed as a means of
providing a non-surgical approach for normalizing skin appearance after reconstructive surgery, for wrinkle reduction, and for face lifts and figure enhancement,”

BTBI-022

PEPTIDE NUCLEIC ACID [PNA] - A NEW MOLECULE FOR LIFE

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Peptide nucleic acid, a synthetic hybrid of protein and DNA, could form the basis of a new class of drugs and of artificial life unlike anything found in nature. PNA access drug design that would work by acting on DNA composing specific genes, to either block or enhance the gene expression and PNA has unique properties to over antisense DNA and RNA for the production of disease related proteins. PNA mimics the information-storing features of DNA and RNA, but is built on a protein like back bone that is simpler and sturdier than sugar-phosphate backbone sugar. Each unit of PNA carries a nucleic acid base binding to DNA and RNA by Watson-Crick pairing of complementary bases by Hoogsteen pairing providing PNA to act as a drug in a cell. At transcription stage, RNA polymerase transcribes information encoded by a DNA molecule into an mRNA. PNA can block this process by binding part of gene that is to be transcribed. Alternatively triplex invasion by PNA can promote transcription exposing an appropriate stretch of single stranded DNA to enzymes that initiate transcription. In second stage of protein production, ribosome translates the sequence on mRNA into sequence of amino acids, forming protein. PNA can interfere with this stage by binding to mRNA. Studies in animals have begun, as has research on ways to transform PNA into drugs that can readily enter a person’s cells from the bloodstream.

KEY WORDS: Peptide nucleic acid, anti-sense, Watson-Crick pairing, Hoogsteen pairing, triplex invasion, transcription.

BTBI-023

BIOMARKERS

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As the health sciences move closer toward understanding why some people seem particularly vulnerable to environmental toxicants, one group of tools has emerged as
especially important: biomarkers. Although many resources have been allocated to the search for more biomarkers, the task has been slow and often frustrating, even as the advent of genomics and related fields has dramatically accelerated this effort. During the last decade, the health sciences have experienced a major shift in orientation. With the rise of genomics and advances in molecular biology, scientists have increasingly moved away from population-based approaches to health toward studies of disease susceptibility among individuals. It's also reflected by recent goals for personalized exposure assessment in environmental health, and efforts to understand why some people seem particularly vulnerable to the harmful effects of pollution and other environmental toxicants.

**BTBI-024**

**TRANSGENIC ANIMALS- AN ALTERNATIVE TO BIOREACTORS**

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Transgenesis is radically a new technology for altering the characteristics by directly changing the genetic material. Transgenesis rely on genetic engineering that refers to gene splicing-inserting DNA fragments from one organism’s genes into the chromosomes of another, thereby changing its genetic makeup. This opens the possibility of looking for methods of changing genes in ways that are useful in areas of genetic engineering: Improving the quantity and quality of agricultural production, Pharmaceutical production of proteins etc. The production of high-value pharmaceutical proteins and peptides in transgenic animals is an attractive and economically feasible alternative to conventional mammalian cell, yeast, and bacterial systems. It has the potential to alleviate the problems, which pose danger to human or animal health. The challenge is thus to develop, supply, and manage biotechnology for the benefit of humankind and the environment.

**BTBI-025**

**DNA VACCINE-NEW INSIGHTS**

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The DNA vaccines are simple rings of DNA containing a gene encoding an antigen, and a promoter/terminator to make the gene express in mammalian cells. They are a promising new approach for generating all types of desired immunity: cytolytic T lymphocytes (CTL), T helper cells and antibodies, whilst being a technology that has
the potential for global usage in terms of manufacturing ease, broad population administration and safety. Vaccines composed of DNA are injected into subjects whose own cellular machinery translates the nucleotide sequences into peptides. The vaccines are presented in the context of MHC class I molecules, and are therefore capable of inducing a brisk cellular immune response, in contrast with traditional vaccines which produce mainly a humoral immune response. DNA may be transferred into the cell by retrovirus, vaccinia virus or adenovirus vectors or by attachment to cationically charged molecules such as liposomes, calcium salts or dendrimers. Alternatively, the desired gene may be directly inserted into a plasmid and the naked DNA simply injected intramuscularly. Naked plasmid DNA vaccines bypass the problem of safety and manufacturing issues arising when viral vectors are used, and also avoid complications or interference from an immune response directed at the delivery vector. For all delivery methods, there is the unproved potential for insertional mutagenesis. There is also the concern of inducing tolerance rather than resistance or anti-DNA antibody formation, leading to autoimmune diseases. There are no DNA vaccines on the market, nor even any published data showing efficacy in humans. Human trials are underway testing the safety and efficacy of DNA vaccines against influenza, malaria, hepatitis B virus, HIV, herpes simplex virus, and colon cancer. While these early studies have only just begun to provide suggestions of vaccine efficacy, the concepts brought forth by DNA vaccines have dramatically changed the way many investigators in the basic sciences are approaching their work.

BTBI-026

NANOROBOTS- MECHANISM AND THEIR APPLICATIONS IN THE TREATMENT OF CHRONIC DISEASES

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Nanorobotics is the technology of creating machines or robots at or close to the microscopic scale of a nanometer(10-9 metres). More specifically, nanorobotics refers to the still largely hypothetical nanotechnology engineering discipline of designing and building nanorobots. Nanorobots (nanobots, nanoids, nanites or nanonites) would be typically devices ranging in size from 0.1-10 micrometers and constructed of nanoscale or molecular components. The mechanism of the nanorobot involves detection of the cause of the disease, travels to the appropriate system and provides a dose of medication directly to the infected area. The nanorobot undergoes several procedures to deliver the medicament to the infected area which involves (1) introduction of the nanorobot inside the bloodstream,(2) nanorobot navigation, (3) powering of nanorobot and (4) nanorobot locomotion. Properly realized,
nanorobots will be able to treat a host of diseases and conditions. While their size means they can only carry very small payloads of medicine or equipment, many doctors and engineers believe the precise application of these tools will be more effective than more traditional methods. These mainly includes the treatment of arteriosclerosis by chipping away the plaque in the arteries, in the treatment of gout and breaking up of kidney stones involves the application of nanorobot. Some special type of nanorobot named ‘clottocyte’ have also been used as an artificial platelet and thus helps in the treatment of clotting problems.

**BTBI-027**

**SIRNA - DIRECTED INHIBITION OF HIV-1 INFECTION**


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RNAi (RNA interference) are the RNA that can stop the gene functioning (make it silence). It is proved through siRNA (short interfering RNA). RNA interference silences gene expression through short interfering 21-23 mer double-strand RNA segments that guide mRNA degradation in a sequence specific fashion. siRNA direred at HIV can shut down the AIDS virus in the test tube. It shuts down the window through which the HIV enters by targeting T-cell that HIV normally infects. By linking siRNA to an antibody that delivers them directly to T-cells to a molecule that carries them to the cell nucleus where it can attack HIV genes and one siRNA that keeps T-cells from expressing the CCR5 molecule to which HIV attacks. Here we report that siRNA’s inhibit virus production by targeting the mRNA’s for either the HIV-1 cellular reporter CD4, the viral structural Gag protein or green fluorescence protein substituted for the Nef regulatory protein. siRNA’s effectively inhibit pre and post integration infection events in the HIV-1 life cycle. Thus siRNA may have potential for the therapeutic intervention in HIV-1 and other viral infections.

**BTBI-028**

**INTRA CELLULAR THERAPEUTICS-A NEW APPROACH IN ANTI RETRO VIRAL THERAPY**

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Cellular therapeutics deals with the identification of cell surface targets and drug action of anti HIV agents in a HIV infected person. Cell surface proteins represent novel targets for the development of therapeutics against HIV infection. Acute HIV
infection can be prevented with the help of antiretro viral therapy. Inhibiting the Replication cycles of HIV with possible targets has emphasized the importance of Antiretro viral therapy and can be achieved by the novel strategies. The etiologic agents for current medical treatment of HIV infections include combination of drugs that inhibit the action of viral encoded enzymes. This covers compounds that cover target HIV transcription by blocking an important transactivating proteins which induce oxidative stress and host cell death, apart from mediating transcriptional activation of HIV pro virus. This review enlights the current treatment options, novel principles and mechanisms of drug designing and drug targeting of anti HIV agents.

**BTBI-029**

**GENE CLOCK THEORY**

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The Gene clock is a technique in molecular evolution to relate the time that two species diverged to the number of molecular differences measured between the species' DNA sequences or proteins. Simple models of molecular evolution assume that sequences evolve by a Poisson process in which nucleotide or amino acid substitutions occur as rare independent events. The different molecular clock models are Changing generation, Population size ,Species-specific differences ,Evolving functions of the encoded protein , Changes in the intensity of natural selection. Microevolution is now observed in molecules, yet an orderly progression from one species to another is not clearly supported by biochemistry. Many mutations are known to be changes in a single letter in a message “written” on a long DNA molecule. The Gene clock technique is an important tool in molecular systematics, the use of molecular genetics information to determine the correct scientific classification of organisms or to study variation in selective forces.

**BTBI-030**

**THE POTENTIAL OF WHITE BIOTECHNOLOGY FOR PRESENT AND FUTURE**

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White Biotechnology is an alternative way of production or treatment of many of the materials we need or have. WB can be differentiated from pharmaceutical and
agricultural biotechnology and it is based on fermentation technology and biocatalysis, genetically modified or non-genetically modified microorganisms (e.g., yeast, fungi and bacteria or cell lines from animal or human origin). The range for this materials is wide which starts from feed stock through cosmetics to therapeutic drugs, till industrial wastes. These are many positive outcomes associated with the use of WB in the industry such as: on environment, economy, ease of production and many other innovative aspects. WB uses biological tools such as enzymes or microbes. For the above mention reasons, the most important needs of the hour are, to save our environment and to generate energy from the unconventional sources as: we are running out the sources for energy for future as a big hope through WB. Many countries like U.S, Netherlands, Japan and India. WB is environmental friendly and cost effective.

BTBI-031

TARGETING CANCER STEM CELLS FOR MORE EFFECTIVE THERAPIES: TAKING OUT CANCER’S LOCOMOTIVE ENGINE


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Novel therapies for the treatment of solid tumors have generally failed to improve patient overall survival. The therapeutic approaches are typically focused on targeting signaling pathways implicated in cell growth and/or survival in order to shrink the malignant mass and achieve an objective clinical response; however, too often these responses are followed by eventual regrowth of the tumor. This clinical conundrum could be explained by the existence of a tumorigenic cell population that is relatively resistant to these therapies and retains pluripotent status in order to repopulate the original tumor and/or contribute to distant metastasis following treatment. Compelling data from liquid tumors, and more recently from studies focused on solid tumors, now support the existence of such tumorigenic cells (i.e., cancer stem cells) as a distinct subpopulation within the total tumor cell mass. These cancer stem cells (CSCs), as compared to the non-CSC population have the ability to reconstitute the primary tumor phenotype when transplanted into recipient animals. In addition, data are beginning to emerge demonstrating that many standard-of-care chemotherapeutics are less effective in promoting cell death or cytostasis in these putative cancer stem cells as compared to effects in the non-stem cell cancerous cells. Therefore, targeting these locomotives drivers of tumors, the cancer stem cells population, should be considered a high priority in the continued pursuit of more effective cancer therapies.
BTBI-032

PHARMACOGENOMICS – A PERSONALISED DRUG

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Pharmacogenomics is a science that refers to the general study of many different genes, which determines the behavior of drugs. The search for pharmacogenomic biomarkers could be used to identify patients at risk for drug related toxic effects which have been focused on variation within gene, and encoding drug metabolising enzymes. This altered enzymatic activity can lead to elevated levels of the substrate drugs. The anticipated benefits of pharmacogenomics include more powerful medicines, better and safer drugs. The most accurate method of determining appropriate drug dose etc. The cytochrome P-450 (CYP) family of liver enzyme is responsible for breaking down more than 30 different classes of drugs. This CYP is less active or inactive form where the enzymes that are unable to breakdown and cannot be eliminated from the body which in turn leads to drug overdose. The clinical trials researchers use genetic tests for variations in cytochrome P-450 genes to screen and monitor patients. Complexity of finding gene variations, limited drug alternatives, disincentives for drug companies to make multiple pharmacogenomic products etc are the barriers. These barriers will have to be overcome. A review of pharmacogenomic biomarkers reveals only a limited number of potentially useful examples like cytochrome P-450 (CYP) as mentioned above. Many more biomarkers remain to be identified to increase the drugs which reduce the adverse drug reactions.

BTBI-033

BIOREMEDIATION- THE PROCESS OF CLEANING ENVIRONMENT

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To control pollution and reduce or eliminate toxic substances, nowadays the process of biotechnology greatly implied. The application of biotechnology in the area of environmental protection is not a new phenomenon – for example, microorganisms have long been used in sewage treatment to eliminate solid particles. Bioremediation may be defined as a process by which microorganisms degrade certain hazardous and toxic substances. The inherent advantages of bioremediation includes ecologically sound and environmentally friendly process, it often results in a complete
decomposition of organic contaminants to harmless forms, it is generally an environmentally non-disruptive process or results in a minimum site disruption, it eliminates liabilities pertinent to environmental regulatory requirements; and it offers the prospect of a cost-effective solution. The microorganisms which are involved in bioremediation are generally *E*bacteria, fungi, algae and protozoa. There are two mechanisms by which bioremediation are achieved, one is aerobic respiration and other one is anaerobic respiration. Sometimes, bioremediation does not result in the complete mineralization of the targeted organic compound. It may instead lead to the partial degradation of the compound to a point sufficient to render it environmentally acceptable. Biotreatment involves the detoxification of waste effluents, particularly hazardous and toxic wastes, and prior to their release to the environment by appropriate enzymes or microbes capable of degrading specific compounds. Biofiltration developed fairly recently, is a biological air pollution control (APC) technology designed to treat off-gases containing biodegradable volatile organic compounds (VOCs) or inorganic air toxics. In conclusion, recent advances in the biotechnology are greatly helpful to reduce pollution and the toxic component from the environment effectively and render pollution free environment around us.

**Keywords:** Biotechnology, Environment, Pollution, Bioremediation, Biotreatment, Biofiltration, Air pollution control

**BTBI-034**

**THE PRICE OF SILENT MUTAROTATION**

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Small changes to DNA that where once considered innocuous enough to ignore are proving to important human disease evolution and biotechnology. It was long assumed that DNA mutation does not change the final protein encoded by a gene is effectively silent but rare on in which silent changes seem to be exerting a powerful effect on protein, have revealed that such mutation can can affect health through a variety of mechanism. A synonymous mutation was found to affect pain sensitivity by changing the amount of an enzyme that cells produce. The different results from alteration in the shape of mRNA that can influence how easily ribosomes are able to unpackage and read the strand the folded shape is caused by paining of the mRNA.nucleotides, therefore a synonymous mutation can alter the way nucleotides matter. 
BTBI-035

QUORUM SENSING-LET BACTERIA TALK

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Quorum sensing, a wonderful natural method to regulate gene expression in response to the fluctuation in the cell density of a given bacterial population and provides the key mechanism through which bacteria communicate. Quorum sensing bacteria release chemical signal molecules called auto inducers that increase in concentration as a function of cell density. The evaluation of Quorum sensing system in bacteria could, probably have been one of the earlier steps in the development of multi cellularity.

Key words:- Quorum sensing, bacterial communication, inducers.

CP-001

AWARNESS OF TUBERCULOSIS IN A RURAL AREA OF SOUTH WEST ANDHRA PRADESH

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Tuberculosis (TB) is an infection, primarily in the lungs (a pneumonia), caused by bacteria called Mycobacterium tuberculosis. It is spread usually from person to person by breathing infected air during close contact. In the urban area where awareness about TB is more as people are regularly in touch with TB related propaganda, advertisement, information through Television, Cinema etc. Again, literacy is more in urban area than in rural area. Therefore, in order to assess the extent of awareness about TB, a survey was undertaken in a rural area of south west Andhra Pradesh. For the experimental work a questionnaire was prepared and according to the data obtained they are categorized into three categories - Category- I, completely aware about TB (C-I), Category – II, Partially aware about TB (C-II), Category – III, completely unaware about TB (C-III). Again, extent of awareness about TB amongst different age groups was studied. The number of population (233) selected randomly in rural places of south west Andhra and survey was performed with the help of carefully designed questionnaire. According to age group, it has been found that the extent of awareness about TB was more in the age group between 25 to 40 years than any other age group.
BEWARE AND AWARE OF SWINE FLU – PRESENT SCENARIO

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There are several ailments which disturbs the routine physiological functions of the human body. Viral infections are one which effects in all age groups and irrespective of sex. “Flu” is a common respiratory disorder seen in all age group of patients, occurs usually due to seasonal variations. There are several varieties of influenza virus that causes in convenience to human beings the symptoms are fever, nasal sore, sneezing, headache etc. and lasts from days to weeks. In recent days the outbreak of Swine Flu in Mexico has been reported and spreading as epidemic to the other parts of the world. Though the swine flu is not a life threatening, the people and Governments are worried to control the epidemic disease. Swine influenza (Swine flu) is a respiratory disease of Pigs/Humans caused by Type-A influenza virus (H1N1). Swine flu virus causes high levels of illness and low death rates in Pigs / Humans. Swine influenza viruses may circulate throughout the year, but most out breaks occur during the late fall and winter. There are several lakh formulations are available in the market for mankind and still there is a need for more. The present findings of presentation help the a) individuals, b) physicians, c) drug industry, d) research and development departments to design suitable medications for the permanent treatment & relief to the patient’s suffering, e) awareness to the people not to be afraid of this influenza.

Key words: Swine Flu, prevention, treatment.

NOVEL APPROACH TO CONTROL THE MALARIAL INFECTION

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Malaria is a common and serious tropical diseases caused by protozoa parasitic infection transmitted by anopheles mosquitoes. Previously malarial parasites have been eliminated through use of residual insecticides and manipulation of environmental and ecological characteristics, however in many tropical and some temperate areas the incidence of disease is increasing dramatically. Most effective antimalarial drug, chloroquine and other first line drugs like sulphadoxin-pyrimethamine are developing resistance and also vector species got resistance to
effective insecticides. In case of vaccine research, yet there is no effective product. Each year at least 110 million people contract this disabling disease and the prevalence may be in order of 280 million parasite carriers. Some 1.5-2.7 million of them do not survive the infection plasmodium falciparum accounts for the majority of infections and virtually all deaths from malaria are due to this species. Now currently some researches on antimalarial drugs are diverted towards preventing malarial parasites infection in mosquito itself. Saglin a mosquito salivary protein is a receptor discovered recently for plasmodium protein, which can be blocked. Mosquitoes can be avoided from infection by parasites by triggering immunity in them. Sea cucumber protein used to inhibit development of malarial parasites in gut of mosquito. Like this more knowledge can be gained by researches and this development is a step towards developing future methods of preventing transmission of malaria. Understanding of complex process by which malarial parasites are transmitted, will lead to new advances in the quest to prevent malaria. It is better to prevent the malarial infection from occurring in the first place then having to kill the parasites already inside humans with vaccines and drugs.

CP-004

THE COMMUNITY BASED SURVEY ON NECESSITY OF PHARMACY EDUCATION IN YOUNG ADULTS TO ERASE THE COMMUNICABLE DISEASE - SELF MEDICATION

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A survey was conducted on October - November 2008 to know about the prevalence, attitude and knowledge of young adults (aged 14 to 18 years) of kharagpur, West Bengal, about pharmacy education & dreadfulness of communicable disease - self-medication which effectively infected them. Among the three hundred and ninety four (394) volunteers of both sexes the prevalence of self-medication was in 66.24% of candidates while 32.99% practiced prescribed medication. But the 72.58% of the same population agreed that self medication is dangerous. The most common reasons for self-medication were parental advice (16.61%), lack of time (25.78%), Cheap (6.5%), lack of consciousness about the disease (37.82%), reuse of old prescription (2.57%), quick relief (3.43%), and easy availability (2.0%). The common medicines used were Paracetamol (47.63%), Aspirin (15.68%), Ranitidine (5.91%), Antacids (4.14%), Diclofenac (7.39%), Sulbutamol (6.50%) which may develop serious side effect. The volunteers also being asked about pharmacy, its education pattern and future prospect. But among them very few volunteers (21.04%) responded for the proper meaning of pharmacy education. From the above data we can conclude that despite majority being aware of harmful effects of self-medication, its prevalence is high in the educated youth. Hence, there is a need to educate the youth about
pharmacy and its advancement to ensure safe practices. Strict policies need to be implemented on the advertising and selling of medications to prevent this problem from escalating.

**CP-005**

**PUBLIC HEALTH PHARMACY’ IN A DEVELOPING COUNTRY CONTEXT**

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The profession of pharmacy is not just about compounding and dispensing. From bench to bed side, there are wide varieties of functional areas where pharmacists actually work. Though the role of pharmacists have been well structured in developed nations, the same in the developing countries especially those in the community and public health (PH) areas are still awkward. In many countries, the pharmacy profession is more industry oriented. Albeit there is an increasing recognition of the contribution that community pharmacy can make to improve the PH, still there is a need to integrate pharmacy into the wider PH workforce. By incorporating PH service in their practice, pharmacists work for their own civic duty and for the advancement of the profession. The demand for pharmacists who are knowledgeable in both pharmacy and population based healthcare is growing significantly. There are a plenty of opportunities for community pharmacists to support the aims of sustainable development, disease prevention, health promotion and emergency preparedness & readiness. This poster aims to present the various activities that a pharmacist can actively engage PH activities which are more relevant to their role and responsibility at the community level. It is no doubt that the profession can re-establish its advisory role and rejuvenate the status of community pharmacy by imparting PH concepts in the pharmacy curriculum; encouraging the involvement of pharmacists in PH activities and understanding the need for an effective role in the community.

**CP-006**

**COMMUNITY PHARMACY**

**Parastoo karim**, parisa karimi

**Context:** The purpose of this study was to examine the community pharmacy practice in global scenario. Community pharmacists are considered as health care professionals who are most accordance with prescription or sell them without prescription. So their professional activities include patient counselling, drug information, pharmaceutical care, health screening, services and health promotion.

**Objectives of the review:** To know what is community pharmacy and community pharmacy practice. To review of community pharmacy practice around the world. This
study give answer to questions about the situation of pharmacy in around the world, question like what are the minimum qualification (B.pharm / D.pharm/ Pharm D) , presence of pre-registration training, licence examination and continues professional development program(CPD) or AICTE or information about practice requirements such as space requirement, professional services and remuneration for services. The pharmacist in developed countries is well recognized as healthcare professional due to the practice of pharmaceutical care philosophy. Most of these pharmacists discharge the role and responsibilities recommended by the World Health Organization in the community pharmacists such as maintaining patient medication records, dispensing drugs with ancillary label, patient counselling, providing drug information, treating the patient for their minor ailments and etc. Conclusion: Community pharmacy has the opportunity to provide one-to-one healthcare. They can and do make significant difference to the people health, including saving the lives! If pharmacist are willing to seat back and simply act as distributor of drug products, then they are doomed. The pharmacist has to change himself, his own future by changing dramatically the concept of his role.

CP-007

SWINE FLU PANDEMIC & THE ROLE OF COMMUNITY PHARMACISTS: ARE WE READY TO FACE THE CHALLENGE??

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The recent outbreak of swine flu is a cause for concern and diligence in preventative measures. This respiratory disease caused by type A (H1N1) influenza viruses, were first reported in southern California and Texas. Cases have now also been confirmed in 74 countries including India (about 50 cases as on 20 June 2009). The World Health Organization (WHO) has already declared it as a pandemic (phase 6 alert) and concerned about current patterns of serious cases and deaths occurring in many parts of the world primarily among young people, including the previously healthy and those with pre-existing medical conditions or pregnancy. Though large outbreaks of disease have not yet been reported in many countries, and the full clinical spectrum of disease is not yet known. There is a large amount of confusion around the current supply of antivirals, oseltamivir (Tamiflu) and zanamivir (Relenza), which are prescribed through agencies for individuals who are suspected to have flu on clinical grounds. Pharmacists have to play a vital role in helping the country deal with swine flu should the situation escalate by providing quality advice and information. It is indeed the high time for pharmacists & pharmacy students to engage in educating the public about why, what, and how to prepare for the pandemic. It is no wonder that the public concern over the swine influenza outbreak has reinforced the status of community pharmacists as being the frontline health-care professionals who consumers turn to for advice.
CP-008

EMERGENCY CONTRACEPTIVES - AN EVIL!

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It was the IPOD first and now the IPILL that has attracted the youth”. Emergency contraceptive pills are the most convenient method to end an unwanted pregnancy. Safety issues concerning contraceptive pills arise due to unsupervised overuse of these pills. Pills containing high-dose levonorgestral should not be used as a substitute for conventional, much safer methods like condoms, low-dose oral contraceptives etc. While conventional pills are a combination of estrogen and progesterone and stop ovulation, the emergency contraceptives pills stop implantation. The side effects of emergency pills include ectopic pregnancy, nausea, gastrointestinal upsets, diarrhea, dizziness, headache, breast tenderness, irregularity in periods, increased menstrual bleeding, vaginal hemorrhage and dryness, hypertrichosis, acne, fatigue, local skin irritation etc. Complications like loss of sensation in limbs, unusually yellow skin or eyes are observed. Nevertheless, these pills have little role after 72 hours, therefore when used mid-cycle, one in every 20 women is likely to conceive and hence not 100 percent effective. Therefore, the importance of ‘follow-up’ for three-weeks must be explained to users. Also these pills are to be avoided by women suffering from asthma, hypertension, but when given as OTC product little awareness will be created regarding all this. Rather than preventing unwanted pregnancies this move will only give the wrong message to teenagers. Making these pills OTC will lead to their indiscriminate use and indirectly discourage the use of condoms, which is very dangerous because emergency pills do not prevent sexually transmitted diseases like AIDS etc.

CP-009

“EVALUATION OF DRUG AND POISON INFORMATION SERVICES IN A TERTIARY CARE HOSPITAL AND COMMUNITY PHARMACIES IN OOTY”

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Background: Aim of the study was to provide current, well referenced, evaluated, comprised and unbiased information about drugs and related aspects in response to queries from the healthcare professionals to optimize patient therapy and to observe the convenient method for the healthcare professionals to give drug information query. Methodology: The study was carried out from May 2007 to December 2007.
The queries were taken from the enquirers using drug information request forms - verbal requests, during the ward rounds, phone, through messengers, mail or through drug information query box kept in the wards and community pharmacies. Result: A total of 205 queries were recorded. Among which 32.2% of queries was from the inpatient wards, 16.58% from the outpatient department in the hospital, 20% through the drug information centre and 31.22% from community pharmacies. Auditing of 31 randomly selected queries was done to evaluate the quality of service, where 51.61% of responses were considered as excellent, 35.48% as good, 12.90% as can improve and none were rated as should improve. Drug information query box kept in each ward in the hospital and community pharmacies was found to be a convenient mode for query request and was utilized by the healthcare professionals. The community pharmacists were the most benefited from the drug information query box. Conclusion: Drug information service was well utilized by the enquirers which contributed for better patient care and in updating the knowledge. The innovative method of drug information box was well appreciated by the enquirers.

CP-010

PHARMACIST INTERVENTION IN MANAGEMENT OF HYPERTENSION AT COMMUNITY LEVEL

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Hypertension is a chronic disease that affects 10-15% of adult population in India and has been aptly nicknamed as “silent killer” because most of the patients with hypertension have no symptoms and often the disease goes undetected. The main goal is to control hypertension at community level through an active involvement of the Pharmacist in the Prevention, Detection and Management of hypertension. The patients were randomly divided into two groups namely Intervention and Control group. Blood pressure of the patients in both the groups was monitored on each follow up. The Intervention group was counseled about Hypertension, Health education, Suggestions for necessary life style modifications and Therapeutic compliance, Treatment regimens and possible drug related problems and Information on self medication. Whereas these services are not given to the control group. The outcome measurements were derived from statistical analysis of data obtained from both the groups. Compared with the control group the Pharmacist intervention group patients with uncontrolled hypertension in greater reduction on systolic blood pressure and also achieving reduction in drug course and hospital visit.
CP-011

CHIKUNGUNYA

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The name "chikungunya" is from the Makonde language and its meaning is "that which bends up". This is a reference to the Chikungunya symptom where patients walk in a stooped posture due to joint pain. Chikungunya fever is a viral disease spread by mosquitoes. Chikungunya disease is a viral disease transmitted in humans by the bite of infected mosquitoes. Aedes aegypti mosquito is the primary transmission agent of Chikungunya Virus. This is usually found in tropics and hence the reason why Chikungunya is predominantly seen in asian countries. Chikungunya typically starts with one or more of the following symptoms - chills, fever, vomiting, nausea, head ache and joint pain. Severe joint pain is the main and the most problematic symptom of Chikungunya. Several methods can be used for diagnosis. Serological tests, such as ELISA, may confirm the presence of IgM and IgG anti-chikungunya antibodies. There is no antiviral drug or medicine specifically for Chikungunya. But since chikungunya is cured by immune system in almost all cases there is no need to worry. Till 10 October 2006, 151 districts of eight states/provinces of India have been affected by chikungunya fever. More than 1.25 million cases have been reported from the country with 752,245 cases from Karnataka and 258,998 from Maharashtra provinces. Research is ongoing to find a vaccine for Chikungunya.

CP-012

“SAFETY AND EFFICACY STUDIES ON HERBAL MEDICINE FOR THE TREATMENT OF RHEUMATOID ARTHRITIS”

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Background: Some herbal preparations have anti-rheumatic properties. The study aim was to evaluate the efficacy and safety of herbal treatment in clinical practice for the treatment of rheumatoid arthritis. Methodology: In this observational cohort study conducted in an ayurveda clinic in Ooty, 12 patients with mild to severe active rheumatoid arthritis receiving herbal preparation were included in a fifteen week study. The primary outcomes were change in disease activity score (DAS 28) and improvement of core disease measures (American college of Rheumatology response score) from baseline to week 15. All analysis was done by intension to treat. Result:
Primary endpoint measures improved started from day 15 and continued to improve to day 105. By end of the study a 20% improvement seen in the seven patients, a 50% improvement in four, and a 70% improvement in three patients who were given the herbal treatment. Clinical remission (as defined by a DAS 28 ≤ 3.2) was achieved in five of ten patients. Two individuals dropped out during the study. Herbal treatment was seen to be well tolerated with no incidence of adverse events clinically. Conclusions: The study has concluded that herbal treatment used in the clinic for rheumatoid arthritis was well tolerated and efficacious in treatment of the symptoms.

**CP-013**

**POPULATION PHARMACOKINETICS – TOOL FOR INDIVIDUALIZED DRUG THERAPY**

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Certain patient demographical, pathophysiological and therapeutic features like body weight, excretory, metabolic functions and other concomitant therapies can alter dose concentration relationship. Population pharmacokinetics seeks to identify the measurable pathophysiological, genetic and demographical factors that cause changes in dose concentration relationship and the extent of these changes. If such changes are associated with clinically significant shifts in the therapeutic index, the dosage can be appropriately modified. This approach allows analysis of data from variety of unbalanced designs and from studies that are normally excluded such as concentration data obtained from pediatric and geriatric patients or during evaluation of relationship between dose/concentration and efficacy/safety because they do not lend themselves to usual forms of pharmacokinetic analysis. In contrast to traditional pharmacokinetic information, population pharmacokinetic approach encompasses collection of relevant pharmacokinetic information in patients, identification and measurement of variability during drug treatment and its reasons. Defining optimum dosing strategy for a population, subgroup or individual patient requires resolution of the variability issues mentioned above. The significance of developing optimum dosing strategies has led to the surge of using population pharmacokinetic approach in new drug development and regulatory process. A survey of 206 new drug development and supplements reviewed by office of clinical pharmacology and biopharmaceutics of FDA in a particular period showed that almost one quarter of the submissions contained population pharmacokinetic studies and/or pharmacodynamic reports. These finding indicates that population pharmacokinetics can be used in drug dosing, drug development process and should be considered wherever appropriate especially in countries like India.
CP-014

ASSESSMENT OF PRESCRIPTION PATTERN OF ANTIHYPERTENSIVES AND COUNSELLING POINTS IN URBAN POPULATION

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Background: - The study was conducted with an objective to establish the drug prescribing trends of antihypertensive agents at community pharmacy in urban population of South India.

Method: - A study of 12 months duration was conducted among patients purchasing the drugs in a community pharmacy at Coimbatore. The patient satisfaction on counseling by prescriber and pharmacist was assessed. The information was collected from hypertensive patients who visited the community pharmacy for filling prescriptions. Standardized prescription assessment questionnaire was used for data collection.

Result: - The study revealed that 70% patients were males affected by hypertension and they were prescribed with combination therapy (80%). Mostly prescribed combination was beta blockers + calcium channel blockers + ACE inhibitors and 20% of patients had mono therapy for hypertension. Hyperlipidemia was the major co-morbidity because of high fatty intake and sedentary lifestyle. Software professionals and business people were more affected with hypertension. About 60% of population were satisfied with pharmacist counseling and 40% with prescribers counseling.

Conclusion: - Study represents current trend in antihypertensive agents in urban area, highlighting certain shortcomings in the existing prescription practice. Study reveals the greater satisfaction of patients with the counseling of pharmacist than prescriber. Considerable improvement in hypertension can be obtained by combination drugs with anti hyperlipidemics. Patient counseling provided by pharmacist are well accepted among hypertensive patients.

CP-015

THE ROLE OF THE PHARMACIST IN IMPROVING GLAUCOMA COMPLIANCE


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Amongst all treatable diseases, glaucoma is one of the most likely to have poor patient compliance. In fact, as many as one half of all glaucoma patients fail to take their eyedrops correctly. Glaucoma is a classic late onset condition with over 4% of
the over 65s with the disease. And the percentages are on the increase. Many individuals are unaware that they have glaucoma until late in the course of the disease. A significant amount of treatment failure is due to poor patient compliance and this can lead to the progression of glaucomatous damage. As the health care provider with whom patients have the most frequent contact, pharmacists bear an important role in helping patients adhere to therapy by educating patients about proper administration and storage techniques. Pharmacists should advise patients who pick up prescriptions to wait the appropriate amount of time between eye drops. This avoids the “washout effect,” thus improving the effectiveness of two or more concurrent medications. Another technique is to remind patients to refrigerate eye drop solutions, so that patients can feel the drop entering the eye. This reduces waste of medication. The move to once-a-day medications and the improved efficacy of single-drug therapy will help to improve adherence to glaucoma therapies. Before the first medication is prescribed, however, communication with patients and educating them about their disease are important first steps to facilitating adherence and to improving outcomes.

CP-016

ROLE OF CLINICAL PHARMACIST IN COUNSELING ASTHMA PATIENTS

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Patient counseling is a key competency element of the pharmaceutical case progress. The pharmacist is in a highly visible and readily available position to answer patients concern and queries about the medication and lifestyle modifications. Bronchial asthma affects approximately 10 to 15% of the Indian population and only 10% of these patients get appropriate treatment to lead a normal life. From last two decades, the present day necessity is met by the pharmacist by taking part in patient education or well being by serving as a good counselor and by passing the relevant information to the patient about the disease state and medication and its use. Significance of patient counseling in asthma patients visiting out-patient department. Methodology: It was prospective study . the asthma patients visiting the OPD were counseled on use of different type of devices and information was explained using patient information leaflets and data was recorded in the patient counseling forms, which contains the demographics, disease state, medication and response on satisfaction the counseling centers timing was from 10am to 2pm. The study duration was from July 2008- August 2008 in Mallige hospital. Results and discussions: The total number of patients was 107 comprises 62 men, 35 women and 10 pediatric patients. The patient counseling
was found to be effective from the response on satisfaction shown by the patients and their health outcomes. Conclusion: from this study it is revealed that the counseling for asthma patients by clinical pharmacist proved to be effective.

**CP-017**

**MEDICATIONS FOR THE TREATMENT OF HYPERHIDROSIS**


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Physiology and Anatomy of human body is a complex phenomenon. There are several disorders which disturbs the normal function of human body. Disorders are of many types curable, non-curable, infectious and allergic. Many disorders are of communicable and non-communicable. Hyperhidrosis is an idiopathic disorder that effect approximately 1% of the population and is characterized by spontaneous excessive, uncontrolled sweating in which hands, feet, under arms and damp sticky or even distributed with sweat. It generates abnoxious odour and socially not acceptable and the patient will be isolated in general public and even with friends. Sympathetic nervous system in the body is responsible for hyperhidrosis. There are several lakh formulations are available in the market for variety of illnesses and still there is a need for more as the unknown diseases are creeping in. Though the mechanism, etiology of hyperhidrosis effect is not clear, the treatment available at present is only a symptomatic relief for the sufferers in the present presentation an elaborative clinical findings of hyperhidrosis are discussed in detail about the a) types of hyperhidrosis, b) etiological factors, c) pathophysiology, d) diagnostic method, e) treatment available. The presentation helps the drug industry, research and development departments to design suitable medications for the permanent treatment and relief to the patients suffering.

**Key words**: Hyperhidrosis, pathophysiology, treatment.
IP-001
AN OVERVIEW ON- BUSINESS INTELLIGENCE (BI) OPPORTUNITIES IN PHARMACEUTICAL INDUSTRY


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Business intelligence solutions is a broad category of application programs and technologies for gathering, storing and analyzing and providing access to data to help enterprise users make better business decisions. As the market pressure demand increased innovation and shorter business time to market product and shorter business cycles, faster information flow, new marketing channels, risky product development cycles and approvals emerging generic and biotech competition ever accelerating discoveries, more limited influencer mind share and continuation of acquisition trend. Winning in today pharma is harder than ever. So pharma companies are evaluating alternative business models, focusing on technologies such as BI tools. BI is more than just installation of leading edge software; it about empowering companies with insight on what derives their business as well as how change it. BI solutions have reduced the pressure for bringing new drugs, safe drugs and the right drugs in the market in a cost efficient effective and timely manner. BI solutions – an area of practical application gaining movements in corporate board rooms.

IP-002
“HYDROTHERMAL OXIDATION” - A NEW APPROACH IN PHARMACEUTICAL INDUSTRIES FOR WASTE WATER TREATMENT

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Environmental regulations and increasing waste water disposal costs, in India and more generally in industrial countries, lead to a new concept for complete destruction of both toxic substances and sludge. Thus, hydrothermal oxidation of waste has been developed as an alternative technique in order to limit the formation of toxic end-product, waste volume and the dissipation of energy supply. Hydrothermal oxidation processes allow a total commission of any organic matter to carbon dioxide without energy supply dissipation due to the high exothermic reaction. This communication will describe the new concept of hydrothermal oxidation, the first industrial plant is based on this new concept. This technology is suitable for all the pharmaceutical and
food companies that would gain access to a new solution to deal with some of their
efficient, in order to reduce the cost of treatment and to respect the environment.

IP-003

DRUG REPOSITIONING

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Drug repositioning is the application of a known drug in treating new diseases.
Increasing interest in drug repositioning has occurred due to high failure rates and
costs involved in attempts to bring new drugs to market. It is estimated that it needs a
cost of about eight hundred million US dollars and around fifteen years time to
develop a new drug by the traditional De novo system of discovery. The advantages
of this drug repositioning over the de novo system is that it ensures quick discovery,
the older molecules are time tested, availability of considerable amount of literature
regarding the molecule, lesser investment required. Keeping inview all these positive
aspects many repositioners are focusing on drug repositioning. Drug repositioning
which is also called therapeutic switchingfollows three steps which are different from
the usual traditional way of discovery. The steps include i) Identifying repositioning
opportunities for the existing drugs ii) Compound evaluation with respect to
pharmacokinetics, pharmacodynamics and safety profile. iii) Market analysis. Drug
repositioning do not need any clinical trials as the drug has already under gone all
these steps. In this present scenario conservation and recycling are gaining
importance, drug repositioning is also considered as one such process which is now
revolutionalisingthe research and development department of the pharmaceutical
industry.

IP-004

A STUDY RELATED TO ONGOING HAZARDS IN PHARMACEUTICAL
INDUSTRIES

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Every product and every process has an associated risk. Every enterprise should have
a methodology for identifying and evaluating the risks it faces and it should have a
process for generating intervention plans to reduce the risks to an acceptable level.
This process is referred to as Risk Management Plan (RMP). In the manufacture of
pharmaceuticals, which include the manufacture of certain antibiotics, hormones,
cytotoxic substances or other highly active pharmaceuticals, together with operations
such as fluid-bed drying and granulation, which are examples of hazard units. Hazards
affecting quality are controlled to a certain extent through the validation of critical operations and processes in the manufacture of finished pharmaceutical products in accordance with GMP. Industrial hazards is mainly due to Large exposures to chemicals can affect human health directly or indirectly, this imbalances ecological systems that exist in rivers, lakes, oceans, streams, and wetlands. The release of chemicals into the environment can have global impacts & these can be transported throughout the atmosphere, thus changes occur in the environment affect people. There are three main routes by which hazardous chemicals enter the body respiratory tract, skin or eyes & digestive tract. Ultimately people can be exposed to any substance that enters the environment. Thus the objective of this study is to Understand the harmful effects of industrial hazards & explore the routes of exposure to industrial hazards.

IP-005

PROCESS ANALYTICAL TECHNOLOGY (PAT)
IN PHARMACEUTICAL INDUSTRY

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The Pharmaceutical Industries were in rapid transition from supply driven market to demand and service-driven market where the manufacturing efficiency and responsiveness will play a critical role in future success. There is growing enthusiasm in industry for many potential gains offered by PROCESS ANALYTICAL TECHNOLOGY, a new FDA initiative that aims to faster improvements in manufacturing efficiency and quality analysis .The underlying premise of PAT is that quality cannot be tested into products, instead it should be built in or should be by design. Pharmaceutical industry goal is to prove formulations so as to provide patience innovative and more efficient solutions, thus achieve commercial break though.” PAT involve the use of raw material properties, manufacturing parameters, process monitoring and chemotherapeutic techniques to produce finished products of acceptable quality”. PAT has been gaining a lot of momentum in bio-pharmaceutical community due to potential for continuous real time quality assurance resulting in improved operational control and compliance fundamental to PAT initiatives are basics of multivariate analysis and design of experiments .This is because analysis of process data is a key to understand process and keep it under multivariate statistical control. Industry will benefit by gradual applying principles of PAT, gaining experience rather than facing high cost towards implementation when it becomes de facto standards for the pharmaceutical industry. This article provides an out line of PAT expectation and pioneering work on PAT and positive impact of PAT in pharmaceutical industry.
IPR-001

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IPR is the topic of the hour, especially, post GATT agreement and its implementation from 1st January 2005. It is the exclusive rights for use of a technology, trademark, design and creative work. The patent gives the holder an exclusive right to use and license use of an invention for a certain period of time. For grant there are three prerequisites novelty, non-obvious and industrial applicability. It helps the discoverer to recoup their investment. Hence, creativity is encouraged and continuous upgradation of technology is there. It can be said that IPR regime is indirect incentive for R&D. Prior to TRIPS (IPR component of 1986-94 GATT round) there was no widely applicable international agreement on IPR. No other country was more active in opposing this treaty than India. But it was enforced and India had to move from minimal intellectual protection to a full-fledged 20-year protection term. There were certain provisions for developing countries like exemption for certain period of time before enforcing the enhanced IPR regime. A round of meeting concluded as Doha declaration which said that a country can deviate from TRIPS agreement to ensure the availability of medicines in India. The main features of this declaration were:- (i) compulsory licensing, (ii) importing under compulsory licensing, (iii) parallel importation, (iv) patentable subject matter, (v) research exception, (vi) bolar provision, (vii) limiting the extent of data exclusivity. Strategies to keep prices of drugs low and ensure availability of drugs after TRIPS (i) price of new patented drug should be negotiated by govt, (ii) grant of petty patents for “incremental innovation”, (iii) use of compulsory licensing provision proactively, (iv) promotion of medical insurance. Recently many controversies have come up due to IPR one of the major being Gleevec anti-neoplastic drug of NOVARTIS.

IPR-002

INTELLECTUAL PROPERTY RIGHTS - (AN IRIDESCENT BOND)

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Intellectual Property Rights is defined as legal rights for creativity that temporarily provides the creator, economic incentives to develop and share ideas through a common monopoly. IPR includes Patents, Trademarks, Copyrights, Industrial designs.
among other rights. Trademarks and Patent as IPR are particularly more important in Pharmaceutical sector. IPR acts as a stimulus for economic growth, attracts investment, creates job opportunities and thereby acts as a catalyst for technical progress. It is a boon for the research oriented companies as it helps in protection of research data from imitation or copying during the term of IP protection. Patent is a contract between society as a whole and the inventor which gives the inventor, exclusive rights to prevent others from selling, using product information for reaping economic benefits during patent term. Patents has territorial jurisdiction. Protection of IPR has strengthened in the recent years due to TRIPS (Trade related intellectual property rights) agreement. This poster elaborates importance of patenting, different stages involved in filling patent and applicable patent laws in India, USA and Europe. Requirements for patenting such as novelty, non-obviousness and industrial application would be discussed. The poster describes protection term, rights available to the patentee, what can be patented, what is not patented and who can file a patent. It points briefly what is infringement and remedies available by territorial law in India, US and Europe. The poster throws light on dynamic IP situation and recent developments in India with respect to patenting. KEY WORDS: Patenting, TRIPS, IP.

**IPR-003**

**INTELLECTUAL PROPERTY RIGHTS**

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They are legal property rights over creations of the mind, both artistic and commercial and the corresponding fields of law. Under Intellectual Property Rights (IPR), owners are given certain exclusive rights to a variety of assets like literary, ideas, discoveries, designs, symbols etc. The objectives of IPR are to provide financial incentives to the owners to reap monopoly profits and economic growth due to legal monopoly or by royalty. IPR in Pharmaceuticals in India is major point of concern as liberalization takes place which gives invitation to many MNC's. The protection of intellectual property rights has strengthened in recent years due to the agreements reached between the WIPO, WTO and TRIPS which are specialized UN organs aiming at increasing the level of international consciousness about the effect of increased competitions among countries and industries in each country. The various laws protecting the intellectual property rights are patent law, utility law, industrial design law, copyright law, trade secret law, trademark law etc. Necessary safeguards with reference to Health care sector have been built into the IP laws, in particular in the Patents law, for protection of public interest including public health. The aim of intellectual property rights system is to encourage and motivate inventors of inventions and creators of designs, to protect their rights, and to instill confidence in the maintenance of business activities related to trademarks. It pervades all sectors of economy and is increasingly becoming important for Pharmaceutical companies to
protect their new research findings and thus ensuring competitiveness of the enterprises.

**IPR-005**

**UNDERSTANDING THE ANDA (ABBREVIATED NEW DRUG APPLICATION) APPROVAL**

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Earlier, the approval processes were same for NDAs and ANDAs. First, Keafauver-Harris then Bolar amendment led to the Hatch-Waxman Act in 1984. It expedited low cost generic business by shortening the ANDA procedures and compensating the NDA holder with 5 year exclusivity. The application is submitted at the Office of Generic Drugs, Rockville, Maryland, USA where, if satisfied, passed to the review queue. An applicant must certify the paragraphs to FDA under which he is seeking the approval. Different patent certifications for ANDA are: Paragraph I The patent information is not available. Paragraph II The listed patent has expired. Paragraph III The listed patent will expire on some specified date and the applicant does not intend to commence marketing before that date. Paragraph IV The listed patent is invalid or will not be infringed by the manufacture, use, or sale of the drug. There are some factors which delay the paragraph IV certification: Patent related delays- Patent term extension (including section 156 adjustment and Uruguay Round Agreements Act 1994 extension), 30 months stay period, 180 days exclusive marketing period, separate exclusivity periods for different dosage forms and different listed patents, the effect of court decisions, transfer or waiver of exclusivity. Other marketing exclusivity based delays- 5 years for NDAs, 3 years for sNDAs, 6 months for pediatrics. The FDA may withdraw or suspend approval of an ANDA (a) when the approval of the listed drug on which the ANDA relies is either withdrawn or suspended (b) any evidence of drug being unsafe and ineffective (c) finds that the approval was obtained, expedited or facilitated through bribery, payment of an illegal gratuity or fraud (d) finds that the applicant was not able to produce the drug and has attempted to introduce adulterated or misbranded drug into the market. The FDA may approve an ANDA either under para I, II and III without any exclusivity or para IV with 180 days marketing exclusivity after the 5 years exclusivity of patented drug is over.
MCDD-001

MEDICINAL CHEMISTRY AND DRUG DESIGN

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Primary objective of medicinal chemistry is designing & discovery of new compounds which also requires development of testing methods & procedure needed to establish how a substance operates in body and its suitability for use. It requires fundamental research into biological & chemical nature of the disease state, input from specialist in pharmacology, computing & medicine. Drug design explains how drugs specifically elicit a particular pharmacological response? How the drug usually gets modified, detoxicated, metabolized or eliminated, probable relationship between biological activities with chemical structure. To avoid side effect, tachyphylaxis, down regulation, also to combat drug resistance drug design is required. They are essential for improvement in treatment of existing, newly identified diseases & in production of safer drugs by the reduction or removal of adverse side effects. In drug design two major types of chemical modification are achieved through formation of analogues & prodrug. Analogue is that modification which brings about a carbon skeletal transformation or subsistent synthesis. Prodrug is derivative of drug that hydrolyses in-vivo to parent drug. Lead compound- specific new molecule useful in drug discovery. Method for drug design are Q–SAR, SAR, drug target binding, molecular modeling, x-ray crystallography, NMR, Docking & scoring function, computer aided drug design which helps to visualize 3D shapes of both ligand & target sites in visual packages as space fill, Corey-Paulling-Kollum, stick, ball - mesh - ribbon. SAR of lead compound & its analogues are used to determine parts of structure responsible for beneficial activity and side effect. This information may be used to develop a new drug that has increased activity, different activity from an existing drug and fewest unwanted side effect.

MCDD-002

GREEN CHEMISTRY

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Green Chemistry also referred as sustainable chemistry can be considered as an answer to the unwanted side of conventional chemistry. Chemical industries with their conventional synthetic methods often generate products in such a manner that the
amount of waste generated per unit reactants is greater than the amount of product synthesized per unit reactant. Green Chemistry involves the design of chemicals and synthetic procedures that will be less detrimental to human health and environment. It protects the environment not by cleaning up, but by inventing novel synthetic procedures that do not pollute. Although as a chemical philosophy, Green Chemistry derives from organic chemistry, inorganic chemistry, analytical chemistry, biochemistry, the main focus of it is on the industrial applications of these sectors. The poster gives a bird’s eye view to the fundamental principles of Green Chemistry with illustration of the same using a suitable example.

MCDD-004

LIPOSOMES- AS NANO MEDICINE CARRIERS AND FUTURE CHALLENGES.

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Liposomes are microparticulate lipoid vesicles that are under extensive investigation as drug carriers for improving the delivery of the therapeutic agents. These are bilayered lipid vesicles made up of phospholipids (lecithin, phosphatidylcholine). They are carrier systems, additives, tool in various scientific domains. They contain lecithin, charge inducers, surfactants, rigidity materials (cholesterol), etc. They are prepared by various methods, which include passive loading technique, dispersion methods, solvent dispersion methods, detergent removal methods and active loading technique. Characterisations include vesicle size, shape, lamellarity, surface feature, phase behavior, drug release profile, encapsulation efficiency, capture volume, etc. The major areas of activity include delivery of small conventional molecules with reduced toxicity and enhanced therapeutic activity. Applications of liposomal formulations of oligonucleotides for gene and antisense therapy delivery of plasmid DNA as Immunoadjuvants, Immunomodulators, Immunodiagnosis, radio pharmaceutical and radio diagnostic carriers. The stability of liposomal drug delivery systems is one of the challenging task for formulation scientist (there is no established protocol for either accelerated or long-term stability studies for liposomal formulations though many of them are now available in the market; eg: Amphotericin B). This effort describes concepts: Potential applications, problems associated with future innovations and recent developments in liposomal drug delivery systems.
MCDD-008

BIOLOGICAL SCREENING OF SOME \([(4,6\text{-DISUBSTITUTED PYRIMIDINE}-2\text{-YL})\text{THIO}]\ METHYL\text{-N-PHENYL}-1,3,4\text{-THIADIAZOL}-2\text{-AMINE}

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A number of substituted \(\alpha,\beta\)-unsaturated carbonyl compounds (1a-i) were prepared by Claisen-Schmidt condensation of substituted acetophenone with selected araldehydes, which on cycloaddition with thiourea furnished 4,6-disubstituted pyrimidine-2-thiols (2a-i). Reaction of (2a-i) with ethyl chloroacetate followed by condensation with hydrazine hydrate yielded 2-\([(4,6\text{-disubstituted pyrimidine}-2\text{-yl})\text{thio}]\text{acetohydrazides}\) (4a-c). Condensation of compounds (4a-c) with phenyl isothiocyanate gave 2-\([(4,6\text{-disubstituted pyrimidine}-2\text{-yl})\text{thio}]\text{acetyl}\text{-N-phenylhydrazinecarbothioamides}\) (5a-c) which on treatment with concentrated sulphuric acid afforded titled compounds 5-\([(4,6\text{-disubstituted pyrimidine}-2\text{-yl})\text{thio}]\text{methyl}\text{-N-phenyl}-1,3,4\text{-thiadiazole}-2\text{-amines}\) (6a-c). These compounds have been characterized on the basis of elemental analysis, IR, 1H NMR and MS. Compounds have been evaluated for their anticancer and antioxidant activities.

In recent years pyrimidine derivatives have received significant attention owing to their diverse range of biological properties particularly being antifungal, antitubercular, antibacterial, antiviral and anticancer. 2,5-disubstituted-1,3,4-thiadiazoles represent one of the most active classes of compounds possessing wide spectrum of biological activities. 2,5-Disubstituted-1,3,4-thiadiazole derivatives exhibit in vitro antimycobacterial, antibacterial and anticancer properties. Considering the above facts, the goal of the present study is to combine disubstituted pyrimidines with 1,3,4-thiadiazole residues in order to develop hybrid molecules with potential of enhanced activity and to test their antioxidant and antitumor activities.

MCDD-009

SYNTHESIS AND EVALUATION OF ANTIMICROBIAL ACTIVITY OF SOME 6-ARYLIDENE-3-ARYL-2,3,3a,4,5,6-HEXAHYDROCYCLOPENTA[c]PYRAZOLES/OXAZOLES

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Condensation of \(\alpha,\alpha\)-bis (arylidene) cycloalkanones 1a,b with hydrazine hydrochloride in presence of glacial acetic acid gave 6-arylidene-3-aryl-2,3,3a,4,5,6-hexahydrocyclopenta[c]pyrazoles 2a,b, which on Mannich condensation with various
alkyl and aryl amines yielded 2-aminomethyl-6-aryliden-3-aryl-2,3,3a,4,5,6-hexahydrocyclopenta[c]pyrazoles 5a-g. Condensation of 1a,d with hydroxylamine hydrochloride in alcohol resulted in the formation of 6-aryliden-3-aryl-2,3,3a,4,5,6-hexahydrocyclopenta[c]oxazoles 4a,b. Further, compounds 1a,b undergo cyclization with phenylhydrazine hydrochloride/2,4-dinitro phenylhydrazine hydrochloride in presence of sodium acetate and glacial acetic acid to furnish 2-(phenyl/2,4-dinitrophenyl)-6-aryliden-3-aryl-2,3,3a,4,5,6-hexahydrocyclopenta[c] pyrazoles 3a-d. The structures of the compounds have been established based on their analytical and spectral data. All the compounds have been evaluated in vitro for their antibacterial and antifungal activities. Compounds 2b, 5c and 5d exhibited significant antibacterial activity. Pyrazoles exhibit antibacterial, antifungal, analgesic and anti-inflammatory activities. Oxazoles are known to possess antibacterial and antifungal activities. In addition arylidene cycloalkanone nucleus is known to possess antibacterial and antifungal activities. In view of these facts, it was contemplated to synthesize heterocycles with the strategy of combining either pyrazole or oxazole nucleus with arylidene cycloalkanone moieties to obtain compounds possessing better antimicrobial activity. In the present investigation new series of substituted 2,3,3a,4,5,6-hexahydrocyclopenta[c]pyrazoles/oxazoles is synthesized and assessed for their antimicrobial profile.

MCDD-010

MICROWAVE SYNTHESIS OF SOME NOVEL BENZIMIDAZOLE SUBSTITUTED FLUORQUINOLONES AND THEIR ANTIMICROBIAL EVALUATION

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Benzimidazole nucleus was reported to have significant antibacterial and antifungal activities. Fluoroquinolones like Norfloxacin and Ciprofloxacin are synthetic antibacterial agents which are effective against gram – ve bacterial species. It has been observed from literature that piperazine group is although beneficial is not essential for low MIC or for IC50 against the target enzymes. Since the benzimidazoles are possessing broad spectrum antibacterial and antifungal activities, it was planned to incorporate these into the piperazine ring of fluoroquinolones via Mannich reaction. The aim of our present work is to see the influence of benzimidazoles on antibacterial and antifungal activity which are substituted on the fluoroquinolones. The synthesized compounds were confirmed by spectral analysis (IR, NMR). They were screened for antibacterial activity against Bacillus subtilis, Mycobacterium phlei and Klebsiella pneumoniae by using Agar Diffusion method. The benzimidazole substituted fluoroquinolones showed significant activity than the fluoroquinolones alone. Also they were screened for antifungal activity against
Candida albicans, Rhizopus Nigerians and Aspergillus Niger. The compounds showed significant activity against candida albicans.

**MCDD-011**

**SUCRALOSE – A BOON TO DIABETICS**

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Sucralose is the low-calorie artificial sweetener made from sugar, so it tastes like sugar. It is about 600 times sweeter than sugar and can be used in place of sugar to eliminate or reduce calories in a wide variety of products, including beverages, baked goods, desserts, dairy products. It was discovered in 1976. Its chemical name is 1, 6-Dichloro-1, 6-dideoxy-1-D-fructofuranosyl-4-chloro-4-deoxy-1±D-galactopyranoside. Sucralose can be used by everyone, including pregnant women and breastfeeding mothers and safely used by children. It may be used as part of a healthy diet that includes a variety of nutritious foods in moderate portions. The scientific studies conducted over a 20-year period demonstrate that sucralose is safe for use as a sweetening ingredient. This presentation explains in detail about the preparation, safety, advantages and limitations of sucralose and also believes that sucralose is going to be the choice of sweetener in the coming years to come.

**MCDD-012**

**GREEN NANOTECHNOLOGY**

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It is a merge of green chemistry and nanotechnology. Nanotechnology and green chemistry have an intimate relationship and great potential to do good. Green chemistry/engineering might seem like an odd mate for nanotechnology, but in fact both respect and seek to emulate natural processes. The goal of green chemistry/engineering is to make industries function more like ecosystems or like cells, in which benign materials are used wisely, wastes are recycled and energy is used efficiently. As it turns out, biological systems accomplish this feat by exploiting properties that occur in the nanodimension. Indeed, the cell is the quintessential “green nanofactory”. It uses natural ingredients rather than in harmful solvents, employs smart controls with feedback loops, conserves energy and resus waste. So it should not be surprise that many researches view nanotechnology and green chemistry/engineering as capable of working hard in hand to provide environmentally sustainable products and process.
MCDD-014

ROLE OF CHIRALITY IN DRUG DESIGN

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The term Chiral is used to describe an object that is non superposable on its mirror image. Human hands are perhaps the most universally recognized example of chirality. When used in contest of chemistry, chirality usually refers the molecules. Many biologically active molecules are chiral, including naturally occurring amino acids, sugars. Many chiral drugs are made with high enantiomeric purity due to potential side effects of the other enantiomer. Most of the time both chiral forms of a drug can be taken safely with out serious side effects. In some situations one chiral form is active and other is not. To improve the effectiveness, to reduce possible side effects from "wrong" chiral form, many of today's newer pharmaceuticals are manufactured as pure chiral isomers. The challenge is developing cost-effective manufacturing process for single isomer chiral drugs. This presentation emphasizes upon growing importance of chirality in drug design and explains about the effects and limitations of chiral drug design.

MCDD-016

INSILICO DRUG DISCOVERY

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Major roles of computation in drug discovery are virtual screening & de novo design, in silico ADME/T prediction and advanced methods for determining protein-ligand binding. In silico methods can help in identifying drug targets via bioinformatics tools. They can also be used to analyze the target structures for possible binding/ active sites, generate candidate molecules, check for their drug likeness, dock these molecules with the target, rank them according to their binding affinities, further optimize the molecules to improve binding characteristics. The research and drug designing, development and its introduction, is indeed in a big mission. The central activities of pharmaceutical research are drug design and delivery. Drug design or discovery of molecular structure which fit certain receptor sites in the protein. The role of computational modeling in drug design is highly developed, dominated by mature methodology involving techniques such as quantitative structure activity relationships (QSAR), ligand Docking and Molecular Dynamics. Despite tremendous advancement in technology, it is clear that molecular variation of a limited number of compounds may not deliver the desired drug rather the key lies in many variations of many compounds. As for example, at initial stage
discovery of a “lead” compound having some pharmacological activity may be a failure at the late stage of development due to poor ADME characteristics. The computational model for drug designing makes industry’s R&D faster a bit. This new role for informatics—at the core of a new pharmaceutical R&D process focused on delivering more and better drugs in a shorter time period. Human ingenuity should again prove to be the pharmaceutical industry’s ultimate driver in creating treatment for poorly or previously untreated diseases. It is therefore of highest importance, given the random character of discovery and virtual impossibility of planned invention of new active principles. In conclusion all strategies resulting in identification of lead compounds are prior advisable, provided that the research induced is done in rational manner.

MCDD-017

SYNTHESIS AND CHARACTERIZATION OF REACTIVE DYSES BASED ON 2-PHENYL-3[4(4-AMINO PHENYL SULPHONAMIDO)]-4(3H)-QUINAZOLINONE-6-SULPHONIC ACID

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A series of new heterocyclic mono azo reactive dyes have been prepared by coupling 2-phenyl-3[4(4-amino phenyl sulphonamido)]-4(3H)-quinazolinone-6-sulphonic acid with various cyanurated coupling components. All the reactive dyes were characterized by their percentage yield, UV-Visible spectroscopy, elemental analysis, infrared spectroscopy, PMR spectroscopy and dyeing performance on wool, silk and cotton fibres. The percentage dyebath exhaustion on different fibres have been found to be reasonably good and acceptable. The dyed fibres show fairly good to very good fastness to light, washing and rubbing.

KEYWORDS: 2-Phenyl-3[4(4-amino phenyl sulphonamido)]-4(3H)-quinazolinone-6-Sulphonic acid; Synthesis; Silk; Wool; Cotton; Dyeing properties.
MCDD-018

COMBINATORIAL CHEMISTRY: A TOOL FOR NEW DRUG DISCOVERY AND DEVELOPMENT

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Combinatorial chemistry is an innovative method of synthesizing many different substances quickly and at the same time. Combinatorial chemistry contrasts with the time-consuming and labor-intensive methods of traditional chemistry where compounds are synthesized individually, one at a time. While combinatorial organic chemists who are seeking new drugs primarily use chemistry, chemists are also now applying combinatorial chemistry to other fields such as semiconductors, superconductors, catalysts and polymers. Traditionally, chemists make compounds one at a time, step by step. If the synthesis of a compound requires numerous steps, the intermediate compounds are usually purified after each step. On the other hand, when chemists use combinatorial methods they will always be making many different compounds at the same time often in the same reaction vessel. The purification steps are usually faster and less complicated compared to the traditional methods. Chemists often start a combinatorial synthesis with a batch of small plastic beads; each individual bead is about the size of a grain of sand. They attach small molecular building blocks to these beads stepwise. They like to use these plastic beads because they need only wash the beads to purify the intermediate compound between each step. To make this washing easier, the chemist often puts these batches of beads into chemically resistant porous bags resembling tea bags, or puts the beads into columns resembling coffee filters.

MCDD-019

FULLERENE-BUCK BALL APPLICATION IN PHARMACY

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In 1985 chemists discovered a soccer-ball-shaped molecule made of 60 carbon atoms and called it buckminsterfullerene-buckyball for short. That could soon change. Toronto-based C Sixty plans to start clinical testing of three fullerene-based drugs in the next year and a half. Coordinating the efforts of a dozen university researchers worldwide, C Sixty is developing drugs for the treatment of AIDS, Parkinson's disease, Lou Gehrig's disease.
MCDD-020

MOLECULAR DOCKING GUIDED STUDY OF BENZENESULPHONAMIDE DERIVATIVES AS CARBONIC ANHYDRASE-II INHIBITORS

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Drug discovery is a workflow solution for chemicals and materials discovery. It helps research scientists to study protein ligand interaction of different compounds with reference compound. Carbonic anhydrase inhibitors are used infrequently as diuretics also aided in our understanding of basic renal physiology. In present study, we have reported the protein ligand interaction of Benzenesulphonamide derivatives as carbonic anhydrase-II inhibitors. The docking study of Benzenesulphonamide derivatives was performed. Crystal structure along with the co-factor was downloaded from RCSB Protein Data Bank (PDB ID: 2HL4). All computational studies including cavity prediction, assigning of bond orders, structure refinement, defining of active binding sites for the enzyme and structure preparation were performed. The biological data for study was selected from the reported literature. All structures were prepared using Chem Sketch. The output of docking study is in the form of binding score, binding energy, H-bond energy, Rerank score. The score comparison of docked compounds with reference ligand has been performed. Docking of 21 molecules into active sites along with references ligand resulted in better score of 3 compounds as compare to the reference ligand. osteoporosis and cancer. "I think their chances are extremely good. About one nanometer in diameter, buckyball is the perfect size to interact with DNA and proteins. And chemists can attach different chemical groups to the carbon scaffold, making drugs with multiple functions. It has also many other applications like in X-ray, MRI, as a carrier of drug molecule, antioxidant and many more to come.

MCDD-021

COMPUTER-ASSISTED MOLECULAR DESIGN


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The last decade new tools have become available for drug design including computational chemistry, high-throughput screening and combinatorial chemistry. Still, no matter how advanced our technology has developed or how fast new compounds can be synthesizes and tested, a medicinal chemist simply has two major questions to answer: Do I understand the structure activity-relationship for this series
of compounds and which compound should I synthesize next? In order to provide answers to these questions these review work procedures are followed. First, one may try to build a 3D model, e.g., homology modeling of the target protein and, accordingly, dock ligands into the active site of the protein. Simply, a potent ligand fits into the receptor while an inactive ligand does not. The second approach is more basic where ligands, initially, are superimposed on mutual tentative interaction points (e.g., lone pair of electrons and midpoints of aromatic rings) with the receptor. Consequently, attempts to explain the potency of the ligands by comparison of their structures and their relative 3D orientations can be done. This approach is generally called an “active analogue approach” or structure-activity relationship (SAR).

MCDD-022

PHASE TRANSFER CATALYSIS-APPLICATION IN GREEN CHEMISTRY

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Phase transfer catalysis refers to the acceleration of the reaction by the phase transfer catalyst. A phase transfer catalyst in chemistry is a catalyst which facilitates the migration of a reactant in a heterogeneous system from one phase into another phase where reaction can take place. Ionic reactants are often soluble in an aqueous phase but insoluble in an organic phase unless the phase transfer catalyst is present. Phase transfer catalysts for anion reactants are often quaternary ammonium salts corresponding catalysts for cations are often crown ethers. The PTC-ion system has a hydrophilic interior containing the ion and a hydrophobic exterior and works by encapsulating the ion. Reactions to which PTC is applicable can be divided into two major categories: 1. Reactions of anions that are available as salts, for example, sodium cyanide, sodium azide, sodium acetate, etc. 2. Reactions of anions that should be generated in situ, such as alkoxides, phenolates, N-anions of amides or heterocycles, etc. and particularly carbanions. A variety of other reactions with participation of inorganic anions such as addition, reduction, oxidation, etc. is efficiently executed using this methodology. By using a PTC process, one can achieve faster reactions, obtain higher conversions or yields, make fewer byproducts, eliminate the need for expensive or dangerous solvents which dissolve all the reactants in one phase, eliminate the need for expensive raw materials (NaOH, KOH, K₂CO₃, etc. instead of NaH, NaNH₂, t-BuOK, R₂NLi, etc.) and/or minimize waste problems. Phase transfer catalysts are especially useful in green chemistry by allowing the use of water; the need for organic solvents is reduced. This methodology is applicable to a great variety of reactions in which inorganic and organic anions and also carbenes react with organic substrates. It consists in use of heterogeneous two-phase systems—one phase being a reservoir of reacting anions or base for generation of organic anions, whereas organic reactants and catalysts (source of lipophilic cations) are located in the second,
organic phase. Key words: Phase transfer catalyst, green chemistry, organic solvents, quarternary ammonium salts, crown ethers.

PAM-001

PHARMACOECONOMICS-A WAY AHEAD

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In this current scenario of economic crunch or recession that has badly affected our economy, we need to take a proactive approach and prepare oneself for future wave of pharmacoeconomic requirement. Pharmacoeconomics (PE) is an emerging and rapidly changing field. It describes the economic relationship involving drug research as the increasing cost of healthcare products and services is a great concern for patients, healthcare professionals, politicians and public. PE analyses methods influence the pharmaceutical R&D sector, to maximize the overall productivity of clinical research. It is important for clinical trial design to account effectively for both successful and unsuccessful drug prospects in terms of both time and money, permit an expeditious “go/no-go” decision to be made to solve greater challenges/consequences and better commercialization of the products by the company plus the global picture regarding healthcare and healthcare services. It’s a young science and needs to keep its theoretical base within welfare economics and health economics. It needs to work more closely with clinicians and other health professionals in order to reduce a substantial burden to society in terms of morbidity, mortality, cost and quality of life (QOL). Thus to conclude If health economics is divorced from its roots in welfare economics, the discipline would lose its theoretical ‘anchor’ and drift aimlessly amongst a sea of applied health sciences research. Therefore, it’s a strong incentive to reduce health risks by adhering to superior, economical treatment regimens for the healthcare industry.

PAM-002

PHARMACEUTICAL SECTOR IN RECESSION AND BEYOND...

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As the world is going through extraordinary times of a financial crisis, the pharmaceutical and health care industries have historically been immune to economic turmoil because illness doesn’t take a vacation. The big global pharmaceutical companies have traditionally been cash rich and not often depend on dept. Despite the current lack of innovativeness in research in the sector for a while, these companies
are viewing this period as the best possible time for a new acquisition at a cheaper price. During these crises, top priorities of pharmaceutical executives is improving new product flow and are also exploring more strategic and sustainable approach to create lasting cost advantage. They also aim to rely less on cost cutting campaigns than ignore on imperative long term growth plans. They are looking for new ways to transform business models to drive innovation and better demonstrate the value for their product. Some of the future trends such as account for the pathophysiology of the disease, patient compliance programs, harmonization of regulatory procedures worldwide with electronic and real time submissions and approvals, tailor-made drug for a specific group of patients, raising ethical standards of industry would be essential coupled with reduction in R&D cost significantly and spread its bets to increase its productivity in the lab. Emerging economies (G7 and E7 countries) and trends of future are discussed with special attention to Indian Pharmaceutical industry.

**Key Words:** Acquisition, New product, Transform business model, Future trends, G7 & E7 countries.

PAM-006

**MODIFIED SUSTAINED RELEASE CHITOSAN-COATED ACTARIT MICROSPHERES**

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Simple actarit microspheres (MS) were prepared by dry-in-oil method using ethylcellulose (EC) as a matrix polymer, Further, the microspheres modified by addition of polyethylene glycol (PEG) and hydroxylpropyl cellulose (HPC), called MS-P and MS-H, respectively, were prepared. The in-vitro release from MS, MS-P and MS-H were examined in phosphate buffer, pH 6.8, at 37ºC and 60 rpm. Chitosan-coated actarit microspheres (Chi-MP) were prepared by the precipitation of droplets of chitosan solution containing MS, and their adhesion to the rat small intestinal mucosa was tested. The plasma concentrations after duodenal administration were investigated for actarit powder suspension, MS, and Chi-MP. It is observed that the particle size was raised with the increase in amount of actarit added. The drug content and addition of PEG or HPC affected the drug release rate. The microspheres with moderate drug content, prepared by addition of modest amount of PEG, exhibited better gradual drug release. Chi-MP showed a good mucoadhesion. The maximum plasma concentration of actarit for Chi-MP was less than one third of that for actarit powder suspension. Chi-MP tended to show the higher and steadier plasma levels than MS.
PDD-001

NANOPARTICLES AS NON-VIRAL VECTORS FOR GENE THERAPY

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Gene therapy is being considered as a potential medical revolution for the future despite some of its drawbacks. Initially, it was approach for treating hereditary diseases, but now due to its wide recognition of its potential role in the treatment of acquired diseases such as cancer it is being envisaged for future advancements also. Non-viral vectors based on the use of cationic lipids or polymers appear to have promising potential, given the problems of safety encounter with viral vectors. Based on the advantages and disadvantages of existing vectors and on the various hurdles encountered with these carriers, the aim of this paper is to describe the ‘perfect vector’ for systemic gene therapy against cancer. Non-viral vectors consist of a vector backbone, usually a cationic lipid or polymer able to form stable complexes with the plasmid, modified by incorporation of functional groups, and often combined with biomaterials to enhance cytocompatibility. But currently, the major drawback of gene therapy is the rate of gene transfection. The two main types of vectors that are used in gene therapy are dependent on viral or non-viral gene delivery systems. The viral gene delivery system shows a high transfection yield but it has many disadvantages, such as oncogenic effects and immunogenicity. In this current paper, we give a detailed report of the new gene delivery system which are based on various nanoparticulate approaches like Cationic polymers, Cationic lipids, Magnetic nanoparticles, Quantum dots, Silica nanoparticles, Gold Nanoparticles, Fullerenes, CNTs, Supramolecular systems etc.

PDD-002

FORMULATION & EVALUATION OF ACECLOFENAC MICROSPHERES BY CO-PRECIPITATION METHOD

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The objectives of the present study was to microcapsulate the anti-inflammatory drug(Acenclofenac) to provide controlled release & minimizing or eliminating local side effects by avoiding the drug release in the upper gastro-intestinal tract. The drug was targeted
to the colon & their aligned area for their local effect. Aceclofenac was micro capsulated with Ethyl cellulose, Eudragit RSPO & RLPO using Co-precipitation techniques. Aceclofenac micro spheres were subjected to micromeritic properties including angle of repose, bulk density, tapped density, Carr’s index & Hausner’s ratio. Micro spheres were subjected to drug loading, in-vitro drug release studies. The prepared micro sphere were white, free flowing & almost spherical in shape. The drug-loaded micro spheres show 70-92% drug entrapment, angel of repose was in the range of 17.23+-0.361 to 23+-0.526, bulk & tapped densities respectively were in the range of 0.422+-0.007 to 0.613+-0.074 & 0.482+-0.02 to 0.836+-0.03,carr’s index ranges from 14.38+-0.036 to 26.32+-1.367, Hausner’s ratio was found to be 1.05+-0.032 to 1.42+-0.02. In-vitro drug release studies were carried out up to 24 hour in three different pH media, I.E., 0.1 N HCl (pH 1.2), Phosphate buffer (pH 6.5) & Phosphate buffer (pH 7.4). The drug-polymer concentration influences the particle size & drug release properties. All the formulations at higher pH were followed by the Matrix-Higuchi model.

KEY WORDS: Aceclofenac, Ethyl cellulose, Eudragit RSPO & RLPO, Co-precipitation Method, release kinetics

PDD-004

STUDIES ON ENHANCEMENT OF POORLY SOLUBLE DRUG KETOPROFEN USING β - CYCLODEXTRIN COMPLEXES

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Ketoprofen is Non-steroidal anti inflammatory drug, which is used in the prevention & treatment of Rheumatoid arthritis and osteo arthritis. It belongs to Class – II drug in BCS classification i.e., low solubility & high permeability. One of the major problems with this drug is its low solubility in biological fluids. Which results into Poor bioavailability after oral administration. Dispersion of ketoprofen with the different types of carriers to increase the solubility & dissolution rate of ketoprofen. Use of β – cycloexedrin complex was used to enhance the dissolution of ketoprofen. The ratio of drugs & β - cycloexedrin complex is 1:1, 1:2, 1:3.
GASTRO-RETENTIVE DRUG DELIVERY OF METRONIDAZOLE FOR ERADICATION OF HELICOBACTER PYL

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OBJECTIVE: The aim of the present study was to develop a drug delivery system wherein the retention of metronidazole could be achieved for increased local action in gastric region against Helicobacter pylori infection. Metronidazole has an absorption zone from the upper part of gastrointestinal tract. Rapid gastrointestinal transit could result in incomplete drug release leading to diminished efficacy of the administered dose. Therefore Metronidazole requires multiple daily drug dosage in order to maintain adequate plasma concentrations. Multiple dosing leads to adverse effects. Hence the objective of present study was to reduce frequency of administration by controlled release of metronidazole.

MATERIALS AND METHOD: The present study was aimed to develop gastro-retentive Mucoadhesive Drug Delivery System (MDDS). The tablets were prepared by direct compression method, using HPMC K100M CR and Polyoxyethylene (POE) alone as well as in combinations.

RESULT: Formulations showed better results when the polymers were used in combinations. Further, formulation in which and drug and polymers were used in ratio of 1.5:1 was found to be better in terms of mucoadhesion time and drug release of 99.94% up to 12 hours.

CONCLUSION: Gastro retentive drug delivery of metronidazole can be achieved by formulating Mucoadhesive Drug Delivery System (MDDS) using HPMC K100M CR and Polyoxyethylene (POE) in various concentrations. It helps in reducing frequency of administration of drug which is main cause of its side effects.
PDD-006

DESIGN AND EVALUATION OF ATENOLOL MUCOADHESIVE TABLETS FOR ORAL CONTROLLED RELEASE USING FENUGREEK SEED HUSK

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TOPIC OF STUDY: The present study was undertaken to formulate mucoadhesive tablets of atenolol as matrix tablets employing sodium carboxymethylcellulose (Sodium CMC), hydroxypropylmethylcellulose (HPMC) K4M and fenugreek seed husk and were investigated.

METHOD: The tablets of atenolol were formulated using sodium carboxymethylcellulose (Sodium CMC), hydroxypropylmethylcellulose (HPMC) K4M and fenugreek seed husk. Also the tablets were prepared using sodium carboxymethylcellulose (Sodium CMC), hydroxypropylmethylcellulose (HPMC) K4M alone and compared for release rate kinetics. All tablets prepared using direct compression method.

RESULT: Tablets formulated employing sodium CMC and HPMCK4M alone were slowly eroded and were dissolved completely within 4-5 hr. When fenugreek seed husk was incorporated, the tablets remained intact and provided slow release of atenolol for over 10-12 hr. Tablets formulated employing sodium CMC with 5% fenugreek seed husk gave slow and complete release over a period of 12 hours and Non-Fickian release was observed from most of the formulations.

CONCLUSION: From the present study, it was concluded that the seed husk separated from fenugreek seeds (Trigonella-foenum graeceum) could be used as a mucoadhesive in the tablet formulations as it shows very good mucoadhesion and release retardant property, which serve as an alternative to synthetic products because of local accessibility, environmental friendly nature and lower prices compared to imported synthetic products.
PDD-007

DRUG DELIVERY BY CARBON NANOTUBES IN CANCER THERAPY

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CNTs are very prevalent in today’s world of medical research and are being highly researched in the field of efficient drug delivery. The main objective is to deliver the drug at the site of action for the cancer therapy. Yinghuai et al. (2005) studied the utility of CNTs as boron delivery agents for their use in boron capture therapy. Substituted carborane cages were attached to the walls of single walled nanotubes via nitrene cycloaddition followed by a treatment with sodium hydroxide, obtaining water-soluble carborane-appended single walled nanotubes. Boron tissue distribution studies showed that there is an enhanced boron uptake and retention of the CNTs in tumor tissue compared to blood, lung, liver or spleen. Metotrexate an anticancer drug can deliver by the conjugation with CNT. The complex of the CNT-methotrexate releases the drug very slowly in to the cytoplasm. Another anticancer drug doxorubicine (DOX), non-covalently bonded with CNTs can also administered by this system. The DOX-CNT produces cytotoxic activity against cancer cells. The CNTs have ability to deliver the drug to certain type of cells by conjugation with tumor-targeting peptides, therefore reducing the toxicity towards non-targeting cells. It is also used for oral administration of Erythropoietin. Current cancer therapy primarily involves surgery, radiation therapy, and chemotherapy, which are usually painful, kill normal cells and produce adverse effects but CNTs as drug delivery vehicles have shown potential in targeting specific cancer cells with a dosage lower than conventional drug used and does not harm healthy cells and reduces the side effects.

PDD-008

MUCO-ADHESIVE GEL SYSTEM FOR TRANSBUCCAL DELIVERY OF BCS-CLASS -II DRUGS

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Muco-adhesive gels were developed for buccal trans-mucosal delivery for a model drug belonging to BCS-class- II. Ideally, the study was preceded by pre-formulation studies of solubility, partition co-efficient, drug polymer compatibility and flux. The
Gels were prepared using carbopol-934p and HPMC to obtain optimum muco-adhesive strength, time and drug release. A maximum release of 76% at the end of 6 hrs was obtained with 5% w/w SLS used as permeation enhancer across porcine buccal mucosa with a flux of 45.03 μgm/cm²/hr. The gels demonstrated muco-adhesive strength of 0.36 N for a 8hr time period. A muco-adhesive gel composed of carbopol-934p and HPMC can be ideally used for trans-mucosal delivery of drugs belonging to BCS-class-II through the buccal mucosa.

PDD-009
TASTE MASKED ORAL DOSAGE FORM OF LEVOFLOXACIN

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Levofloxacin, a second generation broad spectrum Quinolone antimicrobial is extremely bitter in taste as a result of which research towards its formulation into an oral dosage form is limited. So the main objective of the study was to formulate Taste-masked microspheres of Levofloxacin. They were prepared using Eudragits L 100 and Ethyl cellulose in varying ratios of Drug:Polymer and using non-aqueous emulsification-solvent evaporation technique as the preferred method of preparation. Preformulation studies included drug-polymer compatibility studies using IR spectroscopy and numerous trials of formulations with varying proportions of drug, polymer, liquid paraffin and acetone volumes and varying concentrations of PEG-400. The microspheres obtained were in the range of 55-88μm in size with %CDR up to 94% with a maximum yield of 90%. The drug release pattern of the taste-masked microspheres was compared with marketed conventional tablets of Levofloxacin. The kinetics and mechanism of drug release were fitted into Zero-Order, First-Order, Hixson-Crowell, Higuchi and Korsemeyer-Peppas equations. The formulated microspheres ideally followed Higuchi square root mechanism indicating a diffusion dependent drug release. The microspheres were spherical in shape and of smooth surface as seen by their SEM micrographs and demonstrated good flow properties as depicted by the Carr’s index and Hausners ratio. In conclusion, taste-masked microspheres of Levofloxacin were successfully formulated for delivery through the oral route.
PDD-010

PREPARATION AND EVALUATION OF CROSCARMELLOSESODIUM AS DISINTEGRANT IN TABLETS

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Meloxicam and celecoxib tablets formulated employing croscarmellosesodium as disintegrant fulfilled all official requirements with regard to drug content hardness, friability and disintegration rapidly within two minutes then the bioavailability also increased. Intra and intergranular addition of croscarmellosesodium gave rapid and higher dissolution of the medicament from the tablets fulfilling the official dissolution rate was also higher than that from corresponding commercial tablets. This croscarmellosesodium was found to be an excellent disintegrant in the formulation of conventional and dispersible tablets. The prepared tablets were evaluated for dissolution and disintegration test apparatus test for the release rate studies by using UV spectrophotometric method using phosphate buffer (7.4), meloxicam 363nm, and celecoxib 252nm respectively.

PDD-012

NAIL DRUG DELIVERY AND ITS OPTIMISATION USING PENETRATION ENHANCEMENT

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Nail disorders comprise approximately 10% of all dermatological conditions. Nail drug delivery has been a topic of interest to the formulation scientists. The purpose of this review is to explore the difficulties in penetration of drug across nail plate & increase bioavailability of antifungal drug. The existing clinical evidence suggests that a key to successful treatment of fungal diseases of nail such as onychomycoses and nail psoriasis is by use of topical products. The topical therapy of nail diseases is desirable to avoid side effects associated with their systemic therapy, to achieve drug targeting at the site of action and to increase patient compliance. The factors, which affect drug uptake and permeation through the nail plate such as drug molecular size,
hydrophilicity / hydrophobicity, charge and the nature of the vehicle, have been reviewed. The success of the topical therapy lies in effectively overcoming the nail barrier. This can be achieved by disrupting the nail plate using penetration enhancers, which comprise physical techniques and chemical agents. These techniques along with their classification and mechanism have been reviewed. The physical techniques to enhance transungal transport include iontophoresis, manual and electrical nail abrasion, acid etching, ablation by lasers, microporation, application of low frequency ultrasounds and electric currents. Chemical agents to enhance transungal transport include thiols, sulphides, hydrogen peroxide, urea, water and enzymes. Finally, conclusion is drawn that by using synergistic approach offered by both physical and chemical techniques of penetration enhancement we can optimize drug delivery through nail

PDD-013

INSULIN DELIVERY IDEA BY MEDICATED JEWELLERY

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Rings, necklaces and earrings into which its Micro Array Patch (MAP) delivery system has been incorporated. The MAPs are arrays of solid micro protrusions that can be made from biocompatible and biodegradable polymers to which drugs can be attached or integrated the base polymer. It is designed to deliver large and small molecules across the outer impermeable layer of the skin, the stratum corneum. Jewellery may by eye-catching and compliance friendly enough to win over diabetics keen to sidestep daily regime of pills. It believes that system’s steady release of insulin over a prolonged period mean that it produces steady-state levels of blood insulin, decreasing the peaks and troughs that are common to other diabetes medicines. It has not limited its ambitions for MAP to just insulin, arguing that the system is ideal for drugs with short half-lives and those that are too potent to be administered orally or via inhalation. The firm also says that because the platform administers compounds systemically in a way that bypasses the liver metabolism it is particularly suited for the delivery of toxic medications. The project is to provide diabetics with a convenient treatment option that boosts compliance and has a minimal impact on quality of life.
PDD-014

NOVEL DRUG DELIVERY SYSTEM USING STEALTH NANOPARTICLES

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Basic goal of novel drug delivery system using stealth nanoparticles is to achieve a steady state blood or tissue level that is therapeutically effective and non toxic for extended period of time and site specific delivery with increased efficacy of drug. The conventional nanoparticles become recognizable to the mono nuclear phagocytic system (MPS) and are cleared from circulation by phagocytosis. In order to overcome these disadvantages and improve the in vivo survival rate of nanoparticles, researchers are trying to engineer a long circulating nanocarrier with a surface that can avoid opsonin adsorption and the subsequent clearance from the body by phagocytic cells. For achieving this, nanoparticles surfaces are being modified by the incorporation of polyethylene glycol during nanoparticle formulation. And this incorporation has illustrated a decreased uptake by cells of the MPS and an increased circulation time to effectively target diseased cells. Hence our present objective is to study about stealth nanoparticle systems capable of prolonging circulation time and thus drug action. The use of such nanoparticles to deliver therapeutic agents like methotrexate and paclitaxel, were already formulated and are currently being studied. These systems effectively target specific cells in the body such as cancerous cells. Thus study can be undertaken to explore the feasibility of employing stealth nanoparticles for encapsulation of other drugs as a potential drug delivery systems in cancer chemotherapy and can be extended to treat many more diseases.

PDD-015

FORMULATION AND EVALUATION OF AMODIAQUINE HYDROCHLORIDE TABLETS

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Malaria is the world’s most important parasitic infection in man, is one of the most serious challenges to modern health care. Amodiaquine is a 4-amino quinoline similar to chloroquine that has been used widely to treat and prevent malaria as well as other indications including rheumatoid arthritis and lupus erythematosus. But 30-40 % drugs did not meet the USP specification for content and /or dissolution. They were found to be sub-standard Amodiaquine products. Further this work was intensified is
to formulate a solid dosage form of Amodiaquine HCl in the management of plasmodium falciparum malaria. A suitable solid oral dosage form of Amodiaquine HCl tablets was developed using suitable excipients and method gathered from the literature review and drug profile. The prepared Amodiaquine HCl tablet was finally evaluated by USP method. The release profile was matching with in-house specification. Hence the formula developed will be used commercially after getting satisfactory result from stability studies.

PDD-016

SPL7013 VIVA GEL “THE MOST AWAITED DRUG IN THE WORLD”

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VivaGel (SPL7013 Gel) is a topical vaginal microbicide for the prevention of infection with HIV and HSV-2. This drug is the most efficient drug dealing with the complete prevention of various sexually transmitted infections (STI). HIV and HSV-2 are widely prevalent diseases with no known cure. SPL7013 is assembled by the addition of lysine molecules in layers onto a central core to form a dendrimer, the surface of which is derivatised with sodium naphthalene disulfonate. The mechanism of action for SPL7013 for both pathogens is prevention of attachment of the virus to human cells. Viva Gel was also found to be safe and efficacious at different clinical phases of which results are enclosed.

PDD-017

ECO-FRIENDLY PRACTICES IN PHARMACEUTICAL INDUSTRY

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One of the major current challenges before Chemists is to develop synthetic methods that are less polluting i.e. to design clean or green chemical transformation. Here it deals with Supported Acid Catalysts (SAC) developed as alternatives for the conventional ones in organic synthesis; they have advantages such as producing less toxic wastes and using less energy, as current system in effluent treatment in pharmaceutical industry is not appropriate in terms of environment. In order to revive the environmental balance we have to practice green chemistry in our pharmaceutical industry. Use of Solid Phase Organic Chemistry (SPOC) and Supported Acid
Catalysts (SAC) are one of the powerful and effective Medias in order to maintain environmental balance. Ability of recovering the effluent increased greatly by employing SPOC and SAC, in recent times tailor made Alumina, Silica, Zeolites, and Resins are been used for the effective effluent treatment system. This is an attempt to address the problem of effluent treatment in pharmaceutical industry.

KEY WORDS: Green Chemistry, effluent treatment, SPOC, SAC.

PDD-018

STUDY OF ADVANCES IN NON– INTRUSIVE INSULIN DELIVERY METHODS FOR MANAGEMENT OF DIABETES

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The objective of the present review is to advocate the use of non-intrusive insulin delivery devices. In the recent past, many innovative and non-invasive methods of insulin administration have become available that tend to render diabetes management sweeter than ever. These include, mainly, insulin pens, insulin pumps and jet injectors. Insulin pens are hassle-free and ensure precise dosing in which pain is significantly reduced. Insulin pumps may be of open loop or closed loop type. They ensure regular delivery of insulin and zero out any human error. Jet injectors are less frequently used as they are cumbersome but may prove advantageous as they cause less tissue damage. More recent non invasive delivery methods include transdermal insulin patches, oral insulin pills and oral insulin inhalers. Transdermal patches provide a perfect needle free 24-hour delivery of insulin and are easy to use. While oral and inhaled insulin are under Phase-I human trials, they seem to be promising routes for insulin delivery in the near future. Meanwhile, patients today can benefit from the numerous alternatives to syringes.

KEY WORDS: Non-intrusive Insulin Delivery Methods, Insulin pens, Insulin pumps, Jet injectors, Transdermal insulin patches, oral insulin pills, oral insulin inhalers.
PDD-019

MAGIC BULLETS: A NOVEL ERA OF CANCER THERAPY AND VACCINATION

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The concept of magic bullets was first proposed by Paul Ehrlich, one of the outstanding contributors to the modern science of antimicrobial chemotherapy. Magic bullet is a drug delivery system through a cell loaded with an appropriate treatment molecule, which upon injection into patients, migrate through the circulatory system directly to the diseased site. The treatment molecule is genetically recombinant DNA used to deliver genes for therapeutic purposes especially in cancer therapy. They are also proved to be effective in vaccination therapy. More specifically magic bullets are antibodies, directed at tumor-specific antigens that would destroy cancers while sparing noncancerous tissue, thus avoiding the adverse effects of other conventional methods. Before injection, the antibodies are masked by attaching them to organic oil that renders them ineffective. Once in place, a beam of ultraviolet light breaks that mask, bringing the antibody back to life. The antibody then binds to T-cells and triggers them to target the surrounding tissue. General limitation of process involves poor efficacy and a limiting immune response for used antibody. But when compared with drawbacks of other methods like chemotherapy or radiotherapy, magic bullets will be much flattering. Scientists are expressing a renewed optimism for the magic bullet, once again anticipating a healthy future for novel antibody-based therapeutic options. If feat, magic bullet against infectious disease may turn out to be a gold projectile.

PDD-020

PHYTOSOMES: A POTENTIAL PHYTO-PHOSPHOLIPID CARRIERS FOR HERBAL DRUG DELIVERY

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The potential uses of large number of herbal drugs are limited due to their poor absorption and poor bioavailability after oral administration. The bioavailability can be improved by formulating a appropriate drug delivery system, which can enhance the rate and the extent of drug absorption across the lipoid biomembrane.
Phospholipids based drug delivery system have been found promising for better and effective delivery of drug and providing much appropriate systematic drug delivery. The phospholipid molecular structure includes a water-soluble head and two fat-soluble tails, because of this dual solubility, the phospholipid acts as an effective emulsifier, which is also one of the chief components of the membranes in our cells. "Phytosome" is formed by complexing the polyphenolic phytoconstituents in molar ratio with phosphatidylcholine. Phytosomes are advanced forms of herbal products that are better absorbed, utilized, and as a result produce better drug delivery than conventional herbal extracts. This article reviews the current trends in phytosomes drug delivery.

KEYWORD: Phytosomes, Phospholipids, Drug Delivery

PDD-021

RECENT CHALLENGES IN INSULIN DELIVERY SYSTEM

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Relatively, a large percentage of world population is affected by Diabetes Mellitus, out of which approximately 5%-10% with type one Diabetes while remaining 90% with type two. Insulin administration is essential for type one patient while it is required at later stage by the patient of type two. Current Insulin delivery system are available as transdermal injection which may be considered as invasive. Several non-invasive approaches for Insulin delivery are being pursued by pharmaceutical companies to reduce the pain and Hypoglycemic incidences associated with injections in order to improve patient compliance. While any few Insulin delivery system require health authorities approval to provide long term safety profiles and insuring patients acceptance. The inhalation delivery system (Exubera) has already become clinically available in the United State and Europe for patients with Diabets as non-invasive delivery system. Therefore the present article emphases the novel approaches in the Insulin delivery system.
PDD-023

LACTOBACILLI AS A HOST FOR GENE EXPRESSION AND DRUG DELIVERY TOOL IN MAMMALS

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Lactobacilli is one of the most common micro-organism in diverse vegetables, meat products and many of these are also indigenous inhabitants in the gastrointestinal (GI) tract of humans and animals, where they are believed to promote the health of the host. Their ability of producing antimicrobial peptides called “bacteriocins”, which inhibit the growth of pathogens, is considered as a probiotic effect. L.plantarum C11 produces two bacteriocins of subclass IIb, i.e. non-modified bacteriocins whose activity is dependent on the action of two different peptides. Production of these bacteriocins is being strictly regulated through a quorum-sensing (QS) based mechanism mediated by a secreted peptide pheromone (also called induction peptide; IT), a membrane located sensor (histidine protein kinase; HPK) and a cytoplasmic response regulator (RR). The interaction between an IP and its sensor (HPK), is highly specific and leads to the activation of the cytoplasmic response regulator (RR), which in turn binds to regulated promotor and activates gene expression. The signaling between HPK’s and RR within a network is efficient, directional and can be easily activated by exogenously added synthetic IP’s. However, components from such regulatory networks have been exploited in construction of a number of inducible gene expression systems. The quorums-sensing based mechanism involves the production of bacteriocin with focus on the use of regulatory components in gene expression. The therapeutic prospectus and a possible role on live micro organisms will be discussed.

PDD-27

FORMULATION DEVELOPMENT OF KETOPROFEN SR PELLETS

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The Ketoprofen SR Pellets formulate in multi particulate system so that reduces the gastric residence time. The release profile are designed in such way that to resist the drug release at low pH of gastric fluid and release the drug in controlled rate in the higher pH of intestinal fluid.
EXCIPIENT SELECTION: Compatibility screening of a number of excipients was performed at the preformulation stage of development to obtain potential incompatibilities between ketoprofen and excipients. It was concluded that ketoprofen was compatible with all excipients used in the final formulation. The coated pellets should be ≤ 1.0mm. The rationale for this design decision rests on the fact that pellet size is small enough to pass through the pyloric sphincter. The SR pellets are coated with a rate controlling membrane that controls drug release; a membrane comprised of ethylcellulose and DBP was chosen based upon development experience.

EXCIPIENT SELECTION: HPMC and PVPK was chosen as a binder to help the ketoprofen adhere to the sugar spheres. Ethylcellulose and DBP were chosen as components of the rate controlling membrane. Sugar Spheres: sugar spheres with a particle size distribution of 25-30# were selected. Additionally, the particle size constraint of 25-30# ensures that the coated pellets are ≤ 1.0mm.

STABILITY OPTIMIZATION: During the development, studies on various laboratory scale trial formulations qualitatively similar to the finalized formulation. Formulation investigated under accelerated stability test conditions (40°C / 75% RH, 4 weeks). These studies suggested that ketoprofen fall well within the proposed stability specifications.

PDD-029

DEVELOPMENT AND EVALUATION OF AN ANTIHYPERTENSIVE PRODRUG FOR BUCCAL DELIVERY

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Within the oral mucosal cavity, the buccal region offers an attractive route of administration for systemic drug delivery. The buccal mucosa has rich blood supply and it is relatively permeable. Because of the less flow of saliva in the buccal area, as compared to the sublingual region, the residence time of such a delivery system would be longer at the buccal tissue than on the sublingual mucosa, from which it would presumably be washed off quickly. Therefore, the buccal area is considered to be the best site for oral mucosal drug delivery. Furthermore, such a delivery system can be designed for controlled or sustained drug release. When the delivery system remains attached on to the buccal mucosa for a prolonged period of time, sustained drug delivery can be obtained. Basically, most of the bioadhesive drug delivery systems are made in the form of adhesive tablets, compacts, patches, films, adhesive gels etc. Trandolapril bilaminated mucoadhesive films were formulated by solvent casting.
technique using rate controlling, bioadhesive polymer combinations (Gantrez-HPMCK4M)/ (Luctoman- HPMCK4M) and by using two different plasticizers propylene glycol and glycerin. The backing layer was made up of ethyl cellulose. Prepared films were evaluated for weight variation, thickness, surface pH, swelling index, folding endurance, In vitro mucoadhesion test, In vitro residence time, Stability in buffer solution, Stability in human saliva, Water vapor transmission rate studies for film and In vitro release studies. The double-layered structure design was expected to provide drug delivery in a unidirectional fashion to the mucosa and avoid loss of drug due to wash-out with saliva. The Bilaminated films showed a sustained drug release in a phosphate buffer (pH 6.4).

.PDD-030

PREPARATION AND EVALUATION OF FLOATING DRUG DELIVERY SYSTEM USING NATURAL POLYMERS

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Natural polymers and their derivatives are used widely in pharmaceutical dosage forms. These natural polysaccharides hold advantages over synthetic polymers, generally because they are non toxic, less expensive and freely available. Biopolymers can be modified to have tailor-made materials for drug delivery systems and thus can compete with synthetic biodegradable materials available in the market. Ghatti gum and karaya gum are natural polymers obtained as gum exudates. The aim of the present work was to study the effect of ghatti gum and karaya gum as carriers in developing floating tablets using Tramadol as model drug. Tramadol is a opioid analgesic. It acts as a weak agonist at all types of opioid receptors with some selectivity for the mu-receptors. The formulations were prepared by varying the concentrations of polymers under study. The tablets were prepared by direct compression technique using PVP K-30 as binder and sodium bicarbonate for development of CO2. The prepared formulations were evaluated for hardness, thickness, friability, weight variation, floating capability, dimensional stability, swelling studies, erosion studies and FTIR for its compatibility. In vitro dissolution was carried out in pH 1.2 HCl buffer at 37±1 °C using basket type USP dissolution apparatus. The drug release from prepared tablets was found to be vary with vary in gum concentration. From the study it was concluded that floating drug delivery system can be prepared by using the use of natural polymers as carriers.
PDD-032

DESIGN AND DEVELOPMENT OF OFLOXACIN LOADED ALGINATE/CHITOSAN NANOPARTICLES FOR OCULAR DRUG DELIVERY.


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In recent years considerable effects has been made to develop nanotechnology for drug delivery. Since, it offers offer a promising tool for delivering small molecular weight drugs, peptides or genes to cells or tissues. Major problem encountered with the conventional topical delivery of ophthalmic drugs in the rapid and extensive pre-corneal loss caused by the drainage and high tear fluid turnover. Most efforts in ophthalmic drug delivery have been focused on increasing the corneal penetration of drugs with the final goal of improving the therapeutic overcome for treatments of different ocular disease using colloidal drug delivery systems. The alginate chitosin/nanoparticles were prepared in two step procedures using ionotropic and pre-polyeactionic cross linking with chitosan polymer. The prepared nanoparticles were evaluated for particle size determination, study on drug to polymer ratio, drug loading capacity and in vitro release studies. The sizes of nanoparticles were found to be in the range of 140-240nm with an average of 184.4nm. The effect of drug to polymer ratio revealed that there was an increase in concentration of drug loading was found up to 20 mg of drug incorporated and further there was a decrease in drug loading due to the saturation capacity of polymer. In vitro release studies were carried out using artificial tear fluid pH 7.4 for 24 hours. The results suggested that the nanoparticles prepared using 20 mg of drug exhibited 94.17% drug release at the end of 24 hours. The release of the drug from the nanoparticles was found to be fickian model obeying first order kinetics.

PDD-034

NON-IONIC SURFACTANT BASED VESICLES (NIOSOMES) IN DRUG DELIVERY

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The self assembly of non-ionic surfactants into vesicles was first reported in the seventies by researchers in the cosmetic industry. Since then a number of groups
world wide have studied non-ionic surfactant vesicles (niosomes) with a view to evaluating their potential as drug carriers. This review presents a summary of the achievements in the field to date. Niosomes are found to be formed from a diverse array of amphiphiles bearing sugar, polyoxyethylene, polyglycerol, crown ether and amino acid hydrophilic head groups, and these amphiphiles typically possess one to two hydrophobic alkyl, perfluoroalkyl or steroidal groups. The self assembly of surfactants into niosomes is governed not only by the nature of the surfactant, but also by the presence of membrane additives, the nature of the drug encapsulated and the actual method of preparation. Methods of niosome preparation and the number of different morphologies that have been identified are detailed. The influence of formulation factors on niosome stability is also examined as the methods to optimise drug loading. In vivo these systems have been evaluated as immunological adjuvants, anti-cancer/anti-infective drug targeting agents and carriers of anti-inflammatory drugs. Niosomes have also been used in diagnostic imaging. Efforts to achieve transdermal and ophthalmic drug delivery with some formulations are also discussed.

PDD-039
CARRIERS FOR DRUG DELIVERY & DRUG TARGETING

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The drug delivery technology has certainly infused new interest in seemingly traditional old drugs by providing new life specifically through their therapeutic targets. Carrier is one of the most important entities essentially required for successful transportation of the loaded drugs. Carriers can do so either through an inherent characteristics / acquired to interact selectively with biological targets, or otherwise they are engineered to release the drug in the proximity of target cell lines demanding optimal pharmacological action. Delivery systems developed and exploited in the last decennia for ligand directed receptor mediated targeting are mainly focuses on liposomes, niosomes, multiple emulsions, nanoparticles, microspheres, resealed erythrocytes, bioconjugates, fusogenic proteins and peptides. They are drug vectors which sequester transport & retain drug en route, which elute or deliver it within/ in the vicinity of the target. The distinctive and defined intrinsic passivity of carrier decides its ultimate bio distribution. Target orientated drug administration with improvements in therapeutic efficacy, reduction in side effects and optimized dosing regimen, shall be the leading trends in the area of therapeutics. Advent of nanotechnology has infused new dimensions in to the target orientated drug delivery through self assembling supra molecules based nanostructures. This topic summarizes the carriers in the drug delivery system.
PDD-041

THermo & pH – Responsive Polymers in Drug Delivery

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Synthetic polymers are of increasing interest in drug delivery as therapeutic agent. Polymers show an improved pharmacokinetics compared to small molecule drugs with longer circulation time and the potential for tissue targeting. If the polymer is not drug itself, it often provides a passive function as a drug carrier, reducing immunogenicity, toxicity or degradation, whilst improving circulation time and potentially a passive targeting function. Stimuli responsive polymers show a sharp change in properties upon a small or modest change in environmental condition. Ex: temperature, light, salt concentration or pH. This can be a change in conformation, change in solubility, alteration of the hydrophilic/hydrophobic balance or release of a bioactive molecule (Ex: drug molecule). This behavior can be utilized for the preparation of so called ‘smart’ drug delivery systems, which mimic biological response behavior to a certain extent. Different organs, tissues and cellular compartments may have large differences in pH, which makes the pH a suitable stimulus. My discussion deals with pH responsive and thermo responsive drug delivery system. The pH responsive swelling and collapsing behaviour has been used to induce controlled release of model compounds like caffeine, Indomethacin etc. The pH responsive polymers under discussion includes classical monomers of acrylic acid (AAc) methacrylic acid (MAAc), N, N dimethyl aminoethyl methacrylate (DMAEMA), poly ethylene imine (PEI) etc. The thermo responsive polymers shows the thermo dynamic phenomena which explain the balance between entropic effects due to the dissolution process. The thermo polymers under discussion includes PNIPAM gels, poly (methyl vinyl ether), poly(GVGVP) etc.

PDD-043

Nano-Vehicular Delivery- A Novelty

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Nanovehicular delivery is a unique method to deliver medication by controlled release over extended periods of time with a possibility of intracellular drug uptake. Gene transport, accumulation and retention (collectively called as drug delivery) by means of nanovehicles or nanoparticles(NV) are made from a mixture of natural polymers. NV are defined as a wide range of nanosized particles leading to colloidal objects.
Nanoparticles have neutral core with a cationic or anionic corona. NVs are retained, as the exocytosis is minimal for non-targeted nanoparticles, this enhances intracellular therapeutic effects. Nanodelivery methods can widen a therapeutic window to enable intracellular delivery of agents especially within the vascular and tumor compartments and for aseptic operations.

PDD-044

FORMULATION AND EVALUATION OF PROMETHAZINE THEOCLATE MOUTH DISSOLVING TABLETS CONTAINING SUBLIMING AGENT

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PURPOSE: The present work aims to formulate Promethazine theoclate mouth dissolving tablets, by direct compression method.

METHOD: Mouth dissolving tablets were prepared using subliming agent, camphor and sodium starch glycolate or polyplasdone XL 10 as superdisintegrants. The formulation was evaluated for weight variation, hardness, friability, wetting time, in vitro dispersion time and in vitro dissolution.

RESULT: All the formulations showed low weight variation with good in vitro dispersion and wetting properties in presence of subliming agent. It was observed that the dispersion time of formulation F was found to be significantly affected (at P < 0.0001) on addition of camphor. The result reveals that tablet containing subliming agent had a good dissolution profile.

CONCLUSION: The study shows that dissolution rate of promethazine theoclate can be enhanced to a great extent by direct compression technique with the addition of superdisintegrant and subliming agent, which give quick relief from emesis. The tablet exhibited good in vitro dispersion and wetting properties in presence of
subliming agent. Thus the present study demonstrated potential for rapid absorption, improved bioavailability, effective therapy and patient compliance.

PDD-045

RESEALED ERYTHROCYTES: A POTENT DRUG DELIVERY CARRIER AND ITS APPLICATIONS

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Erythrocytes have been extensively studied for their potential carrier capabilities for the delivery of drugs and drug-loaded microspheres. Such drug-loaded carrier erythrocytes are prepared simply by collecting blood samples from the organism of interest, separating erythrocytes from plasma, entrapping drug in the erythrocytes, and resealing the resultant cellular carriers. Hence, these carriers are called resealed erythrocytes. When erythrocytes are suspended in a hypotonic medium, they swell to about one and a half times their normal size and the membrane ruptures, resulting in the formation of pores. The pores allow equilibrium of intra and extra cellular solutions. If the ionic strength of the medium is adjusted to isotonicity and cells are incubated at 37 degree celsius, then the pores close causing erythrocytes to reseal. The overall process is based on the response of these cells under osmotic conditions. Upon reinjection, the drug-loaded erythrocytes serve as slow circulating depots and target the drugs to a reticuloendothelial system. Advantages of using resealed erythrocytes as drug carriers are biocompatibility, biodegradability, being nonimmunogenic, long circulating half lives and they can be loaded with a variety of biologically active compounds.

PDD-046

RESEALED ERYTHROCYTES: A NOVEL DRUG DELIVERY SYSTEM

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Erythrocytes have been extensively studied for their potential carrier capabilities for the delivery of drugs and drug-loaded microspheres. Such drug-loaded carrier erythrocytes are prepared simply by collecting blood samples, separating erythrocytes from plasma, entrapping drug in the erythrocytes and resealing the resultant cellular carriers. Hence these carriers are called resealed erythrocytes. The overall process is based on the response of these cells under osmotic conditions. Upon re-injection the drug-loaded erythrocytes serve as slow circulating depots for the sustained delivery of Antineoplastics, antiparasitics, veterinary anti amoebic, vitamins, steroids, antibiotics and cardiovascular drugs. Resealed erythrocytes can act as drug carriers and targeting tools as well. Surface modified erythrocytes are used to
target organs of mono nuclear phagocytic system or reticuloendothelial system. Nearly 25% of the patients with ulcerative colitis requiring steroids therapy become steroid-dependant after 1 year, and virtually all developed steroid related adverse effects. Low doses of dexamethasone 21-P loaded into autologous erythrocytes were significantly more effective in contrast to oral prednisolone. No steroid related adverse events were induced. Responses to exchange transfusion using red blood cells with modified hemoglobin oxygen affinity were studied. Allosteric effectors like inositol hexa phosphate (IHP) and 5-hydroxy methyl-2-furfural (5HMF) decrease and increase Hb-O2 affinity respectively.

PDD-047

DEVELOPMENT OF COLON TARGETING DRUG DELIVERY SYSTEM IBUPROFEN

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A novel colon targeted tablet formulation was developed using natural polysaccharides such as chitosan and guar gum as carriers and Ibuprofen as model drug. The prepared polymer-drug blend tablets were coated with two layers of polymers, inulin as an inner coat followed by shellac as outer coat and were evaluated for properties such as average weight, hardness and coat thickness. In vitro release studies of prepared tablets were carried out for 2 hrs in pH 1.2 HCl buffer, 3 hrs in pH 7.4 phosphate buffer and 6 hrs in simulated colonic fluid (SCF) in order to mimic the conditions from mouth to colon. The drug release from the coated system was monitored using UV/Visible spectroscopy at respected wavelengths. In vitro studies revealed that the tablets coated with inulin and shellac have controlled the drug release in stomach and small intestinal environment and released maximum amount of drug in the colonic environment. Among the matrix polymers used, chitosan was found to be the suitable polymer for colon targeting. The study revealed that polysaccharides as carriers and inulin and shellac as a coating materials can be used effectively for colon targeting of drugs for treating local as well as systemic disorders.
OSMOTIC DRUG DELIVERY: AN OVERVIEW

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Control release products provide significant benefits over immediate release formulation, including greater effectiveness in the treatment of chronic conditions, reduced side effects, and greater patient convenience due to simplified dosing schedule. A number of design options are available to control or modulate the drug release from a dosage form. Majority of per oral dosage form fall in the category of matrix, reservoir or osmotic system. In matrix system, the drug is embedded in polymer matrix and the release takes place by partitioning of drug into the polymer matrix and the release medium. In contrast, reservoir systems have a drug core surrounded/coated by the rate controlling membrane. However factor like pH, presence of food and other physiological factor may affect drug release from conventional controlled release systems. Osmotic systems utilize the principle of osmotic pressure for the delivery of drugs. Drug release from these systems is independent of pH and other physiological parameter to a large extent and it is possible to modulate the release characteristic by optimizing the properties of drug and system.

RIDDS: NEXT IS HERE, ARE WE READY?

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The scientific community has been researching for a drug delivery that would not only be more targeted in distribution, but would also lead to better absorption and elimination of the drug, improvement in the efficacy and safety of the drug, along with enhancing patient convenience and compliance. One of the fruitful outcomes of this is the Remote Intelligence Drug Delivery System (RIDDS) which holds an enormous promise for patients, especially the aged, and the physically and mentally challenged patients for whom administration of medicines is a task. The devices
developed by this system are in the form of oral (electronic endoscopic) pills, subcutaneous implants, ophthalmic vitreous implants, chemotherapeutic implants etc. They are well equipped with micro reservoirs containing drugs, targeted and accurate drug release through either pre-programming or through wireless, and biosensors for patient monitoring. Use of these devices in certain conditions like extremely low blood sugar, hypoglycaemia, where being able to fix somebody with a dose that they are no longer at high clinical risk would be an advantage. Furthermore delivering the required drugs directly to the site of disease, the drug release profiles may be tailored to the needs of the individual patient with minimum side effects. Hence our present objective is to study about Remote Intelligence Drug Delivery System (RIDDS) capable of accurate targeted drug release and thus drug action. Thus study can be undertaken to explore the feasibility of employing this system as a potential drug delivery systems in other umpteen number of diseases.

PDD-053

ADVANCED DRUG DELIVERY SYSTEM-MICROSPHERES

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The concept of the advanced drug delivery systems especially those offering a sustained and controlled action of drug to desired area of effect, attained great appeal for nearly half century. The microparticulate delivery systems are considered and accepted as a reliable means to deliver the drug to the target site with specificity, if modified, and to maintain the desired concentration at the site of interest without untoward effect. Microspheres-Introduction, Material used, Prerequisites for ideal microparticulate carriers, General methods of preparation, Loading of drug, Drug release kinetics, Polymeric microspheres, Fate of microspheres in body, Application, Future perspective.

PDD-054

INTELLIGENT DRUG DELIVERY SYSTEM

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An intelligent drug delivery system potential for the more effective therapy of the chronic diseases were proposed & the composition of system was analyzed. Based on the design of the Micro-Electro-Mechanical system (MEMS), an interactive modeling process was introduced. This drug delivery system can be employed by the use of the
micro robot, radiation, polymeric micelles & hydrogels, through buccal cavity, computer program & infrared communication, programming control release of drug, intraoral micro system, by the synthesis of stimuli sensitive polymer and by the nanoscale bioreactors. This system is used in the diabetes, cancer, etc severe diseases. This drug delivery system increases bioavailability of the drug molecules by the decreasing loss of drug and also decreasing the first pass metabolism. This system can be employed to the unconscious patient and the doctor can handle the dose of drug through the remote control. So the doctor can handle more patients simultaneously and accurately.

PDD-055

CYCLODEXTRIN BASED PHARMACEUTICS: PAST, PRESENT AND FUTURE

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Cyclodextrins are cyclic oligomers of glucose that can form water-soluble inclusion complexes with small molecules and portions of large compounds. These biocompatible, cyclic oligosaccharides do not elicit immune responses and have low toxicities in animals and humans. Cyclodextrins are used in pharmaceutical applications for numerous purposes, including improving the bioavailability of drugs. Current cyclodextrin-based therapeutics are described and possible future applications discussed. Cyclodextrin-containing polymers are reviewed and their use in drug delivery presented. Of specific interest is the use of cyclodextrin-containing polymers to provide unique capabilities for the delivery of nucleic acids

PDD-056

FORMULATION DEVELOPMENT AND OPTIMIZATION OF NANOEMULSION SYSTEM CONTAINING FELODIPINE

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Nanoemulsion drug delivery system is being applied to enhance the solubility and bioavailability of lipophilic drugs. The solubility of Felodipine was determined in various oils and found to be maximum in Oleic acid. Studies were carried out by water titration method. Tween 80 (surfactant) and ethanol (cosurfactant) were mixed
in different weight ratios from 1:1 to 1:9 and vice versa, to obtain the surfactant and cosurfactant mixture (smix). Oleic acid (oil phase) and smix were then mixed at weight ratios of 1:9 to 9:1. Temperature was maintained at 40°C with continuous stirring. These mixtures were diluted with water under moderate agitation. The samples were assessed visually to determine clarity and fluidity. The selection of formulation was based on maximum percentage of oil solubilised in minimum concentration of smix ratio and thermodynamic stability. Based on visual observation and stability studies, the best formulations were selected for further studies. Viscosity of all the formulations was found to be less than 28Cp. Particle size by TEM studies was found in range of 20-100nm. Drug content was found to be 96.5%. In vitro dissolution studies were carried out in 3 type of media (pH1-2, pH4.5 and pH6.8). The % drug release at different pH was found to be 15.92 to 95.54 % in 1 hour. Based on these observations it is concluded that formulated nanoemulsion has good stability, higher solubilization capacity for drug in oil over emulsion and suspension, because they can be manufactured with little energy input and have a long shelf life.

**PDD-057**

**FORMULATION AND EVALUATION OF CARVEDILOL BUCCAL TABLET**

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The buccal mucosa is an attractive site for the delivery of therapeutic agents, and can be ideal for compound unsuited to oral delivery. Excellent accessibility, high patient acceptance, compliance and robustness give an attractive feature to oral mucosa. The development of adhesive dosage form via mucous membrane is of interest with regard to drug poorly absorbed from the gastrointestinal tract. Because of rich blood supply and direct access to systemic circulation, the oral mucosal route is suitable for drugs, which are susceptible to acid hydrolysis in the stomach or which are extensively metabolized in the liver. It prevents drug from enzymatic degradation, easy to administer, easy removal of dosage form in case of toxicity, less frequent dosing. After oral administration of conventional tablet of carvedilol only 25 – 30% of the total dose reaches to systemic circulation because of its high first pass metabolism. Aim of the study is to increase the bioavailability of carvedilol by forming buccal tablet. Various formulations of mucoadhesive buccal tablets of Carvedilol were prepared using Carbopol and HPMC polymers in different proportions and combinations. The tablets were evaluated for different parameters like weight variation, friability, in-vitro release, content uniformity, hardness, swelling index, surface pH, mucoadhesive strength and the results found to comply with official compendia’s. Bioavailability is significantly increased as the formulation (D-6) with carbopol 5mg and HPMC 58.5mg showed in-vitro drug release of 82.7%, and stability
study was carried at 75% ± 5% RH for two months and 80% ± 5% RH for two weeks. Thus it can be concluded that the formulation is stable.

PDD-058

ANTI-HIV PEG-DIDANOSINE CONJUGATES: SYNTHESIS, CHARACTERIZATION AND IN-VITRO DRUG RELEASE STUDIES

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Didanosine (2’, 3’-dideoxyinosine, ddl) is an anti-retroviral agent. Its main limitations are its short half life (1.5hrs), acid labiality and dose limiting toxicities (peripheral neuropathy and pancreatitis). To overcome these limitations a macromolecular prodrug of ddl was synthesized for oral administration by coupling the ddl to polyethylene glycol via a succinic spacer. Didanosine was first reacted with succinic anhydride to form a succinoylated ddl which was then coupled with PEG to yield the PEG-ddl conjugate. The structures of the synthesized compound were characterized by FTIR, MASS & 1H-NMR spectroscopy. The drug conjugate was subjected for in-vitro drug release studies in buffers of pH 1.2 & 7.4 mimicking the upper & lower gastrointestinal tract. The results showed that the release of ddl from polymeric backbone takes place predominantly at pH 7.4 and in a sustained manner over a period of 12 h. This indicates that the macromolecular prodrug should release the drug in-vivo at the alkaline environment of the lower gastrointestinal tract. Thus this site specific & sustained drug release behavior of the conjugate should increase the bioavailability of the ddl by increasing its t1/2, maintaining the systemic drug concentration within the therapeutic range and decreasing the contact of the drug to the gastric acid.

PDD-060

CYCLODEXTRINS – IN SERTACONAZOLE FORMULATION AND DELIVERY

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Since their discovery, cyclodextrins are used in various drug formulations and in different modes of drug delivery. In addition, to their well known effects on drug solubility, bioavailability their safety and stability are well known. The present work was to develop novel hydrogels for delivering sertaconazole, based on cyclodextrins and various biocompatibility polysaccharides. Sertaconazole is an antifungal agent
very effective for treatment of candida albicans infection. However its poor aqueous solubility is still a challenging issue for developing suitable formulation. Complexation with cyclodextrins is a very attractive route to overcome this limitation, cyclodextrins with lipophilic inner cavities and hydrophilic outer surface are capable of interacting with a large molecule to form non-covalent inclusion complexes, which also enhances its antifungal property. Hydroxypropyl-β-cyclodextrin (HpβCD) hydrogels prepared by direct cross linking in the presence of hydroxypropylcellulose swelled in water without dissolving, which enables the formulation of microenvironments very rich in cyclodextrin cavities responsible for hosting the drug and control its release rate. HpβCD hydrogels showed a high capability to load sertaconazole (with partition co-efficient from 22-470), versatile biochemical properties (hardness and compressibility) and sustained release behavior (up to 4 days). Importantly, sertaconazole loaded cyclodextrins showed effectiveness against candida albicans in culture medium. HpβCD polysaccharide hydrogels could be useful as sertaconazole delivery systems for the treatment of mucosal infections

PDD-061

“FORMULATION, DEVELOPMENT AND EVALUATION OF VERAPAMIL HYDROCHLORIDE CONTROLLED RELEASE MATRIX TABLETS”

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Drug concentrations can be controlled within the narrow therapeutic range by the use of controlled release systems which will minimize the severity of side effects. Controlled release formulation may also be economical, because the average cost of the treatment over an extended time. Verapamil hydrochloride (C27H38N2O4.HCl) is widely used as anti hypertensive agent, anti anginal agent and anti arrthymatic agent. Since the drug has biological half life of 2-7.4 hrs given at least 3-4 times a day and rapidly absorbed with peak plasma concentration occurring at 10-30 min and having 35% of bioavailability. So it is selected to prepare a controlled release tablets. The objective of the present study is to develop competitive controlled release tablets of verapamil hydrochloride over a period of 24 hrs, by preparing granules using fluid bed granulator and by using different polymers and study the effect of polymers on their release pattern. Formulation of sustained release tablets of verapamil containing 13% HPMC K100 and 5% lubritab with binder PVP K30 can be taken as an ideal optimized formulation of controlled release tablets for 24 hrs release as it fulfills all the requirements controlled release tablet.
**PDD-062**

"FORMULATION AND EVALUATION OF GASTRORETTENTIVE FLOATING DRUG DELIVERY SYSTEM OF KETOPROFEN"

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Most of the oral dosage forms possess several physiological limitations such as variable gastrointestinal transit, because of gastric emptying leading to non uniform absorption profiles, incomplete drug release and shorter residence time of dosage form in the stomach. The hydrodynamic balance system (HBS) also called floating drug delivery system (FDDS) is an oral dosage form designed to prolong the residence time of the dosage form within the GIT. It is formulation of a drug with gel forming hydro colloids meant to remain buoying in the stomach contents. The drug dissolution and release from the dosage form retain in the stomach fluids occur at PH of the stomach under fairly controlled conditions. Ketoprofen is an effective NSAID used in the treatment of rheumatoid arthritis and osteoarthritis. It has short biological half life of 2-3 hrs and it is eliminated rapidly. HBS used in the formulation of Ketoprofen can prolong its duration of action and reduction of usage frequency. Floating tablets containing Ketoprofen were prepared by wet granulation technique using variable concentrations of HPMC K4M, HPMC K100M, and ethyl cellulose and various in vitro studies were carried out. Thus it is summarized and concluded that HPMC K4M, HPMC K100M and ethyl cellulose can be successfully used in formulation of ketoprofen sustained release gastroretentive floating drug delivery system using low density polymer.

**PDD-063**

FORMULATION AND EVALUATION OF NIFEDIPINE SUBLINGUAL TABLETS

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The aim of this study was to evaluate the effect of increasing nifedipine load on the characteristics of fast-disintegrating sublingual tablets for the potential emergency treatment of anginal pain and hypertension. Nifedipine undergoes first pass metabolism in liver and gut wall, which has oral bioavailabilities of 43-77%. Sublingual dosage form bypasses the metabolism of the nifedipine in liver and offers a fast relieve from anginal pain and hypertension. An attempt has been made to prepare fast dissolving tablets of nifedipine using super distintegrants like cros carmellose...
sodium, sodium starch glycolate, crose povidone. Five different formulations (F1, F2, F3, F4, and F5) with variation in tablets Excipients were prepared by direct compression method. Tablet weight variation, hardness, friability, drug content, disintegration time and dissolution time were evaluated for each formulation and found satisfactory. The studied sublingual tablet formulation ‘F1’ shows a lesser T50% compared to commercial oral tablet. The formulation ‘F1’ also indicated the fast dissolution and disintegration rate of the optimized nifedipine sublingual tablet, which is prerequisite for rapid management of anginal and hypertension diseases.

**KEY WORDS:** Sublingual tablets, nifedipine, fast drug release, hypertension, anginal pain.

**PDD-064**

**A REVIEW ON GASTRIC RETENTION DRUG DELIVERY SYSTEM**

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Gastric retention will provide advantages such as the delivery of drugs with narrow absorption windows in the small intestinal region. Also, longer residence time in the stomach could be advantageous for local action in the upper part of the small intestine, for example treatment of peptic ulcer disease. These drugs can be delivered ideally by slow release from the stomach. The control of Gastrointestinal (GI) transit profiles could be the focus of the next two decades and might result in the availability of new products with new therapeutic possibilities and substantial benefits for patients. Soon, the so-called ‘once-a-day’ formulations may be replaced by novel gastroretentive products with release and absorption phases of approximately 24 hours. Also, Gastric retention drug delivery system (GRDDS) will greatly improve the pharmacotherapy of the stomach itself through local drug release leading to high drug concentrations at gastric mucosa which are sustained over a large period. GRDDS, comprised mainly of floating, bioadhesive, and swellable systems, have emerged as an efficient means of enhancing the Bioavailability and controlled delivery of drugs that exhibit an absorption window. This review has been proposed with an aim to work on gastroretensive drug delivery, improved bioavailability is expected for drugs that are absorbed readily upon release in the GI tract and longer residence time in the stomach, treatment of peptic ulcer disease and control of drug release profiles.
PDD-065

FORMULATION AND EVALUATION OF CHITOSAN NANOSPHERES CONTAINING CYTARABINE

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Nanoparticles is a colloidal drug delivery system composed of synthetic or semisynthetic polymers ranging in size of 1-1000nm, in which the drug may be dispersed, encapsulated, absorbed or covalently attached. Numerous investigations have shown that both tissue and cell distribution profiles of anticancer drugs can be controlled by nanoparticles. The rationale behind this approach is to increase antitumor efficacy, while reducing systemic side-effects. Cytarabine a synthetic pyrimidine nucleoside acts by getting converted rapidly to cytosine arabinoside triphosphosphate, which damages DNA at the S phase (synthesis of DNA) of cell cycle. Chitosan nanoparticles containing cytarabine were prepared by ionotropic gelation method using Tripolyphosphate (TPP) solution as cross-linking agent. To determine the carrier capacity of chitosan with respect to Cytarabine, various batches of drug-loaded nanoparticles were prepared with varying concentration of drug to polymeric ratio. The efficacy of cross-linking capacity was studied by varying the concentration of TPP. Among the batches formulated, the batch containing 1.50mg of drug/ml of 0.4% polymer solution showed a comparatively higher percentage of drug release (93.51%) at the end of 18 hours. The particle size of placebo and drug loaded nanoparticles was found to be 415nm and 466nm respectively. The cumulative percentage drug release among the batches at the end of 18th hour ranged from 86.74% to 93.51%. The results shows that the nanoparticles is having better distribution of drug compared to free drug in different organs like spleen, lungs, kidney liver.

PDD-066

PLGA NANOPARTICULATE SYSTEM CONTAINING CARVEDILOL: AN APPROACH TO ENHANCE THE BIOAVAILABILITY AND SUSTAIN THE DRUG RELEASE

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Carvedilol, a potent antihypertensive drug, is lipophilic in nature with poor bioavailability (25-35%) and short biological half life (5-6hrs), thus it requires multiple daily dosing for maintenance of its therapeutic effects. Carvedilol suffers
from severe drawbacks of hypotensive, bradycardia, dizziness and fatigue. The study was aimed at preparing sustained release nanoparticles of Carvedilol using PLGA (polymer) for oral administration that will improve the bioavailability, reduce the hypotensive peak and prolong antihypertensive effect. Nanoparticles were prepared by Nanoprecipitation method and formulation was designed by 23 factorial design in which high and low levels of Carvedilol, PLGA and Pluronic F-68 were used to study influence of their concentration on drug release profile. FT-IR studies were carried out to find out possible interactions between selected polymer and drug. The total drug content in nanoparticle varied from 2.05-2.31 mg for 5mg drug loaded (Batch F1,F3,F5,F7) and 5.18-5.61mg for 10mg drug loaded (Batch F2,F4,F6,F8). Average nanoparticle size was in range of 132-234nm. SEM studies reveal that nanoparticles were nearly spherical in shape. Invitro drug release was studied by Dialysis bag diffusion technique. Smaller size nanoparticles prepared with lower amount of PLGA exhibited higher release rate (Batch F2,72.72%) compared to larger size nanoparticles prepared with higher amount of PLGA (Batch F3,56.5%). All the batches show drug release in a sustained manner over 24hrs suggests that frequency of administration, dose and adverse effects could be reduced. Invivo biodistribution studies were carried out in Wistar rats. Drug loaded nanoparticles showed better drug distribution to organs like heart, liver and kidney than free drug. Absence of burst effect may reduce initial hypotensive peak which improves use of Carvedilol for Antihypertensive treatment.

PDD-067
FORMULATION AND EVALUATION OF SUSTAINED RELEASE MATRIX TABLET OF THEOPHYLLINE USING NATURAL GUMS

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Theophylline, a methyl xanthane has proven efficacy as a bronchodilator in asthma. Especially, nocturnal asthma can be improved by slow release preparations of theophylline due to above mentioned fact and to overcome the difficulty in conventional dosage forms, it can be formulated into various sustained release dosage forms. The present work was to formulate theophylline matrix tablet to achieve sustained drug release for the treatment of chronic obstructive pulmonary disease (COPD) and nocturnal asthma. The matrix tablets were prepared using different polymers such as xanthan gum and guar gum. Formulation were prepared in varying concentration (10%, 15%, 20 % and 30 % ) of gums in 1:1 and comparative release profile were investigated. The granules were prepared by WEF granulation technique and evaluated for angle of repose, loose bulk density, tapped bulk density and compressibility index. The prepared tablets pass the weight variation, hardness, friability, mean thickness according to USP specifications. Percentage of drug content
varies from 97.58% to 103.89%. The invitro dissolution profile reveals that all the formulation was found to sustain the release and achieve the object when compared to market samples.

PDD-070

FAST DISSOLVING TABLETS: A PATIENT FRIENDLY DRUG DELIVERY SYSTEM

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Fast dissolving drug delivery system emerged from the desire to provide the patient with more conventional means of taking their medication. It is difficult for many patients (30-50% of the population) to swallow tablets and hard gelatin capsules. Hence they do not comply with prescription, which results in high incidence of non-compliance and ineffective therapy. These are used in case of motion sickness, sudden episode of allergic attack, cough, unavailability of water, mentally ill and non-cooperative patients with reduced liquid intake and traveling patients who do not have ready access to water. Swallowing difficulty in experiencing particularly by pediatrics and geriatric patients. To overcome this problem scientists have developed innovative drug delivery system known as “fast dissolving tablets”. These are novel solid oral dosage forms that disintegrate and dissolve rapidly in saliva without the actual need of water. These tablets disperse in saliva within 60 seconds. Some drugs are absorbed from mouth, pharynx and oesophagus as the saliva passes down into the stomach and produce rapid onset of action. In such cases, bioavailability of drug is significantly greater than those observed from conventional tablet dosage form.

KEY WORDS: - Fast dissolving tablets, saliva, rapid onset, greater bioavailability.

PDD-071

A POTENTIAL CARRIERS FOR TRANSDERMAL DRUG DELIVERY

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The literature is abounding with attempts made to enhance the delivery of drugs into the deep layers of the skin and through the skin. Ethosomes are noninvasive delivery carriers that enable drugs to reach the deep skin layers and/or the systemic circulation. Although ethosomal systems are conceptually sophisticated, they are characterized by simplicity in their preparation, safety, and efficacy a combination that can highly expand their application. Ethosomes are soft, malleable vesicles tailored for enhanced delivery of active agents. This article reviews various aspect of ethosomes including their preparation, characterization, potential advantages and their applications in drug delivery. Because of their unique structure, ethosomes are able to encapsulate and
deliver through the skin highly lipophilic molecules such as cannabinoids, testosterone, and minoxidil, as well as cationic drugs such as propranolol and trihexyphenidil. Ethosomes are provides a number of important benefits including improving the drug's efficacy, enhancing patient compliance and comfort and reducing the total cost of treatment. Enhanced delivery of bioactive molecules through the skin and cellular membranes by means of an ethosomal carrier opens numerous challenges and opportunities for the research and future development of novel improved therapies.

KEYWORD: Ethosomes, Transdermal delivery, Carriers.

PDD-072

ORAL DRUG DELIVERY APPROACHES OF PROTEINS AND PEPTIDES


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Injections remained the most common means for administering therapeutic proteins and peptides, till recent. Major efforts have been directed towards developing effective oral formulations and increasing the oral absorption of intact protein through the use of formulations that protect the macromolecule and enhance it's uptake into the intestinal mucosa. Oral route is preferred to any other route because of its high levels of patient acceptance and long term compliance, which increases the therapeutic value of the drug. For the efficient delivery of peptides and proteins by non-parenteral route, in particular via the gastrointestinal tract, novel concepts are needed to overcome significant enzymatic and diffusion barriers. Designing and formulating a polypeptide drug delivery through the gastrointestinal tract has been a persistent challenge because of their unfavorable physicochemical properties, which includes enzymatic degradation, poor membrane permeability and large molecular size. The main challenge is to improve the oral bioavailability from less than 1% to at least 30-50%. Consequently, efforts have intensified over the past few decades, where every oral dosage form used for the conventional small molecule drugs has been used to explore oral protein and peptide delivery.
PDD-074

MICROENCAPSULATION OF ZIDOVUDINE USING CHITOSAN-GEL MICROSPHERES

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The aim of the present work was to investigate the biodegradable polymer like chitosan adsorbed microspheres containing zidovudine. The zidovudine loaded chitosan microspheres was prepared in the size range of 12 µm to 60 µm by emulsion-cross linking technique using span-80 at different speed of agitation. All the formulations were evaluated for particle size, morphological characterizations, percentage of drug encapsulations, equilibrium swelling degree, percentage of mucoadhesion and in vitro dissolution study. The drug loaded spherical microspheres showed good mucoadhesive property and swelling behavior. The in vitro release profiles were applied on various kinetic models in order to find out the mechanism of drug release. The best fit with the highest correlation coefficient was observed in Higuchi model, indicating diffusion-controlled principle.

PDD-075

MODIFIED SUSTAINED RELEASE CHITOSAN-COATED ACTARIT MICROSPHERES

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Simple actarit microspheres (MS) were prepared by dry-in-oil method using ethylcellulose (EC) as a matrix polymer. Further, the microspheres modified by addition of polyethylene glycol (PEG) and hydroxypropyl cellulose (HPC), called MS-P and MS-H, respectively, were prepared. The in-vitro release from MS, MS-P and MS-H were examined in phosphate buffer, pH 6.8, at 37°C and 60 rpm. Chitosan-coated actarit microspheres (Chi-MP) were prepared by the precipitation of droplets of chitosan solution containing MS, and their adhesion to the rat small intestinal mucosa was tested. The plasma concentrations after duodenal administration were investigated for actarit powder suspension, MS, and Chi-MP. It is observed that the particle size was raised with the increase in amount of actarit added. The drug content and addition of PEG or HPC affected the drug release rate. The microspheres with moderate drug content, prepared by addition of modest amount of PEG, exhibited better gradual drug release. Chi-MP showed a good mucoadhesiion. The maximum plasma concentration of actarit for Chi-MP was less than one third of that for actarit.
powder suspension. Chi-MP tended to show the higher and steadier plasma levels than MS.

**PDD-076**

**THE NOSE MAY HELP THE BRAIN THROUGH INTRANASAL DRUG DELIVERY**

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The treatment of brain disorders is the greatest challenge because of a variety of formidable obstacles in effective drug delivery and maintaining therapeutic concentrations in the brain for a prolonged period. Many advanced and effective approaches to brain delivery of drugs have emerged in recent years. Intranasal drug delivery is one of the focused delivery options for brain targeting. The unique relationship between nasal cavity and cranial cavity tissues makes intranasal delivery to the brain feasible. The brain and nose compartments are connected to each other via the olfactory/trigeminal route and via peripheral circulation. In the past two decades, a good number of encouraging outcomes have been reported in the treatment of diseases of the brain or central nervous system (CNS) through nasal administration. In spite of the significant merit of bypassing the BBB, it still bears the problems of low efficiency. It is crucial that selective distribution and retention time of drugs or preparations on olfactory mucosa should be enhanced so as to increase the direct delivery efficiency. The development of nasal drug products for brain targeting is still faced with enormous challenges. A better understanding in terms of properties of the drug candidate, nose to brain transport mechanism, and transport to and within the brain is of utmost importance. An efficient way of drug delivery can be provided by combining the intranasal delivery system with the latest technologies like nanotechnology.

**PDD-077**

**RECENT STRATEGIES IN INSULIN DRUG DELIVERY AN OVERVIEW**


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A large percentage of world population is affected by Diabetes Mellitus. Insulin administration is essential for type 1 patients while it is required at later stage by the patients of type 2. For most patients, the worst part of the disease is to tolerate needle after needle, both for glucose measurement and to deliver insulin. In today's era, insulin delivery by alternative route is a topic of current interest in the design of drug
delivery system. Major global pharmaceutical companies are showing encouraging progress in their attempts to develop alternative insulin delivery technologies. An ideal insulin delivery system should deliver insulin in a pulsatile manner, control the rate of insulin delivery depending on blood glucose concentration, should be delivered into the portal circulation. The current insulin treatment does not meet these requirements; hence alternate routes are being developed. Needle-free insulin delivery appeared to be a wonderful approach and is comfortable and safe. The oral delivery though the most convenient and acceptable route however is degraded by intestinal enzymes therefore. Insulin was administered with enzyme inhibitors, coated with polymers in the form of nanocapsules, liposomes, microemulsions. To improve patient compliance, many insulin delivery systems like insulin sprays, pulmonary aerosols, transdermal are now available. The inhalation delivery system “Exubera” has already become clinically available in the United States and Europe for patients with diabetes as non-invasive delivery system. This review mainly focuses the development of different alternative approaches to parenteral route for delivering insulin with comfort.

PDD-078

TRANSDERMAL PATCHES – AN OVERVIEW


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Transdermal Drug delivery systems are now one of the hottest areas of pharmaceutical research and development. Transdermal drug delivery is the non-invasive delivery of medications from the surface of the skin and through its layers to the circulatory system. Transdermal patches are also called as skin patches that are medicated adhesive pads designed to release the active ingredient at a constant rate over a period of several hours to days after application to the skin. A skin patch uses a special membrane to control the rate at which the drug contained within the patch can pass through the skin and into the bloodstream. Transdermal dosage forms, though a costly alternative to the conventional formulations, are becoming popular because of some unique advantages like controlled zero-order absorption, simple administration mode and the option of easy removal in case of adverse manifestations make them particularly desirable in cardiovascular therapy. There are five main types of transdermal patches namely single-layer drug-in-adhesive, multi-layer drug-in-adhesive, reservoir, matrix and vapour patches. Transdermal patches are preferred as they show improved bioavailability, more uniform plasma levels and reduced side effects. Pharmaceutical companies are now developing new adhesives, molecular absorption enhancers and penetration enhancers that will enhance skin permeability and thus greatly expand the range of drugs that can be delivered transdermally.
THIXOTROPY- SIGNIFICANCE IN PHARMACEUTICAL FORMULATIONS

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The word “thixotropy” is defined as an isothermal and slow recovery, on standing of a material, of a consistency lost through shearing. Thixotropy can be applied to only shear thinning systems. The effects of rheological properties of thixotropic formulations on controlled drug delivery through various routes including oral, ophthalmic, dental, mucosal administration and pharmacological efficacies are discussed. The factors affecting thixotropic properties like PH, temperature, polymer concentration, polymer modifications, polymer combinations, addition of cations or excipients are also studied. The time dependent change in viscosity in case of thixotropy formulations provides them with the flexible rheological manifestations which affects the release profile of loaded drugs. The comprehensive analysis of rheological properties will provide an insight into the potential usage of thixotropic formulations as controlled release systems. This topic mainly focuses on the thixotropic formulations and their influence on each step of pharmaceutical development process and their in vivo behaviour.

THE ORAL DELIVERY OF PROTEIN AND PEPTIDE DRUGS


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Till recent, injections remained the most common means for administering therapeutic proteins and peptides because of their poor oral bioavailability. However, oral route would be preferred to any other route because of its high levels of patient acceptance and long term compliance, which increases the therapeutic value of the drug. Designing and formulating a polypeptide drug delivery through the gastro intestinal tract has been a persistent challenge because of their unfavourable physicochemical properties, which includes enzymatic degradation, poor membrane permeability and large molecular size. The main challenge is to improve the oral bioavailability from less than 1% to at least 30-50%. Various strategies currently under investigation include altering the environment for maximum solubility and enzyme stability by using formulation excipients like buffers, surfactants and protease inhibitors. Derivitization of the protein with polymers like PEG for the prevention of immunogenecity and prevention of excessive enzymatic degradation. Enhancement of the solubility of the protein and peptide drugs in aqueous and lipid environments inorder to overcome lipophilic and hydrophilic barriers for the distribution of the
drug. Use of absorption enhancers that disrupt the tight junctions present between the epithelium cells lining the biological membranes thereby enhancing the absorption of water soluble drugs. Other approaches include chemical modification of the protein and the use of mucoadhesive polymers. This review summarizes different pharmaceutical approaches which overcome various physiological barriers that help to improve oral bioavailability that ultimately achieve formulation goals for oral delivery. PDD-082

IMMUNOMICELLES-TARGETED PHARMACEUTICAL CARRIERS FOR POORLY SOLUBLE DRUGS

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To prepare immunomicelles, new targeted carriers for poorly soluble pharmaceuticals, a procedure has been developed to chemically attach mAbs to reactive groups incorporated into the corona of polymeric micelles made of polyethylene glycol–phosphatidylethanolamine conjugates. Stable PEG-PE-based micelles with an enhanced ability to carry a variety of poorly soluble pharmaceuticals can be transformed into immunomicelles by attaching various specific antibodies to their surface with this method. Micelle-attached antibodies retained their ability to specifically interact with their antigens. Immunomicelles with attached antitumor mAb 2C5 effectively recognized and bound various cancer cells in vitro and showed an increased accumulation in experimental tumors in mice when compared with nontargeted micelles. Intravenous administration of tumor-specific 2C5 immunomicelles loaded with a sparingly soluble anticancer agent, taxol, into experimental mice bearing Lewis lung carcinoma resulted in an increased accumulation of taxol in the tumor compared with free taxol or taxol in nontargeted micelles and in enhanced tumor growth inhibition. This family of pharmaceutical carriers can be used for the solubilization and enhanced delivery of poorly soluble drugs to various pathological sites in the body.

PDD-083

RECENT ADVANCES IN INSULIN ADMINISTRATION

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Diabetes mellitus is a chronic disorder caused by inherited and/or acquired deficiency in production of insulin by the pancreas, or by the ineffectiveness of the insulin produced. Over 30 million of India’s population has developed diabetes, while the
number is expected to rise to over 50 million within the next 20 years. Medications used to treat diabetes include insulin. Everyone with type 1 diabetes and some people with type 2 diabetes must take insulin every day to replace what their pancreas is unable to produce. Unfortunately, insulin can't be taken in pill form because enzymes in your stomach break it down so that it becomes ineffective. For that reason, many people inject themselves with insulin using a syringe or an insulin pen. But this has attracted a lot of scrutiny due its drawbacks like painful process and self administration. Pulmonary or inhaled insulin seems to be the most promising alternate route for insulin delivery. For the last three years, trials on inhaled insulin are being conducted, and plan to introduce insulin inhalers in the Indian market by 2009. Insulin patches that enable transdermal administration are still in the phase of pharmacologic investigation. The goal is to perfect a 24-hour patch that will provide a needle-free basal insulin supply to the body.

**PDD-084**

**SOLID LIPID NANOPARTICLES (SLN):**

**A NOVEL DRUG DELIVERY SYSTEM OF CHOICE IN BRAIN TARGETING**

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Brain is the delicate organ, isolated from general circulation and characterized by the presence of relatively impermeable endothelial cells with tight functions and the presence of various active efflux transporter enzymatic activity mechanisms (like p-glycoprotein efflux). These obstacles often hinder drug delivery to the brain. As a result several drug molecules showing a good potential in invitro evaluation are lost from the market due to lack of invivo response because those molecules cannot reach the brain in sufficient concentration. The existing approaches for the brain delivery like superficial and ventricular application of drug to brain parenchyma are invasive, more laborious and require skill. In view of these considerations novel drug delivery systems such as nanoparticles are presently being explored for suitability for drug targeted brain delivery. Nanoparticles are solid colloidal particles ranging in size from 1 to 100nm and composed of macro molecular material. Nanoparticles could be polymeric are lipidic(SLN). Due to lipid nature, SLNs are taken up by the brain. The bioacceptabe and biodegradable nature of SLNs make them less toxic as compared to polymeric nanoparticles. Supplemented with nanosize which prolongs the circulation time in the blood and absence of guest effect makes them interesting candidates for study. In this presentation, it was discussed about the barriers to CNS drug delivery.
strategies to cross the blood brain barrier (BBB), characterization methods of SLNs and mechanism of uptake of drugs. KEY WORDS: Solid-lipid nanoparticles, Brain targeting, Blood brain barrier, Targeted brain delivery.

PDD-086

NOVEL ADVANCES IN INSULIN DELIVERY- RECENT TRENDS

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Insulin remains indispensable in the management of diabetes mellitus since its discovery in 1921. Relatively, a large percentage of world population is affected by diabetes mellitus, out of which approximately 5-10% with type 1 diabetes while the remaining 90% with type 2. It has been now well proven that adequate control of blood sugar delays or prevents the complications associated with diabetes. Transdermal Injections are available as current insulin delivery systems as which may be considered as invasive. The non-invasive delivery of insulin has been a major goal for the treatment of diabetes mellitus (DM). Needle phobia and stress of multiple daily injections led researcher to investigate and explicit of all promising technologies & discoveries for advances in insulin delivery. Needle-free insulin delivery appeared to be astonishing approach, and its allure rested in being comfortable and safe. The document present here encompass, in brief, the emerging technologies & discoveries that are in pipeline, including insulin inhalers, implantable insulin pumps, insulin spray, smart cells, insulin pill, insulin complement, islet cell transplant, insulin nanopump, & the other promising advances in safe & comfortable insulin delivery. Therefore it will be a tripartite task for the researcher, health authorities & community pharmacist to foster the long term safety profile & to provide comfortable insulin delivery.

KEYWORDS:- Insulin, Diabetes, Drug Delivery System
INTRODUCTION TO PULSATILE (TIME RELEASE) DRUG DELIVERY FOR BETTER THERAPEUTIC RESPONSE

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Oral administration has been the most versatile, convenient and commonly employed route of drug delivery. An oral control release system which releases the drug at zero order is considered an ideal system maintaining constant drug plasma level. Circadian variation observed various body functions like Heart rate, stroke volume, gastric emptying time, blood pressure, glomerular filtration rate. Considering chronopharmacology of disease, synchronization of drug administration with biological rhythm will produce maximum therapeutic benefit for disease treatments. Currently available drug delivery systems are based on the view of constancy of disease 24 hr a day which is not suitable for the disease shows circadian. Presently delivery systems with pulsatile release pattern are receiving increasing interest where conventional continuous release is not ideal. Many body functions that follow circadian rhythm, a number of hormones like rennin, aldosterone, and cortisol show daily fluctuations in their blood levels. Circadian effects are also observed in case of pH and acid secretion in stomach, gastric emptying, and gastro-intestinal blood transfusion. Diseases like bronchial asthma, myocardial infarction, angina pectoris, rheumatic arthritis, ulcer, and hypertension display time dependence. Such a condition demands considerations of diurnal progress of the disease rather than maintaining constant plasma drug level. A drug delivery system administered at bedtime, but releasing drug well after the time of administration (during morning hours), would be ideal in this case. Same is true for preventing heart attacks in the middle of the night and the morning stiffness typical of people suffering from arthritis.
PDD-090

NANOPARTICLE TECHNOLOGY FOR DRUG DELIVERY ACROSS THE BLOOD-BRAIN BARRIER

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Nanoparticles (NP) are solid colloidal particles ranging in size from 1 to 1000 nm that are utilized as drug delivery agents. The use of NPs to deliver drugs to the brain across the blood-brain barrier (BBB) may provide a significant advantage to current strategies. The primary advantage of NP carrier technology is that NPs mask the blood-brain barrier limiting characteristics of the therapeutic drug molecule. Furthermore, this system may slow drug release in the brain, decreasing peripheral toxicity. This review evaluates previous strategies of brain drug delivery, discusses NP transport across the BBB, and describes primary methods of NP preparation and characterization. Further, influencing manufacturing factors (type of polymers and surfactants, NP size, and the drug molecule) are detailed in relation to movement of the drug delivery agent across the BBB. Currently, reports evaluating NPs for brain delivery have studied anesthetic and chemotherapeutic agents. These studies are reviewed for efficacy and mechanisms of transport. Physiological factors such as phagocytic activity of the reticuloendothelial system and protein opsonization may limit the amount of brain delivered drug and methods to avoid these issues are also discussed. NP technology appears to have significant promise in delivering therapeutic molecules across the BBB.

PDD-091

OSMOTIC PUMP IN NOVEL DRUG DELIVERY SYSTEM

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The novel system of drug delivery offer a means of improving the therapeutic effectiveness of incorporated drug by providing sustained, controlled delivery & or targeting the drug to desired site. Osmotic pump systems are another form of membrane controlled release drug delivery system through semipermeable membrane. It is widely used in most of the area of complicated disease in the form of novel drug delivery system in the treatment of several chronic disease
like, cancer, kidney stone and much more pathological disorder which the specific delivery of drug is required to illuminate or minimize the side effect of drugs. It can be implemented in delayed or pulsed deliveries. It is independent of gastric pH & hydrodynamic condition, not dependent on drug. It has been proved by many research that it is safe, effective & convenient to use.

PDD-092

FAST DISSOLVING TABLETS OF METOCLOPRAMIDE HYDROCHLORIDE

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Pharmaceutical industry has become increasingly aware of the need that elderly be considered as a separate and unique medicare population. In this study, Metoclopramide Hydrochloride is used as the model drug to formulate Rapidly Disintegrating Tablets (RDT). Metoclopramide Hydrochloride RDT (F1-F9) were prepared by mass extrusion technique using varying concentrations of drug, SSG, Avicel PH 102, L-HPC, Eudragit E-100, Lactose. Pre & Post compression parameters were evaluated for all the nine formulations. Angle of repose and % compressibility showed good flowability. Drug content was found in the range of 9.700-9.925 mg in each tablet. Hardness of all the tablet formulations was observed in the range of 2.9-4.16 kg/cm3 (n=3). Water absorption ratio was found in the range of 18.45–37.89. Wetting time for all formulations was found in the range of 17.33-28.33 sec. In-vitro disintegration & in-vitro dispersion time were found in the range of 8-23.67 sec & 14.33-23.67 sec respectively. In-vitro release studies revealed that 96% of drug released from SSG, MCC (90%), and L-HPC (85%) within 15 min. Depending upon cumulative % drug release, in-vitro disintegration time, in-vitro dispersion time & wetting time, three formulations F3, F6, F9 were selected for stability studies (250°C/60% RH and 400°C/75%RH for 30 days). Formulations F3, F6, F9 found to be stable after performing physical and chemical parameters at suitable intervals. The study concludes that formulation containing SSG as superdisintegrant is fulfilling all the parameters satisfactorily. It has shown excellent in-vitro disintegration, in-vitro dispersion time, compared to other superdisintegrants. KEYWORDS: Rapidly disintegrating tablets; Sodium starch glycolate, mass extrusion technique.
PDD-093

DESIGN AND FORMULATION OF NANOEMULSION TECHNIQUE BY USING BRIJ 35 AS SURFACTANT

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The main purpose of this work is to prepare nanoemulsion for oral bioavailability enhancement of a poorly water soluble drug. Nanoemulsion were prepared by spontaneous water titration method. Mixture of oil phase (linseed oil) and surfactant (Brij35)-cosurfactant (Ethanol) i.e. Smix were prepared, where contents of oil and amphiphile blend in mixture were varied from 1:7 to 7:1 water phase was added drop by drop, under magnetic stirring to each oily mixture. Following the addition of aliquot of water, the mixture was visually examined for transparency. The changes in the sample visual aspect from turbid to transparent and inversely was observed. Thermodynamic stability studies were carried out for 4 days to assess the nanoemulsion stability at different temperatures (freeze thaw cycle). Based on visual observation and stability studies, best formulation was selected. Particle size analysis of the optimized formulation was carried out by using TEM and was found to be in range of 50-100nm. Further proposed studies going to be carried out are determination of viscosity and interfacial tension, drug content, entrapment efficiency, In-vitro dissolution studies and In-vivo bioavailability studies.

PE-001

POST GRADUATE STUDENTS DECISIONS ABOUT TRADITIONAL TEACHING METHOD AND TECHNOLOGY ADVANCEMENT

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Lectures remain an important component of pharma education in the Master of pharmacy first year, despite the increases in small group teaching that have occurred at many institute in the past decade. During the same period of time, the expanded availability and use of technology in teaching have made it possible to provide students with a variety of course materials, and even entire lecture sessions electronically. Our study explored first year Post graduate student’s make deliberate decisions about attending lectures and to evaluate identify factors that influence these decisions specifically addressing the potential impact of electronic materials. Post graduate students who completed first year studies between 2006 and 2007 responded to an open-ended survey question about their own lecture attendance decisions. Responses to student’s ratings of the electronic materials were also examined. Our
result shows that, electronic materials influence students’ choices for quick learning and understood subject easily. Whereas, blackboard teaching influence the concentration, personal learning preferences and learning needs at that particular time, with the overriding goal of maximizing learning. The outcomes of our studies the increasing availability of technology-enhanced educational materials has a negative impact on traditional teaching method on lecturer attendance seem founded. KEY WORDS: - Pharma education, Master of pharmacy, Personal learning, Education.

PE-002

PHARM.D. IN INDIA-RATIONALE, REQUIREMENTS & REALITY

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The much needed and long awaited reorientation of Pharmacy profession in India is all set to come into reality with the induction of Pharm.D. program in the Healthcare education of the country. However, this welcome change needs a cautious and judicious launch. Out of this concern an informal survey was conducted to gauge the likely impact of the program. The course will enable the graduates to participate in hospital affairs through direct interaction with physicians as well as patients. This in itself is a great revolution in Pharmacy education. This will supposedly bring the qualification and role of pharmacists in India at par with that in U.S.A, U.K. and other western nations. But, the conduction of course requires such infrastructural facilities which may take quite some time to shape up. The tie-up or set-up of a hospital for actual practice by Pharm.D. students is by no means an easy proposition. A sudden entry and intervention of pharmacist may not be taken with pleasure by the established custodians of healthcare i.e. doctors. A thorough change in the mindset of all the concerned is an essential, although an uphill task. Of the over 500 Pharmacy colleges of the country, only a handful (about 20) have the sister medical colleges where Pharmacy practice may be implemented; although not without resistance from some quarters. At the end of the day the course will serve as an additional check post in clinical practice, thus benefiting the patients in particular and healthcare program in general.

PE-005

PHARMACOGNOSY EDUCATION IN INDIA: TEACHER’S EXPECTATIONS AND STUDENT’S REALITY

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As we are aware, the members of board of studies and other University members who frame the curriculum/syllabus in pharmacognosy for various universities in India do the same with a vision in their mind, which is very much clear. 100% of this vision/message has to be passed on to the teachers teaching pharmacognosy for the overall success of pharmacognosy education in India, which we feel is not happening. Various teachers adopt their own methodology in teaching pharmacognosy. In addition, the expectations of such teachers is entirely counteracted by reality of the students. Most of the students fail to understand what exactly the subject pharmacognosy is and what are the objectives and scope of the same. On one hand, the students fail to understand these expectations and on the other hand they interpret the things in an entirely opposite direction. This makes the students to understand/learn the subject in an entirely opposite method that is followed by their teacher in teaching it. More over, there appears to be many practical problems that arise while understanding and learning pharmacognosy. These contribute further in making the subject not understandable or getting an image of tough subject to it. Hence, most of the students don’t understand the subject in full or they study it just to pass with minimum marks. In the present study, we have attempted to study the present scenario of pharmacognosy education in India including the teacher’s expectations and student’s reality.

PE-015

EARLY PATIENT-ORIENTED CARE (EPOC) PROGRAM FOR PHARMACY STUDENTS

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Objectives:-Our Early Patient-Oriented Care (EPOC) program gives pharmacy students introductory practice experience (IPE) while providing clinical services to hemodialysis outpatients. We assessed the EPOC program to determine if it incorporates the desired attributes of an IPE, estimated its impact on student learning and clerkship site productivity, and evaluated student satisfaction. Methods:-An assessment form was developed and completed by EPOC preceptors (n = 3) and current students (n = 24) to determine if EPOC incorporates characteristics of an ideal IPE. Additionally, EPOC activities were identified and applied to two algorithms that estimate the impact of clerkship activities on student learning opportunities or impact site productivity. Finally, past EPOC students (n = 27) rated their satisfaction with the EPOC experience using a standard clerkship evaluation form. Results:- Preceptors and students similarly ranked EPOC highly as providing the desired characteristics of an IPE. EPOC activities produced optimal learning opportunity scores while having minimal but positive impact on site productivity. Student evaluations indicated a high degree of satisfaction with the EPOC experience. Conclusion:- The EPOC program incorporates the desired characteristics of an IPE, provides students with an optimal
learning opportunity, marginally but positively impacts participating dialysis centers and provides students a highly satisfactory learning experience.

**PE-016**

**A STUDY TO CREATE AWARENESS OF SWINE FLU**

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Swine influenza is an infection of a host animal by any one of several specific types of microscopic organisms called "swine influenza virus". The 2009 swine flu outbreak in humans is due to a new strain of influenza A virus subtype H1N1 that contains genes closely related to swine influenza. Swine influenza was first proposed to be a disease related to human influenza during the 1918 flu pandemic, when pigs became sick at the same time as humans. The direct transfer of the virus probably occurs either by pigs touching noses, or through dried mucus. People who work with poultry and swine, are at increased risk of zoonosstic infection. Vaccination of these workers against influenza and surveillance for new influenza strains among this population may therefore be an important public health measure. According to the Centers for Disease Control and Prevention (CDC), in humans the symptoms of the 2009 "swine flu" H1N1 virus are similar to those of influenza and of influenza-like illness in general. Symptoms include fever, cough, sore throat, body aches, headache, chills and fatigue. Prevention of swine influenza has three components: prevention in swine, prevention of transmission to humans, and prevention of its spread among humans. If a person becomes sick with swine flu, antiviral drugs can make the illness milder and make the patient feel better faster.

**PSY-001**

**REVIEW ON THE POTENTIAL OF NATURAL HERBAL ALTERNATIVES IN TREATING ANDROGENETIC ALOPECIA.**


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Androgenetic alopecia is characterised by gradual hair thinning that most often affects the crown and frontal areas of the scalp causing or developing a M-shaped hair pattern(1). Man and women experience androgenetic alopecia with equal frequency. It is caused due to high levels of DHT, the enzyme 5alpha reductase irerevably catalyses the conversion of testosteron to DHT. DHT has more affinity to androgen
receptors than testosterone, therefore on binding to the receptors it causes hair thinning and finally hair loss (2).

For the treatment of androgenetic alopecia two medications minoxidil & finasteride are available. Minoxidil is topical application which promotes hair growth by lengthening the growth phase of hair follicles and causing more follicles to produce hair but, there are side effects like it causes skin irritation, systemic side effects are also possible in case of patients having history of heart disease, it occasionally develops increased facial hair(3). Finasteride is an oral medication which decreases DHT levels resulting in an increased amount of hair covering the scalp but the main draw back is it can not be given to women cause it could effect the reproductive age causing concerns regarding abnormal genitalia development in male fetuses. It can be given in 1mg per day, but in higher doses causes side effects including sexual dysfunction and decreased sex drive(4). Attempts have been made to treat androgenetic alopecia with natural herbs.

**PSY-003**

**IN VITRO ANTIOXIDANT ACTIVITIES AND TOTAL PHENOLIC, FLAVONOID, ASCORBIC ACID CONTENTS OF SYZYGIUM CUMINI FRUITS**

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The present study was aimed at investigating the antioxidant activities of the hydromethanolic extract of Syzygium cumini (HESC) fruit (myrtaceae). The antioxidant activities of extract have been evaluated by using a range of in vitro assays and were compared to standard antioxidants such as butylated hydroxyl toluene, α-tocopherol, curcumin. Fruit extract showed effective H-donor activity, reducing power, free radical scavenging activity. The antioxidant property depends upon concentration and increased with increasing amount of the extract in all the models. IC50 values were found to be 36, 104, 90, 45 μg/ml respectively in DPPH, Nitric oxide, Superoxide and Hydroxyl radical scavenging assays. The free radical scavenging and antioxidant activities may be attributed to the presence of phenolic (pyrocatechol and gallic acid content is 8.2 and 3.283 μg/mg respectively), vitamin C (vitamin C i.e. ascorbic acid content is 3.018 μg/mg) and flavonoid compounds (4.86 μg/mg) in HESC fruits extract. The results obtained in the present study indicate that the Syzygium cumini fruit is a potential source of natural antioxidant.
PSY-006

STUDY OF PHYSICO-CHEMICAL PROPERTIES OF ADHATODA VASICA NEES. LEAVES

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The plant Adhatoda vasica Nees. belonging to the family Acanthaceae has a wide range of medicinal importance in traditional system of medicine because of soluble active constituents. The present study deals with the physico-chemical properties of leaf extracts of Adhatoda vasica Nees. It contains high percentage yield of methanol soluble extract when compared to water soluble and petroleum ether extract. In preliminary phytochemical analysis, methanol extract and petroleum ether extract contain mainly alkaloids, proteins, carbohydrates, sterols where water extract is devoid of alkaloids and sterols. Whereas the three materials do not differ in their PH values, while the one of the active principle vasicine is present in methanol extract. Results of the analysis of extracted materials for different functional groups reveal the presence of carboxylic, alcoholic, ketone group. Fluorescence analysis data, Specific gravity, Acid, Saponification, Iodine and Ester values of these materials are also reported.

PSY-007

EVALUATION OF PHYSICO-CHEMICAL ANALYSIS OF STROPHANTHUS KOMBE (APOCYANACEAE)

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In the present study, the physicochemical analysis of Strophanthus kombe belonging to family Apocyanaceae were performed. The isolation of the medicinally important materials was carried out by extraction through solvents viz. petroleum ether, methanol and water extracts. Highest yield is obtained in water while lowest in petroleum ether. The water soluble extractive value contains maximum amount of soluble constituents compared to methanol soluble extractive. The extracts shown enough variations in acid value and saponification values. In functional group analysis all the three extracts show the presence of carboxylic, ketonic and alcoholic groups. The quantitative analysis observed that the presence of glycosides, alkaloids, proteins,
fixed oils, sterols is indicated in all the three extracts. Additionally the presence of flavones is indicated in water extract. Further ultra violet and fluorescence analysis also carried out with powdered drug of Strophanthus kombe seeds.

**PSY-008**

**NUTRACEUTICALS**

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Angiogenesis is a critical component of the proliferative endometrial phase of the menstrual cycle. Thus, we hypothesized that a stem cell-like population exist and can be isolated from menstrual blood. Mononuclear cells collected from the menstrual blood contained a subpopulation of adherent cells which could be maintained in tissue culture for >68 doublings and retained expression of the markers CD9, CD29, CD41a, CD44, CD59, CD73, CD90 and CD105, without karyotypic abnormalities. Proliferative rate of the cells was significantly higher than control umbilical cord derived mesenchymal stem cells, with doubling occurring every 19.4 hours. These cells, which we termed "Endometrial Regenerative Cells" (ERC) were capable of differentiating into 9 lineages: cardiomyocytic, respiratory epithelial, neurocytic, myocytic, endothelial, pancreatic, hepatic, adipocytic, and osteogenic. Additionally, ERC produced MMP3, MMP10, GM-CSF, angiopoietin-2 and PDGF-BB at 10–100,000 fold higher levels than two control cord blood derived mesenchymal stem cell lines. Given the ease of extraction and pluripotency of this cell population, we propose ERC as a novel alternative to current stem cells sources.

**PSY-009**

**THE UNEXPLORED NATURE’S BOON – NEEM**

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AIM: To explore the biological activities of some of neem compounds, pharmacological actions of the neem extracts its medicinal use and its probable toxic effect on human body. CURRENT SCENARIO: There are around more than 135 pharmacologiacally active compounds from different parts of neem. They are classified into isoprenoids and nonisoprenoids. The isoprenoids include diterpenoids and triterpenoids containing protomeliacins, limonoids, azadirone and its derivatives,
gedunin and its derivatives, vilasinin type of compounds and Csecomeliacins such as nimbin, salanin and azadirachtin. The nonisoprenoids include proteins (amino acids) and carbohydrates (polysaccharides), sulphurous compounds, polyphenolics such as flavonoids and their glycosides, dihydrochalcone, coumarin and tannins, aliphatic compounds, etc. Pharmacological activities such as anti-inflammatory, antipyretic, analgesic, immunostimulant, hypoglycaemic, antiulcer, antifertility, antimalarial, antifungal, antibacterial, antitumorigenic, hepatoprotective, effect on CNS are exerted by A. indica compounds like Nimbidin, Sodium nimbidate, Nimbin, Nimbolide, Gedunin, Azadirachtin, Mahmoodin, Gallic acid, epicatechin, catechin, Margolone, Margolonone, Isomargolonone, Cyclic trisulphide, cyclic tetrasulphide, Polysaccharides, Polysaccharides GIa, GIIb, Polysaccharides GIIa, GIIIa, NB-II peptidoglycan, etc. Toxic effect shown in humans is very mild and limited showing symptoms like diarrhoea, nausea, vomiting, acidosis, encephalopathy, etc. when neem oil is used.

CONCLUSION: Neem, the versatile medicinal plant is the unique source of various types of compounds having a wide spectrum of pharmacological activity. Very little work has been done on the biological activity and plausible medicinal applications of these compounds and hence extensive research and development work should be promoted on neem and its products for their better economic and therapeutic utilization...

PSY-010

HERBAL ALTERNATIVES IN TREATING OBESITY


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Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have an adverse effect on health, leading to reduced life expectancy.1 Obesity is from the Latin word obesitas, which means "stout, fat, or plump".2 It is a leading preventable cause of death worldwide.3 Obesity is associated with many diseases, particularly heart disease, type 2 diabetes, breathing difficulties during sleep, certain types of cancer, and osteoarthritis.4 It is commonly caused by a combination of excessive dietary calories, lack of physical activity, and genetic susceptibility, though a limited number of cases are due solely to genetics, medical reasons, or psychiatric illness.5 The primary treatment for obesity is physical exercise, behavior modification programs, abstinence, very low calorie-diets and drugs. Drugs like Sibutramine, Orlistat, Lovastatin, Colestipol are widely used.6 In severe cases, surgery is performed or an intragastric balloon is placed to reduce stomach volume and or bowel length, leading to earlier satiation and reduced ability to absorb nutrients from food.4,5 Allopathic drugs show various side effects while treating obesity and there is an urgent need for finding herbal alternatives to contain this problem with less side effects and long term efficacy.
PSY-011

ANTIBACTERIAL ACTIVITY IN LEAVES OF MALAYSIAN JASMINUM GRANDIFLORUM LINN

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The Arial parts of Jasminum grandiflorum Linn. (Family: Oleaceae) is used as a folk medicine in various parts of south India for treating different types of wounds. The leaves were collected from Kualalumpur, Malaysia and authenticated. The leaves then dried, and powdered followed by extracted by cold maceration. The extraction solvents were selected and used in the order of increasing polarity. All the extracts were examined for the presence of Phytochemical. The presence of alkaloids, steroids and flavanoids were identified. All the extracts were screened against different strains like Salmonella typhi, Proteus, Bacillus cereus, Streptococcus pyogenes and Staphylococcus aureus, using disc agar diffusion method. Among the extracts, aqueous extract showed promising results, especially against Proteus and streptococcus pyogenes, with 3mm and 7 mm zone of inhibition respectively. These results were well compared with a commercially available antibiotic Ciprofloxacin as positive control.

PSY-012

ANTIASTHMATIC ACTIVITY OF THE ROOT OF DESMODIUM GANGETICUM DC

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The roots of Desmodium gangeticum DC is traditionally used in the treatment of asthma. The present study was undertaken to investigate the effect of chloroform, ethanolic, hydroalcoholic extract of roots Desmodium gangeticum DC in ovalbumin-induced asthmatic rats. All the rats were weighed before treatment and then divided into six groups of six animals in each group. Rats were treated with prestandardised dose of 5mg/kg body weight of ovalbumin for 28 days and effect of chloroform, ethanolic, hydroalcoholic extract of root Desmodium gangeticum DC at a dose of 200mg/kg body weight administered orally. White blood cell, Differential cell count, Protein estimation, Malonyldialdehyde.
estimation were observed. Desmodium gangeticum DC had showed significant decrease in white blood cells, differential cell count, protein estimation and normalize the increased malonyldialdehyde level(P<0.001). Hence it can be concluded that Desmodium gangeticum DC may prove that to be an effective in treatment of asthma in its ability to decrease the white blood cell, differential cell count, protein level and normalize the increased malonyldialdehyde level.Keywords: Desmodium gangeticum ,Asthma , Differential cell count, Malonyldialdehyde,Ovalbumin

PSY-013

NUTRACEUTICALS

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Nutraceuticals” is a term proposed to classify foods, that may be considered to provide medical or health benefits, including prevention & treatment of disease. Dr. Stephen De Felice coined the term “Nutraceuticals” from “nutrition” and “Pharmaceutical.” Nutraceutical is assuming a middle ground between food and drug due to growing body of evidence that support their role in maintaining health and contributing to treatment of disease. To search for specific constituents of plants, animals, mineral and microbial origin, which are beneficial to our mental and physical health, has caused coining of this terminology Nutraceuticals. Further, Nutraceuticals are represented for use as a conventional food or as the role item of meal or diet .To conclude, Nutraceuticals have a positive impact on an individual’s health, physical performance or state of mind in addition to its nutritive value. However there is a lack of proper regulation for their production and marketing, which may reduce exploiting industries to develop core competency in this emerging area. KEYWORDS: Nutraceuticals-functional food,dietary supplements.
PSY-015

ANTIMICROBIAL ACTIVITY OF LEAF EXTRACTS OF ADHATODA VASICA NEES.


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The antimicrobial investigations were carried out of the extracts obtained from the leaf of Adhatoda vasica belongs to the family of Acanthaceae, using solvents with increasing polarity viz. Petroleum ether and methanol. Its main action is as an expectorant and antispasmodic. The important active components include alkaloids-vasicine and vasicinone. In the present work the effect of Petroleum ether and methanol, were tested on Escherichia coli, Staphylococcus aureus, Pseudomonas aeruginosa, Proteus vulgaris, and Candida albicans by cup plate method. The bacteria were grown in the nutrient broth at 37°C and maintained on nutrient agar slants at 4°C. The bacterial and fungal pathogens were inoculated on Mueller Hinton broth/Agar medium. In cup plate method, different concentrations ranging from 50µg/ml, 100µg/ml, 250µg/ml, and 500µg/ml were added to the agar wells. After 24 hours incubation, the zone of inhibition was measured and compared with as standard drug. The results showed that the methanolic extract showed good antibacterial activity. The petroleum ether extract has no antifungal activity whereas methanolic extract showed notable activity against fungi. The petroleum ether extract was showed poor antimicrobial activity. From the results it may be concluded that the methanol extracts exhibited effective antimicrobial activity.

PSY-016

POLYHERBAL ANTI-DIABETIC DRUG CONTAINING INDIAN HERBS

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Diabetes mellitus is a life-style disease commonly found in modern ages. Dysfunctioning of liver due to excessive consumption of glycogen and decreased gluconeogenesis is a major complication of diabetes. Polyherbal is a formulation composed of medicinal herbs with proven pharmacological action, which takes care of all major complication of diabetes. The pharmacological action of individual herbs indicate that the major ingredients of Polyherbal- Momordica charantia and Azadirachta indica are anti-hyperglycemic in nature and thereby help to reduce
elevated blood glucose levels and induce pancreas to secrete insulin in diabetes. The immunomodulator activity of the ingredients Azadirachta indica and Picrorrhiza kurroa helps to potentiate the immune system, which usually diminishes in diabetes due to excessive consumption of proteins. Herbs like Zingiber officinale possess anti-hyperglycemic activity and Ocimum sanctum enhances uptake of glucose by muscles. Picrorrhiza kurroa is a proven hepatoprotective. Treatment of diabetes with sulfonlurea such as Glibenclamide precipitates cholestasis, which may lead to development of diabetes. Adjuvant therapy of Polyherbal in such cases provides protection to liver and prevents toxic influence of allopathic anti-diabetics due to virtue of the presence of Picrorrhiza kurroa. Precipitation of hyperglycemia due to increased levels of stress is a common feature of diabetes in modern world. These ingredients also help in lowering the incidences of severe infections, a common feature of diabetes due to increased blood glucose levels. The other herbs included are Commiphora mukul, Syzigium cumini and Gymnena sylvestre. These Polyherbal drugs are given along with allopathic drugs as they have lesser side effects.

PSY-017

HERBAL HOME REMEDIES & NATURAL TREATMENT

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Man is unique creation but a part of the universe. Like other living creatures, man has been provided with food, water and shelter around his habitat. Eco-friendly tribals collect food, fuel fodder, housing material and herbal medicine from the forests where they live. Health-care, which was a part of the traditional culture of the people, has become a profession in the modern industrial world. Herbal remedies rapidly return the body to state of health without side effects unlike synthetic drugs. The world’s attention has again turned to traditional medical systems. The use of plants for healing is by far the world's oldest and most widely known therapy. Since the beginning of knowledge of herbal remedies has been headed down from generation to generation. Herbal remedies stimulate the body's own natural healing abilities by cleaning and rebalancing. Home remedies are based on the knowledge that most natural foods like fruits, vegetables, cereal grains, seeds and nuts as well as other natural substances posses many herbs contain antibacterial like the synthetic properties. Natural remedies can be used to efficiently treat a range of ailment through correct and regular usage: like to boost immune system preventing avoiding hair loss, treating aches, pains, cuts and burns to lower cholesterol level, high blood pressure& can also be used in common cold, constipation, arthritis, diabetes mellitus. This presentation is to highlight some of these herbal home remedies for natural treatment.
PSY-018

EVALUATION OF THE ANTHELMINTIC ACTIVITY OF THE ROOTS OF PSEUDARTHRIA VISCIDA


Helmintic infections are among the most common infections in human beings, affecting the large proportion of world’s population. In developed countries they pose a large threat to public health. The helminthes which infect the intestine are cestodes e.g. tape worms, nematodes e.g. hook worm and trematodes. Ideally an anthelmintic agent should have broad spectrum of action, high percentage of cure with a single therapeutic dose, free from toxicity to the host and should be cost effective. Most of the screenings reported are in vitro studies using some worm samples like Indian earth worms, Ascardia galli etc. The drug which has been studied in this work is the classical drug called as Saliparni (Pseudarthria viscidia) is a common classical drug which has been mentioned in various ayurvedic classical texts. Samples for the study were prepared by dissolving 2.5 gm of dried crude extract in 25 ml of 1% gum acacia solution prepared in vehicle to obtain a stock solution of 100 mg/ml. Different working dilutions were prepared to get a concentration range of 25, 50, 100 mg/ml. Observations were made for a time taken to cause paralysis/death of individual worms. The ethanolic extract of Pseudarthria viscidia caused paralysis and death of the earth worms at a better timing than the standard Piperazine citrate. 25 mg/ml conc of extract caused paralysis within 12.5 ± 0.25 mins, when compared with Piperazine citrate (15 mg/ml) which caused paralysis within 31.47 ± 0.69. It was observed that the ethanolic extract of Pseudarthria viscidia is more potent than reference control Piperazine citrate. The extract caused paralysis followed by death of the worms at all tested dose levels.

PSY-019

ANTI-OXIDANT ACTIVITY OF POMEGRANATE FRUIT IN AMELIORATION OF NEOPLASM

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Cancer is a class of diseases in which a group of cells display uncontrolled growth, invasion, and sometimes metastasis. Chemotherapy is the successful approach for treating the cancers. Drugs such as Cisplatin (CS) and 5-fluorouracil (FU) acts on the tumors by the production of reactive oxygen species. Although patients with established cancer have already sustained DNA damage, avoiding further DNA insult
may avoid further mutation of indolent malignant or premalignant cells into more aggressive phenotypes. The nutrients in many fruits and vegetables have been found to fight cancer by preserving the DNA in healthy cells. Pomegranate has been found to be used traditionally in treatment of cancers due to the presence of Ellagic acid. Anti-oxidant activity of whole fruit extract(WFE) and fruit juice(FJ) were tested on the adult Wistar rats of both sexes. EAC cell lines were used to induce tumor. At the end of the 15th day of induction, oxidative stress was induced by the administration of CS and FU. The WFE and FJ were administered individually. There was significant decrease in tumor weight of animals treated with FJ through oral gavage and WFE at 450 mg/kg body weight. Oxidative stress was found to be reduced after performing SOD, GSH and lipid peroxidation assays. Animals shown more survival rate and % increase in life span was found to be upto 76% and 68% for WFE and FJ respectively. Thus it was concluded that WFE and FJ was effective in co-administration with CS and FU.

PSY-020

PHYTOPREVENTIVE ANTIHYPERLIPIDEMIC ACTIVITY OF ABUTILON INDICUM LEAVES

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Abutilon Indicum belongs to the family Malvaceae. Qualitative phytochemical analysis of Abutilon indicum leaves showed the presence of alkaloids, flavonoids and steroids in 50% hydro ethanolic extract prepared by hot and cold maceration process and flavonoids are present in the aqueous extract. 50% hydro ethanolic extract prepared by hot maceration process of Abutilon indicum leaves was shown to have sufficient phenol content in the range of 44.71 mg/g of Gallic acid and it showed flavonol content of 128.83 mg/g of quercetin. Abutilon indicum was found to be effective in significantly reducing both TG and TC levels after 12 days of pretreatment with 50% Hydro ethanolic extract prepared by hot maceration process at a dose of 200 and 400 mg/kg. Abutilon indicum significantly reduced TG levels by 16.85 % and 20.64 % respectively. And decreased TC level by 37.39 % and 43.8 % respectively. LDL levels were also found to be decreased by 31.55 % and 39.83 % respectively. VLDL levels were also significantly decreased by 16.85 and 20.63 %. No significant changes were seen on HDL cholesterol. All these decreased levels were statistically significant (P<0.001) and indicates anti hyperlipidemic activity of Abutilon Indicum leaves.
PSY-021

ANTIOXIDANT ACTIVITY OF DIFFERENT FRACTIONS OF BRASSICA OLERACEA LINN

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The antioxidant properties of different fractions of Brassica oleracea flower were tested using standard in vitro models. The percentage of the phenolic and flavonoid compound present was also determined. Among the extract tested the successive n-butanol fraction of Brassica oleracea (NBBO) exhibited strong scavenging effect on hydroxyl radical by p-NDA, scavenging of ABTS radical cation, hydroxyl radical by deoxyribose, lipid per oxidation and total antioxidant capacity by phosphomolybdenum method with IC50 values of 653±0.02, 0.08±0.09, 16.25±1.90, 17.81±0.11 and 0.29± 0.10 µg/ml respectively. The free radical scavenging effect of NBBO was comparable with that of reference standard. These results clearly indicate the strong antioxidant property of NBBO. The study provides a proof for the ethnomedical claim reported biological activities.

PSY-022

ANTIDIABETIC ACTIVITY OF ALPINIA OFFICINARUM

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This present deal with the antidiabetic activity of Alpinia officinarum by in vitro and in vivo method. The dried rhizomes were subjected to hot and cold maceration using 50% ethanol and soxhlet extraction using methanol. Phytochemical studies of extracts showed the presence of Terpenoids, flavonoids, tannins, alkaloids, saponins and protein and amino acids. The hydro alcoholic extract obtained from hot maceration showed highest phenol and flavonol content 50.1% and 54.02% respectively and soxhlet extraction showed a concentration dependent free radical scavenging activity by inhibiting DPPH with IC50 95. 54± 1.10, 123.43±0.78, 137.33±2.25 µg/ml and showed good reducing power. All the extract was showed significant antioxidant activity as milimolar equivalent of ascorbic acid. The hydro alcoholic extract exhibited good antibacterial activity but none of the extract exhibited significant antifungal activity. The vitro antidiabetic activity was carried out by estimating the glucose uptake by isolated rat hemidiaphragm. The extract did not show any signs and symptoms of acute toxicity on the basis of this, the dose was decided as 200µg/ml and 400µg/ml body weight. The administration of extracts for 21 days regulated the loss in body weight and increased fluid intake. It showed significant reduction in blood glucose level (p<0.01) on 1st, 2nd and 3rdeek. The oral glucose tolerance test were
performed it showed significant reduction in blood glucose level and also showed significant activity to control serum triglycerides and total protein in comparison with diabetic control (p<0.01).

**PSY-023**

**IN VITRO ANTI-DIABETIC ACTIVITY OF CASSIA**

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Herbal medicines are in use from time immemorial by different cultures around the world for the treatment of diabetes. They are often used as therapeutic remedies in combination with allopathic drugs. Usually herbal preparations are being used because of their minimum toxicity. Various parts of the plants were selected for their cytotoxicity and anti diabetic activity in vitro. Four plants namely Cassia auriculata, Cassia alata, Cassia fistula and Cassia tomentosa were selected and different extracts were prepared. All the extracts were screened for cytotoxicity against L-6 and 3T3-L1 cell lines. Sulphorhodamine B (SRB) assay was performed to determine the cytotoxicity. All the nine extracts were screened for their anti diabetic activity in 3T3 – L 1 cell line and three extracts in L -6 cell line. The anti diabetic activities of plant extracts were determined by percentage glucose uptake over control. Methanolic (MeOH) extract of leaves (L) and stem ( S) of the plant Cassia auriculata, showed higher cytotoxicity with a lower CTC 50 value of 15 µg/ ml and 28 µg/ml on L 6 cells and 28 µg/ml and 34 µg/ml on 3T3- L1 cells respectively. The CTC 50 values of the other extracts ranged from 35 – 120 µg/ ml. The methanolic extracts of leaves and stem of Cassia auriculata showed good anti diabetic activity with a percentage uptake value of 90 + 0.57 and 81 + 3.57 compared to standard insulin 83 + 0.57 in 3T3 – L1 cells. Almost similar results were obtained on L 6 cells, the percentage uptake being 90 + 0.69 and 90 + 1.30 compared to standard insulin, 89 + 1.89.

**PSY-024**

**IN VITRO BIOLOGICAL ACTIVITY OF CASSIA SPECIES**

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Plants as extracts and in various other forms are being used for centuries in different traditional systems of medicine for the treatment of human ailments. Plants produce a great diversity of substances that could be of therapeutic significance in many areas of medicine. These therapeutic benefits to medicinal plants are often attributed to their anti oxidant properties. Based on their ethanomedical use the Cassia species viz, Cassia auriculata, Cassia alata, Cassia fistula and Cassia tomentosa were investigated for their different biological properties. Extracts from different parts of these plants
(leaf and stem) were prepared and concentrated using standard procedures. The extracts were investigated for their phytochemical constituents, anti microbial, anti oxidant, in vitro cytotoxicity and short term anti tumour properties. Phytochemical studies revealed the presence of flavonoids, glycosides, tannins and phenolic compounds in these extracts. These plant extracts showed only moderate anti microbial activity even at the highest concentration used. The methanolic extract of C. auriculata showed anti bacterial activity at a concentration of 125 µg/ml against B. subtilis, P. aeruginosa and T. rubrum. C. tomentosa was active against E. Coli where as C. alata showed activity against C. albicans at a concentration of 125 µg/ml. Methanolic and aqueous extracts of C. auriculata and C. fistula showed potent anti oxidant activity by DPPH method and C. alata extract showed potent anti oxidant activity by hydrogen peroxide method. Cytotoxicity study results indicated potent cytotoxicity activity in the four cell lines tested (Vero, L-6, A 549 and HEp- 2) the CTC 50 values being below 100 g/ml. C. auriculata, C alata, C fistula and C tomentosa extracts showed potent anti tumour activity against EAC cells at a concentration of 250 µg/ml.

PSY-025

EVALUATION OF ANTI-ASTHMATIC ACTIVITY OF AERIAL PARTS OF ARTIMISIA NILAGIRICA AND SEEDS OF SESAMUM INDICUM

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Aqueous extracts of aerial parts of Artimisia nilagirica and seeds of Sesamum indicum were subjected to antiasthmatic activity on healthy adult rats of wistar strain. Since clinical asthma is much similar to ovalbumin induced asthma in rats, the selected strains of animals were treated with ovalbumin suspension for sensitization. The sensitized wistar rats when exposed to both the plant extracts showed significant therapeutic efficacy in reducing the WBC count specifically neutrophills and monocytes, lowering the level of malonyldialdehyde (MDA) or the OH radical scavenging effect, protection of tissue proteins from neutrophills, prevention of histamine- induced bronchospasm, decrease in the production of nitrate ion thus minimizing lung inflammation of asthmatic animal models and relieving bronchial congestion as compared to ovalbumin treated group. In the in-vivo antiasthmatic study, the aqueous plant extracts at a concentration of 200mg/kg body weight showed significant activity in comparison to positive control ketotifen. These investigations further suggest that aqueous extracts of seeds of Sesamum indicum is relatively better than aqueous extracts of aerial parts of Artimisia nilagirica and can be considered as a future natural remedy for treating unresolved asthmatic conditions.
PSY-026

STUDIES ON BACOPA MONNIERA – A REVIEW

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Bacopa monniera (BM) known as Brahmi, a reputed traditional Ayurvedic medicine used for centuries as memory enhancer. The plant extracts and isolated bacosides have been investigated in many laboratories for their pharmacological activities for protective effects against major risk factors in cardiovascular and cerebral diseases analgesic, sedative, hepatoprotective, anti-fertility, anti-bacterial activities. Many triterpenoid saponin glycosides such as Bacosides A, B, C which are of biological importance & other jujubogenins & pseudojujubogenins have been reported in the plant, various new extraction techniques, estimation methods i.e. HPTLC, HPLC, new markers, stability studies of the saponins have been developed in the recent years. Its toxicity studies in rodents in up to 500 mg/kg did not reveal any toxicity in clinical signs, clinical studies in healthy children, adult subjects, mentally retarded children patients were carried out & have been well-tolerated & proved as a safety drug. This paper illustrates the work carried in the 2nd half of the first decade in the new millennium & necessity for working on several other biological activities which have been revealed in the ethnomedicinal survey such as usefulness in skin disease i.e. Leucoderma, Syphilis, Leucoderma, Leprosy & digestive disorders. The standardized formulations available in the market are Bacomind, Promind, Brahmi claiming their use in memory enhancement and other cerebral diseases.

PSY-027

IN-VITRO ANTIOXIDANT STUDIES ON ETHANOLIC EXTRACT OF DIOSCOREA ALATA LINN. (TUBERS)

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Free radicals which have one or more unpaired electrons are produced in normal or pathological cell metabolism. Excessive generation of ROS, induced by various stimuli and which exceed the antioxidant capacity of the organism, leads to a variety of pathophysiological processes such as inflammation, diabetes, genotoxicity, and cancer. Antioxidants play an important role to protect human against infections and degenerative diseases. Nowadays, modern research has been directed towards natural antioxidants of plant origin due to safe therapeutics. Many medicinal plants contain large amounts of antioxidants other than vitamin C, vitamin E, and carotenoids. Dioscorea alata has been consumed and regarded as medicinal food in traditional Chinese herbal medicine. The present investigation evaluates the antioxidant activity of ethanolic extract of Dioscorea alata (Family: Dioscoreaceae) tubers in various
invitro models. The ethanolic extract exhibited potent invitro antioxidant activity against 1, 1-Diphenyl-2-picryl-hydrazyl (DPPH), 2, 2’-azino-bis (3-ethyl benzo-thiazoline-6- Sulphonic acid) diaminium salt (ABTS) radical cation, Hydrogen peroxide and Nitric oxide radical with IC 50 Values 40.84±3.912, 5.115±0.4640, 44.39±0.5842 and 194.8±2.529 µg/ml, respectively. The results were compared with standard drugs like rutin, ascorbic acid and butylated hydroxy anisole. Furthermore, the total antioxidant capacity of the ethanolic extract was found to be 2.355±0.0556mM (≈ to ascorbic Acid). The phytochemical analysis of the ethanolic extract showed the presence of phytosterols, glycosides, saponins, carbohydrates, flavonoids, tannins and phenolic compounds. The antioxidant activity may be due to the presence of flavonoids and phenolic compounds.

PSY-028

EVALUATION OF ANTI-DIABETIC ACTIVITY OF STEM BARK OF MUKIA MADERASPATANA.

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Diabetes mellitus is a syndrome characterized by chronic hyperglycemia and disturbances in carbohydrate metabolism associated with absolute or relative deficiencies in insulin secretion and/or insulin action. Ethanolic and aqueous stem extracts of plant Mukia maderaspatana were subjected to anti hyperglycemic activity on normal and alloxan induced rats. Healthy sprague dawely rats were selected and treated with alloxan solution (120mg/kg). The diabetic rats when subjected to different plant extracts showed significant hypoglycemic activity by increase in glucose uptake in L-6 skeletal muscle cells in vitro. In the in- vivo hypoglycemic activity the aqueous and ethanolic plant extract at a concentration of 200mg/kg of body weight showed significant activity by lowering the glucose level in alloxan induced diabetic animals when compared with standard drug glibenclamide(7mg/kg). Since the effect of aqueous stem extract of Mukia maderaspatana on glucose uptake was not significant. The results indicated that the ethanolic stem extract of Mukia maderaspatana acts as a potent hypoglycemic agent and can be used as a future remedy for the treatment of diabetes.
PSY-029

DOWNSTREAM PROCESS OF STEVIOSIDE FROM STEVIA REBAUDIANA

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Stevia is a member of Asteraceae family and is commonly called as honey leaves or sweet herbal grass. Stevia contains 5-10% of stevioside and 2-4% of rebaudioside. Stevioside is considered to be 300 times sweeter than 0.4% sucrose solution and has earned universal acceptability as a non-calorific natural sweetener because of its history of safe use and zero side effects. Till date, there has been no process for purification of stevioside in India; hence a simple but efficient downstream protocol that is economically and environmentally feasible for the purification of stevioside was developed. Stevia leaves were subjected to hot maceration and the extract obtained was clarified using Calcium oxide and Aluminum oxide, the clarified extract was passed through XAD columns for the adsorption of stevioside is recovered by eluting the column with ethanol. The eluent is concentrated and kept in a deep freezer at -70°C for over night. Loss of stevioside and the percentage yield was observed during the process with the help of HPLC and the purity was checked by mass spectrometry. The percentage yield of stevioside was found to be 3.72%. Being an important natural sweetener, the process developed will meet the stevioside demands of food and pharmaceutical industry.

PSY-030

OPTIMIZATION OF CONDITIONS FOR ULTRA SOUND ASSISTED EXTRACTION OF FLAVONOIDS FROM ONION LEAVES (ALLIUM CEPA L)

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Onions (Allium cepa l) are one of the richest sources of flavonoids. They posses high Antioxidant activity. Onion leaves, like onions have the potency to become the major dietary source of flavanoids. The present work proposes the use of orthogonal design in the development of ultrasound assisted extraction of flavonoids from Allium cepa leaves. Effects of single factors such as temperature, time, material ratio and concentration of ethanol solution on the contents of flavonoids were investigated. On this basis, employing the orthogonal design the optimum extraction conditions for flavanoids from Allium cepa were determined by colorimetry. The optimum conditions were, extraction temperature 500°C, extraction time 45 minutes,
concentration of ethanol 90%, material ratio 1:10 w/v and total flavanoids extracted 24.45 Kg/mg. The extraction of total flavanoids from leaves of Allium cepa by ultrasound was simple, feasible and efficient.

PSY-031

DEVELOPMENT OF STANDARDIZATION PROTOCOLS FOR THE FORMULATIONS AND EXTRACTS CONTAINING MIMUSOPS ELEGY LINN AND PSORALEA CORYLIFOLIA LINN

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The plant Mimusops elegy Linn and Psoralea corylifolia Linn are used in many herbal formulations. Pharmacognostical, Photochemical studies of Betulinic acid present in the bark of Mimusops elegy Linn and the amount of psoralea present in the seed of Psoralea corylifolia Linn and their formulations was also estimated by High Performance Liquid Chromatography (HPTLC) method. In pharmacognostic studies, macroscopy, microscopy, powder microscopy and its analytical parameters like ash value and extractive values of the plants were determined which will help us for correct identification of plant for future study. Phytochemical studies like phytochemical tests, fluorescence analysis and TLC analysis of various extracts and power were carried out of confirm phytoconstituents in plants. The amount of hydro-alcoholic extract is relatively higher than the aqueous extract in the both case of Mimusops elengi Linn and Psoralea corylifolia Linn respectively.

PSY-032

AMARANTHUS VIRIDUS - EVALUATION FOR ANTIPSORIATIC AND ANTIOXIDANT ACTIVITIES

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Amaranthus viridis is an annual herb, probably of American origin, found throughout India in waste places. It is indicated in leprosy, eczema, nutritional, boils, snake bites, scorpion stings, burning sensation, appetizer, laxative, diuretic, menorrhagia, leucorrhoea, heematinic, internal bleeding, diarrhoea, nosebleeds, gonorrhoea, urinary troubles, indigestion and used as galactagogue. A thorough literature of this plant revealed that, so far this plant has not been evaluated for antipsoriatic activity. Hence in the present study we evaluated the hydor alcoholic extract of this plant for antipsoriatic activity using mouse tail test for psoriasis which is a simple and commonly used model for the evaluation of drugs used in the treatment of psoriasis. Apart from the antipsoriatic evaluation, the plant has also been evaluated for its chemical constituents, total phenol and total flavonoid contents, screening and
quantification of different phytoconstituents by HPTLC and in vitro antioxidant activities. Quality control parameters such as loss on drying, ash values and extractive values were also performed. The plant was found contain carbohydrates, proteins, amino acids, saponins, phenols, tannins, terpenoids, fixed oils and fats, gums and mucilages. Phenytoin, isoleucine, threonine, valine and tryptophane were found to be present in the hydroalcoholic extract. It showed very good antioxidant activity in reducing power assay, DPPH, hydrogen peroxide and nitric oxide scavenging activities compared to the standard used. The extract produced significant percentage orthokeratosis (52.86 ± 2.36) in the mouse tail test for psoriasis. Formation of orthokeratosis in those parts of the adult mouse tail where normally a parakeratotic condition is seen. Parakeratosis is a histopathological feature of human psoriasis.

**PSY-033**

**DEVELOPMENT OF POLYHERBAL FORMULATION FOR HEPATOPROTECTIVE ACTIVITY**

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The aim of the present study is to develop a polyherbal formulation using the highly reported plant extracts of Cassia fistula, Coccinia indica and Vigna mungo. The leaf material of Cassia fistula and Coccinia indica and seed material of Vigna mungo were collected at Ooty and authenticated. The collected plant materials were cleaned, washed, dried, powdered and used for the further work. Physicochemical constants determinations like ash values and extractive values were carried out for the raw materials. All the three drugs were extracted by alcoholic maceration method as per the literature collected. The qualitative analysis for raw materials and extracts were carried out and reported. The HPTLC quantitative analysis was carried out for the raw materials, extracts and prepared formulation. The tablet formulation was prepared by using non-aqueous wet granulation method with an average weight of 960 mg. Physical evaluations like friability, weight variation, disintegration time, hardness and chemical evaluation like HPTLC quantitative analysis was carried out for the prepared tablets. The results of physical evaluations were within the IP limits. Determining the potency of the formulation by using in-vivo Carbon tetrachloride induced hepatotoxicity model was carried out. The result reveals that 500 mg/kg dose level shows significant hepatoprotective activity when compared to untreated control animals. The present study was concluded that the prepared formulation was showing significant hepatoprotective activity with all stable physical parameters.
PSY-034

VALIDATED HPTLC METHOD FOR THE QUANTIFICATION OF FORSKOLIN IN COLEUS FORSKOHLLII COLLECTED FROM DIFFERENT REGIONS OF INDIA.

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Forskolin is a labdane, 7b-acetoxy-1a, 6b, 9a-tri-hydroxy-8,13-epoxy-labd-14-en-11-one, primarily extracted from Coleus forskohlii Briq. belong to the family Lamiaceae. It acts by directly stimulating adenylatecyclase, resulting in an increase in the “second messenger” c-AMP Forskolin. Nowadays, HPTLC has become a routine analytical technique due to its advantages of reliability in quantitation of analytes at micro and even in nanogram levels and cost effectiveness especially in herbal drug analysis. A simple and precise high-performance thin-layer chromatographic (HPTLC) method for the quantification of forskolin in Coleus forskohlii was developed and validated. The method was developed on HPTLC aluminum plates precoated with silica gel 60F254 using solvent system benzene: ethyl acetate (7.5:2.5, v/v), which gives well resolved band of forskolin. Densitometric analysis of forskolin was carried out in the absorbance mode at 200 nm. The linear regression analysis data for the calibration plots showed good linear relationship with $r^2 = 0.9986$ with respect to peak area in the concentration range 1000–5000 ng per spot. The limits of detection and quantification were 200 and 1000 ng per spot, respectively. The mean value of correlation coefficient, slope and intercept were $0.9986 \pm 0.0015$, $871.49 \pm 0.68$ and $281.761 \pm 70$, respectively. The method was validated for precision, accuracy, recovery and found to be simple, sensitive, precise, accurate and specific for the estimation of forskolin. The proposed method was applied for the determination of forskolin in Coleus forskohlii collected from different regions of India.

PSY-035

HERBAL REMEDIES FOR PSORIASIS CONTROL - A REVIEW

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Psoriasis is a chronic inflammatory skin disorder that affects 1 to 3 % of the world's population. It is characterized by periodic flare-ups of well defined red patches covered by a silvery, flaky scale on the skin and the scalp. It is noncontagious and commonly affects the skin of the elbows, knees, and scalp. Psoriasis is considered a non-curable, long-term (chronic) skin condition which is periodically improving and worsening. Symptoms of psoriasis become worse during winter season. Psoriasis affects people of all race, age and sex. It is most commonly diagnosed in early adulthood. Patients with more severe psoriasis may be affected both physically and
mentally. There are several variations of psoriasis but the most common type is chronic plaque psoriasis. The exact cause of psoriasis is not clear, but it is believed that activation of T-lymphocytes plays a major role in development of this disease. Till now there is no perfect remedy for psoriasis as the available modern medicines have their own side effects e.g., hepatotoxicity on methotrexate treatment. In this scenario, search for suitable alternative treatments with minimal side effects are essential. Plants can be an effective alternative in this regard. Hence the present review deals with the knowledge of plants that have been traditionally used in the treatment of psoriasis in different systems of medicine including folklore uses in India. Most of the plants traditionally claimed or used in the treatment of psoriasis were not scientifically evaluated for its activity and this review would open up the minds of researchers to enter the rarely explored area of medicinal plant research for psoriasis. Plant information included in this review includes Psoralea corylifolia, Calendula officinalis, Wrightia tinctoria, Momordica charantia, Linum usitatissimum, Azadirachta indica, Ricinus communis, Capsicum frutiscence, Matricaria chamomilla and Simmondsia chinensis.

PSY-036

ISOLATION, CHARACTERIZATION AND EVALUATION OF A POLYSACCHARIDE FROM TAMARINDUS INDICA FOR SUSTAINED DRUG RELEASE PURPOSES

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A water soluble polysaccharide was isolated from the gum Tamarindus indica (Cesalpiniaceae) (GTI) by hot water extraction followed by ethanol precipitation. The phytochemical screening and physicochemical properties of GTM proved that it is suitable for excipient purposes. Sustained release (SR) matrix tablets were prepared by wet granulation method using xanthan gum, GTM and their combination with diclofenac sodium as a model drug. The dried granules were evaluated for flow properties and compressibility index. The blends were compressed using 8 mm concave punches on a rotary tablet press. The compressed tablets were evaluated for weight variation, thickness, hardness, friability, drug content and in vitro drug release. The in vitro dissolution studies of the developed SR tablets were carried out using USP type II apparatus (Electrolab, Mumbai, India) at 50 rpm. The dissolution medium consisted of 900 ml of pH 6.8 phosphate buffer, maintained at 37 ± 0.5°C. The drug release at different time intervals was measured using an UV visible spectrophotometer. The results reveal the sustaining nature of the different batches prepared. The release mechanism of the drug from the matrix tablets was analyzed by Highuchi and Peppas models. The results reveal that the combination of xanthan and GTM has good sustaining property. The release mechanism of the optimized batch
was found to be anomalous diffusion and does not obey fickian laws (n=0.578618). Bioavailability studies in animal models are in progress.

**PSY-037**

**ANTIMICROBIAL ACTIVITY OF CLERODENDRUM SPECIES**

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The solvent extracts of the barks of Clerodendrum viscosum and Clerodendrum serratum were tested for antimicrobial activity. The antifungal activity was tested against Aspergillus niger, Aspergillus fumigatus, Aspergillus rauantii and Candida albicans. Antibacterial activity was tested against Proteus vulgaris, Bacillus subtilis, Staphylococcus aureus, Escherichia coli and Pseudomonas aeruginosa. The methanolic extract of both the plants exhibited significant activity against all the selected strains. The study justifies the folk therapy of the title plant in varities of fungal and bacterial infections. The antimicrobial effect of poly phenols (Phenolic acid, Flavanoids and Tannins) present in Clerodendrum serratum and Clerodendrum viscosum demonstrated in this study can be added to the already known beneficial biological properties of Clerodendrum species to the human health.

**PSY-038**

**FORMULATION AND EVALUATION OF HERBAL SOAP CONTAINING CURCUMINOID EXTRACT**

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The present study was carried out with an aim of formulating a herbal soap containing the total curcuminoid extract and evaluating the formulation for various physical and chemical parameters. The formulation was made on the basis of choosing an effective acidic pH for making soap base and then incorporating the total curcuminoid extract in to the base. The comparative evaluation was performed by using a formulated basic soap and a marketed herbal soap preparation containing turmeric in the label claim. The marketed sample was found to be alkaline in nature. Natural curcuminoids possess the deep yellow colour at the pH of 7 or less, but in case of alkaline pH the colour changes from deep yellow to deep red, which is an indication of instability of curcuminoids at alkaline pH. The result of the study reveals that the formulated acidic soap was comparatively stable and effective than alkaline soap and the marketed soap. The antimicrobial screening of the acidic
soap reveals its antimicrobial activity on selected strains namely Streptococcus epidermiditis, Lactobacillus leishmanii and E.coli. The phytoconstituents present in Turmeric namely curcuminoids is effective and stable at a pH of 5.5. At a pH of 7 or more the curcuminoids precipitated out and looses its antimicrobial activity. Considering the above factors a herbal acidic soap was formulated to protect the biological activity of curcuminoids. The formulated herbal acidic soap possesses the following advantages: More effective formulation at acidic pH. Ease of formulation. No skin irritation. Economical. Eco-friendly.

PSY-039

**ANTIVIRAL ACTIVITY OF LEAF EXTRACTS OF CRYPTOSTIGIA GRANDIFLORA (ROXB) R.BR**

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The plant Cryptostigia grandiflora (Rxb) R.br (family: Asclepediaceae) is widely distributed in Nilgiris. The dried leaves of Cryptostigia grandiflora were extracted with methanol and used for Anti-viral studies. Confluently grown mono-layer culture of Vero and A-549 cells were developed in Trypsin phosphate buffered saline solution in 1-versene glucose mixed with Eagles minimum essential medium which were cultured in sterile micro-titer plates by Trypan blue exclusion method. Herpes virus Type-1 a human pathogenic strain (Family: Herperviridae) were chosen for screening Anti-viral activity. A parallel control was also carried out using Acyclovir as a virus inhibitory drug. The methanolic extracts of leaves of Cryptostigia grandiflora were found to be potent inhibitors of the host cell lines of the concentration used.

PSY-040

**DIURETIC STUDIES ON THE BARK OF VERNONIA MONOSIS BENTH**

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The bark obtained from the tree of Vernonia monosis Benth (Family: Compositae) abundantly found in the Nilgiris. The bark of this plant is used by Ethonopharmacologist for diuretic activities. The various extracts of petroleum ether, benzene, ethyl acetate and ethyl alcohol obtained from the bark of Vernonia monosis Benth was studied for their diuretic activity in adult male albino rats. The parameters estimated were Volume of urine output in ml, pH and estimation of electrolytes like Sodium, Potassium and total Chlorides were studied. The various extracts showed a significant and dose-dependent increase in urine volume and cation excretion in rats in the dose administered at 100mg/kg and 200mg/kg. With urine volume as the diuretic parameter, the benzene extracts showed the maximum mean value within the
compound groups. All the extracts produced slightly alkaline urine which was similar to that of Furosemide. With cation excretion as the diuretic parameter, the extracts showed a significantly higher value with the Potassium ions. At the dose level of 200mg/kg body weight, the ethyl acetate extract significantly eliminates the Sodium and Potassium levels, which was akin to Furosemide. The elimination of Chloride by the various extracts was similar to that of Furosemide.

PSY-041

PHARMACOGNOSTIC STUDY OF BAUHINIA VARIEGATA (INDIA)

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It grows throughout India, ascending to an altitude of 1,300m in the Himalayas. Bvariegata is a medium-sized, deciduous tree. The bark is gray; the leaves are sub-coriaceous and deeply cordate; the flowers are variously coloured and occur in few-flowered, lateral corymb; the pods are long, flat, glabrous, dehiscent and 10-15 seeded. The seeds yield a fatty oil, the bark yields fibre. Five flavonoids isolated from the different organs of B.variegata were identified as quercetin, rutin, quercetrin, apigenin and apigenin7-O-glucoside1. The alcoholic extract of the stem bark showed CNS activity. Besides producing hypothermia in mice, it also responded to amphetamine hyperactivity test2. The bark is astringent, tonic and anthelmintic. It is useful in scrofula and skin diseases. It is also used for ulcers and leprosy. A decoction of the bark is taken for dysentery. The dried buds are used for diarrhea, dysentery and hemorrhoids.

PSY-042

HIGH PRESSURE EXTRACTION OF FOOD DYES FROM NATURAL SOURCES

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The food dyes extraction from natural source has been studies in the last years from different authors. The use of synthetic dyes is being increasingly rejected by the consumers. The current trend in the elaboration of foods and drinks is for the use of natural dyes. Because they are perceived as less harmful to health. There are number of methods for the extraction of dyes from natural sources. The application of the super critical fluid extraction technology to obtain these substances has been studied in the last decade. An increase in the quality of the product to the great extent is possible with this technique. Some extraction process of different food dyes: carotenoids from carrots, from orange peels, etc., have been reported. Other
extraction process of food dyes from different natural sources has been studied like extraction of anthocyanins from the red wine waste.

PSY-043

DETERMINATION OF REDUCING POWER OF A TRADITIONAL DRUG

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Urena labata (Malvaceae) commonly called Ottu tutti is used as folklore medicine in the treatment of inflammation, wound, diabetes, rheumatism and hypertension. The Phytoconstituents like triglycerides, mangiferin, quercetin, stigmasterol and Beta – sitosterol and roots of Urena lobata. The roots of the plant may have anti bacterial activity where as the leaves possessed anti inflammatory and anti oxidant activity in the total Methanolic extract, since the entire plant was not worked so far an attempt has been made to determine the invitro anti oxidant activity by determining reducing power. The shade dried entire plant was powdered, extracted separately with petroleum and alcohol for 72 hours followed by 48 hours and 24 hours by maceration technique. The dried extracts were subjected to preliminary phytochemical screening and anti-oxidant studies by determining reducing power. The phyto chemical screening reveals the presence of carbohydrates, phytosterols, terpenoids, saponins, protein and amino acids in petroleum ether extract followed by protein and amino acids, favoniods, tannins, mucilages in alcoholic extract. In in-vitro anti oxidant study both the extracts showed dose dependant activity. A dose dependent increase in reducing power was shown with petroleum ether and with alcoholic fraction and it is expressed interms of ascorbic acid equivalents. This result proves that the presence of amino acids may be responsible for the reducing power.

PSY-044

EFFECT OF BARK OF PITHECELLUBIUM DULCE ON 1,1-DIPHENYL-2 PICRYL HYDRAZINE[DPPH]-SCAVENGING ACTIVITY

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Pithecellobium dulce [family:mimosaceae] commonly called as Kodukkaa puli is used as a follicle medicine possing abortifacient, anodyne, astringent, larvicidal. Decoction is used as enema. It is a tree native to mexico through central America to Columbia and Venezuela. The bark was reported to contain cathecol type tannins. In the present study, the various extracts[ pet. Ether, chloroform, ethyl acetate, ethanol, total ethanol] of bark of Pithecellobium dulce [ROXB] Benth were subjected to
DPPH radical scavenging activity in the concentration of [1.5, 3, 7, 15, 30, 62, 125, 250, 500, 1000 mcg/ml]. The DPPH scavenging activity was shown in the order of ethyl acetate > pet. Ether > chloroform > ethanol > total ethanol. The effect may be due to the presence of phenols, proteins [amino acids like arginine, isoleucine, proline etc.] and sugars.

**PSY-045**

**THE WONDERS OF GREEN BLOOD**


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“Green Blood” is an extract obtained from Wheat Grass, scientifically called Triticum firmum (Poaceae). It contains chlorophyll which has structural resemblance to haemoglobin of blood, hence called Green Blood. It is immediately absorbed into the bloodstream and gives immediate energy. It is the most widely used health supplemental foods as it contains 70% chlorophyll, about 20 amino acids, vitamins like A, B, C, E, K and as many as 90 of 102 possible minerals. The best part is that it has ‘live enzymes’. Each enzyme performs a specific function within the body and they control all the bodily functions. Did you know about the healing wonders of wheat grass? The chlorophyll in it neutralizes the infections, heals wounds, and overcomes inflammations. The three most important effects of wheat grass on the human body are: blood purification, liver detoxification and colon cleansing. It has excellent detoxifying, cleansing and deodorizing properties, especially of the bowel and blood. This wonder grass is known to assist skin allergies and stimulates regeneration of healthy tissue for burns and slow healing ulcers. Wheat grass juice enhances human immune system and is an incredible super food that builds healthy blood like no other food and that you can easily grow and juice yourself. So, invest about 100ml of Green blood everyday into your body and enjoy the refund. Hence it is not astonishing to say Green blood as "Miracle life enhancing liquid rejuvenator". Now, it's good-bye to all that junk food and hello to Green blood.
HERBS FOR THE BRAIN

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Long practiced outside of conventional medicine, herbalism is becoming more mainstream as its value in treatment and prevention of disease is becoming evident. Among principal medical conditions reported by patients seeking herbal treatment, most fall within the province of neuropsychiatry including back problems, insomnia, headache, anxiety, depression. Roughly half the current pharmaceuticals originally were procured from plants. Proponents of herbal medicines describe a plant's therapeutic value as coming from the synergistic effects of its various components, in contrast to individual chemicals of conventional medicines isolated by pharmacologists. Patients seeking herbal care have been characterized as neurotic terminally ill patients who have exhausted conventional treatment. People usually turn to herbalism due to high cost of conventional treatment, frustration with iatrogenic effects from chronic treatment or interventions and insufficiency of scientific molecular model of medicine to address all of patients' physical and mental health needs. Many herbs are considered safer than conventional medications, but because they are unregulated, herbal products may often contain undeclared additives and adulterants. Some are associated with allergic reactions or interact with conventional drugs. Examples of some such herbs, their mechanism and effects are: St. John’s wort (5-HT uptake inhibition, MAO, COMT inhibition) used in Depression, Sleep disorder; Ginkgo (GABA agonist, PAF inhibition) in Dementia; Kava-kava (GABAA receptor binding, Na channel inhibition) in Anxiety; Ginseng (ACh agonist) in schizophrenia; Valerian (GABAA/GABAB receptor binding, GABA uptake inhibition) in Anxiety. Professionals trained in herbal medicine can effectively help patients integrate herbs along with conventional therapies into the individual's treatment plan.

THE PHARMACIST'S ROLE IN HERBAL MEDICINE

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Herbal medicines are in great demand and are used by approximately 80% of the world's population. Their popularity is due largely to their presumed safety, efficacy,
cultural acceptability, and lesser side effects compared with prescription medications; perhaps most important, they are viewed as cost effective and accessible. The past few years in particular have seen a major increase in the use of herbal products. The global market was $5.6 billion by the end of 2006; growing at an average annual growth rate of 1.7%, it is expected to exceed $6.1 billion by 2011. Pharmacists can play a key role by asking patients about their use of herbal products, and by discussing this issue with healthcare providers. Various pharmacist roles are discussed below.

Patient Education:- Pharmacists need to stay current on accurate information about herbal medicines and use this expertise when advising patients. Pharmacists need to establish rapport with their patients, maintain regular contact and follow-up, and most importantly, encourage the use and continuation of therapeutics that have been proven effective.

Pharmacy Education:- In addition to integrating information about herbal products across the curriculum, specific courses must be designed to help pharmacists attain higher skill levels in this area. For pharmacists to serve as educators on the use of herbal medicines.

Conclusion :- The use of herbal medicines is growing at an outstanding rate all over the world. Herbal remedies are now available not only in drug stores but also in grocery stores. To assure that comprehensive care is maintained, patients need to be encouraged to share information with their primary care providers about their herbal medicines, or to allow their pharmacist to inform their providers.

**PSY-049**

**Herbal Remedies for Diabetes in India**

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There is a great demand for herbal medicines especially in the developing countries because of some generalized conception persist in the society regarding its superiority over other contemporary therapies including most advanced allopathic system of medicine like they are safe, non toxic, their wide spectrum of effectiveness, usefulness, cheaper and easily available. The basic objective of this review focuses on herbal plants used as drugs in the treatment of diabetes. Diabetes has been recognized since ancient times and is of particular importance because of its widespread prevalence. In India it is proving to be a major health problem, especially in the urban areas. In recent times a number of evidences have come up throwing light on the usefulness of particular herbal remedies in preventing diabetes and keeping blood sugar levels under control. These include *Eugenia jambolana*, *Momordica charantia*, *Ocimum sanctum*, *Allium sativum*, *Trigonella foenum graecum* and *Costus pictus.*
PSY-050

THERAPEUTIC POTENTIAL OF SEABUCKTHORN (HIPPOPHAE RHAMNOIDES L.)

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Seabuckthorn (Hippophae rhamnoides L.) is thorny nitrogen fixing deciduous shrub. A Seabuckthorn(SBT) is primarily valued for its very rich vitamins A, B1, B12, C, E, K and P; flavonoid, lycopen, carotenoids, and phytosterols. Therapeutical important since it is rich with potent antioxidants. Scientifically evaluated pharmacological effects of it are like inflammation inhibited by reduced permeability, disappearance of follicular aggregation of lymphocytes from the inflamed synovium and suppress lymphocyte proliferation. SBT reduced recurrence of angina, ischemic electrocardiogram which might be due to decreased myocardial oxygen consumption and inhibition of platelet aggregation induced by collagen and antiatherogenic effect. SBT can kill both cancer cells of S180 and P388 and inhibit growth of cell strains of human gastric carcinoma (SGC7901) and lymphatic leukemia (L1200). The antiulcer activity may be related to reduced gastric emptying time, inhibiting proteolytic activity in gastric liquid and promoting wound repARATION processes of mucosa. SBT exerts antihypertensive effect in part by blocking angiotensin-2 receptor on cell surface and thus arrest downstream signal pathway. SBT may promote restoration of stress of healing tendons, probably by enhancing matrix deposition and maturation with altered cytokine profile in wound. SBT decreased the level of stress hormones and enhanced hypoxic tolerance in animals indicating its anti-stress, adaptogenic activity. Lot of research work is still need to find cellular and molecular mechanisms of these activities and also yet to be explored for its activity in osteoporosis, hemorrhage, cataract, urinary stone, acne, psoriasis, sterility, polyneuritis, cheliosis, glossities, baldness, analgesic, benign prostatic hypertrophy, anti-obesity, gout, and chronic prostitis.

PSY-051

COMPARATIVE STUDY BETWEEN MARKETED POWDER AND SELF PREPARED POWDER OF FRUITS OF LAGENERIA SICERARIA

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Now a days the powder of fruits of bottle guard is in great demand. The market is flooded with numerous companies supplying this powder. This comparative study is carried out to find out the adultration and confirm the purity of marketed sample. The
powder was prepared in our laboratory by shade drying method. The parameters which are used for comparison are as follows. Pharmacognostical studies, Plant profile, Macroscopic characters, Microscopic characters, Determination of Physico chemical constants, Ash values, Determination of Total Ash, Determination of Acid Insoluble Ash, Determination of Water soluble ash, Determination of Acid soluble Ash, Determination of Water Insoluble Ash, Extractive Values, Determination of Alcohol Soluble extractive value, Determination of Water Soluble extractive value, Determination of Total solid, Determination of fibre value, Qualitative phytochemical screening, Preliminary phytochemical screening. It is confirmed by above study that marketed powder is not adulterated.

PT-001

**DRUG DISCOVERY & DEVELOPMENT**

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Drug Discovery & Development is defined as the process of taking a new chemical lead through the stages necessary to allow it to be tested in human clinical trials. The Creation of a New drug begin in the laboratory with chemists, scientists and pharmacologists which involve Target identification, Target prioritization/validation, Lead identification, Lead optimization NCE are compounds which emerge from the process of drug discovery. These will have promising activity against a particular biological target thought to be important in disease, however little will be known about the safety, toxicity, pharmacokinetics and metabolism of this NCE in humans. A further major objective of drug development is to make a recommendation of the dose and schedule to be used the first time an NCE is used in a human clinical trial FIM. Clinical testing is usually described as consisting of Phase 1, Phase 2 and Phase 3 clinical studies. Testing is continued even after a new drug is been approved.

PT-002

**NANOROBOTS**

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Diagnosis and treatment for simple and complex illness can be effectively attempted by using robots inside the body. Nano technology clearly provides avenues to explore in this direction. The bio-medical applications of nanorobots are crucial vis-à-vis effective and relatively faster treatment while also enabling to increase the potential of human cells. Although at a nascent stage of research the effectiveness and purpose of
nanorobots in already manifest in R&D. The cost concerned is on the higher side for now. However, as production and usage is increased the cost concerns will also be solved. This poster will deals with idea of nanorobots and their biomedical applications. Furthermore, this poster also discusses how nanorobots can function inside human body in terms of its movement and the energy for its movement.

PT-003

FORMULATION AND EVALUATION OF VENLAFAXINE HYDROCHLORIDE TRANSDERMAL PREPARATIONS

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The Transdermal Drug Delivery is becoming increasingly popular with the demonstration of the percutaneous absorption of large number of drugs. In this study we have made an attempt to develop Transdermal patches of VHF by using HPMC (4KM) as polymer matrix, Polyethylene glycol (20,30 and 40%w/w of dry polymer) as the plasticizer, Tween-80(5 & 10% w/w) as the permeation enhancer, and Alupolyfoil as the Backing membrane. The films were evaluated for various physicochemical properties. In vitro diffusion studies were done by using excised albino rat skin. From in vitro diffusion studies, it was found that there was increase in permeation rate with increase in permeation enhancer concentration. Tween 80 at (10%w/w) was found to produce the highest permeation of the drug. The HPMC films at 2% w/v concentration showed a greater rate of release. Skin irritation studies for the Transdermal patches were assessed and were found to be free of irritation.

PT-004

FORMULATION DEVELOPMENT AND IN-VITRO EVALUATION OF MATRIX TYPE TRANSDERMAL PATCHES OF CARVEDILOL

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The feasibility of matrix controlled transdermal patch based on span-80 and Tween-80 as penetration enhancer containing Carvedilol was investigated. Matrix-type transdermal drug delivery system of Carvedilol with different ratios of hydrophobic polymeric alone and combination of hydrophilic polymer, was fabricated by the solvent evaporation technique. The physicochemical compatibility of the drug and polymers was studied and found to be compatible. In vitro dissolution studies was carried out using modified paddle over disk method. The optimized formulation,
combination of Ethylcellulose and Hydroxy propyl methyl cellulose in the ratio (2:8) showed better release of 95.91% ±0.053 % after 24 hours. It showed first order release with linearity (r=0.9447 to 0.9895). The results followed Higuchi kinetics (r = 0.9953-0.9979), and the mechanism of release was diffusion mediated. It was further confirmed by Peppas-Korsemayer.

PT-005

ISOLATION OF SEED HUSK MUCILAGE FROM Plantago ovata AND ITS EVALUATION AS A TABLET DISINTEGRANT

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Topic of study: The present study was undertaken to separate mucilage form seeds of Plantago ovata and explores its use as a tablet disintegrant. Method: Method for extraction of mucilage from seeds was developed. The mucilage was evaluated for various parameters as per Indian Pharmacopoeia. The disintegrant action of separated mucilage was compared with that of the starch in tablets prepared using lactose, propranolol hydrochloride and polyvinyl pyrrolidone as model diluent, drug and binder, respectively. The tablets were prepared by using direct compression method. Result: The yield of mucilage was found to be 8% w/w. The loss on drying, ash value, and microbial count were well within official limits. The compressibility index and angle of repose indicated that the powder is having good flow with moderate compressibility. The disintegration time for tablet formulations prepared using Ispaghula mucilage (10% w/w) was less (154 seconds) than that of the tablet formulation prepared using starch as a disintegrant (269 seconds). Formulated tablets were found stable at 450C for 4 weeks without significant change in hardness, disintegration time, and in vitro drug release. Conclusion: From the present study, it was concluded that the mucilage separated from Plantago ovata could be used as a disintegrant in the tablet formulations as it shows very good disintegrating property when compared with starch, which serve as an alternative to synthetic products because of local accessibility, environmental friendly nature and lower prices compared to imported synthetic products.

PT-007

Abbreviated New Drug Application

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The generic pharmaceutical company, seeking to market an equivalent to an innovators product (once the market exclusivity
on the innovator’s product has expired), uses a significantly less costly & faster process, the Abbreviated New Drug Application process. An ANDA is an application for a generic drug approval for an existing licensed medication or approved drug. Under this process, the generic manufacturer relies on the safety & efficacy data supplied by the innovator, & only has to prove to the branded product. Once approved, an applicant may manufacture & market the generic drug product to provide a safe, effective, low cost alternative to public. A generic product is one that is comparable to an innovator drug product in dosage form, strength, route of administration, quality, performance characteristics & intended use. All approved products, both innovator & generic are listed in FDA’s approved Drug Products with Therapeutic Equivalence Evaluations. Generic drug applications are termed“Abbreviated” because they are generally not required to induce preclinical (animal) & clinical (human) data. The FDA waives the requirements for conducting complete clinical studies as safety & efficacy have already been established by innovator company. Using bio-equivalence as the basis for approving generic copies of drug products was established by the Drug Price Competition & Patent Term Restoration Act of 1984, also known as Hatch-Waxman Act. The ANDA process eliminates the length of costly clinical research phase of development, as a result generic pharmaceutical product development takes approximately 3 years.

PT-008

ASPECTS OF CLEANING VALIDATION

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Pharmaceuticals can be contaminated by potentially dangerous substances like product residues, cleaning agent residues, airbome matter, lubricants, ancillary material, bacteria, moulds and pyrogens hence it is essential to establish adequate cleaning procedures. Cleaning validation should be performed in order to confirm the effectiveness of a cleaning procedure. The overall objective of any cleaning validation is to assure that intermediates, excipients and active drug ingredients from the previous batch do not contaminate the product. The strategy on cleaning validation includes product changeover. Between batches in campaigns, bracketing products for cleaning validation, periodic reevaluation and revalidation. Cleaning validation should include objective of validation should include objective of validation, responsibility
for performing and approving validation study, description of equipment used, interval end of production and cleaning and commencement of cleaning procedures and its type, number of cleaning cycles performed consecutively, sampling procedures used and rationale and sampling locations. Record of cleaning validation should have data on recovery studies, analytical methods including Limit of Detection and Limit of Quantitation, acceptance criteria and rationale, when revalidation will be required, management and QA involvement. The results and reports must consist of cleaning record sign by operator, checked by production and reviewed by QA, final validation reports including conclusions. Cleaning criteria limits are visually clean, 10ppm in another product and 0.1% of therapeutic dose. Thus a manufacturer needs a cleaning validation strategy, access each situation on its merits, develop scientific rationale and visually clean may be all that is required.

**PT-009**

**SOLUBILITY ENHANCEMENT AND DEVELOPMENT OF DISPERSIBLE TABLET OF MELOXICAM**

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The present research work investigates enhancement of dissolution profile of meloxicam using solid dispersion (SD) with various polymers. The work also describes the formulation of dispersible tablet (DT) and effervescent tablet of meloxicam. PEG 6000, PEG 8000, PEG 20000, Lutrol F-127, and β-cyclodextrin were selected for the preparation of SD. The SDs were prepared by melting and solvent evaporation methods. Dissolution studies were performed for pure meloxicam, SDs, and tablet formulations. Differential scanning calorimetry was performed to identify the physicochemical interaction between drug and carriers. Dispersible tablets and effervescent tablets were compared with tablet containing pure drug for dissolution profile. Dissolution of DT improved significantly in SD product (<95% in 1 min).
PT-010

RECENT TRENDS AND DEVELOPMENT IN PRODUCTION OF HEPATITIS B VACCINE

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Hepatitis B is one of the world’s major health problems. Hepatitis B is a viral disease process caused by the hepatitis B virus (HBV). As per WHO estimates, more than 2 billion people are infected with hepatitis B virus globally. This includes 350 million chronic carriers of the virus. Hepatitis B infection leads to 1 to 2 million deaths per year worldwide. The objective of presenting the poster is to summarize the various trends and developments in production of Hepatitis B vaccine. HB vaccine is a very sensitive to heat and chances of thermal degradation are very high during production, transportation and even storage and as result cost of vaccine is very high. Several research groups try there best to solve these problems and they find the best solution of this in form of edible vaccine. Plant based vaccines can be grown locally, reducing the cost and complications of transportation, while the stability of proteins in intact plants removes the refrigeration. Furthermore, the edible nature of the vaccines eliminates the need for syringe-based delivery, saving money and reducing the risk of infections. Flow chart 3 represent the production of plant derived vaccine (oral vaccine) for hepatitis B and different expression systems used to express hepatitis B surface antigen that is (A) banana fruits (B) tobacco plants, (C) soyabean callus (D) potato hairy roots, (E) potato microtubers (F) tomato fruits.

PT-011

STUDIES ON SOLID DISPERSION OF ROXYTHROMYCIN


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The objective of this work was to improve the aqueous solubility of poorly water soluble drug roxithromycin. The major drawback of roxithromycin is its aqueous solubility, which results in reduced bioavailability of 50%. To overcome these drawbacks, an attempt has been made to formulate solid dispersions of roxithromycin. Solid dispersions were prepared by using various ratios of α-cyclodextrins (1:1, 1:2, 1:3, 1:4 and 1:5) by kneading method. The prepared solid dispersions were evaluated for various physicochemical evaluations such as percentage yield, average particle size, angle of repose, bulk density, compressibility, moisture uptake, drug content and in vitro dissolution studies. The FTIR studies and DSC revealed that there was no
major interaction between the drug and carrier. The XRD studies were done to find out the crystalline nature of drug in solid dispersion. The results suggested that the drug was in amorphous form and little crystalline in nature. The in vitro study for pure drug and solid dispersions were carried out using 900 ml of double distilled water using USP XXIII dissolution apparatus (Paddle method). The results suggested that the rate and extent of dissolution of drug from the solid dispersion were found to be faster than pure drug. This could be due to the lack of crystallinity, increased wettability and reduction in particle size of the drug in the solid dispersion complex. The batch prepared using drug carrier (1:4 ratio) showed the maximum dissolution of drug 96.5% as compared to pure drug. The t50 values for this batch was 25 minutes. The results revealed that the prepared solid dispersions were found to follow first order kinetics. From the study, it can be concluded that the formulated solid dispersions cou

PT-012

DESIGN AND IN VITRO EVALUATION OF ACECLOFENAC MICROBEADS


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The primary objective of this study was to develop controlled release beads of aceclofenac. Oral slow and sustained release drug delivery systems can release their drug content with a sustained manner, producing a desirable blood level, reduction in toxicity and improving patient compliance by prolonging dosing intervals. The major drawback of the orally administered drugs like aceclofenac has a shorter biological half-life of 4 hours. To overcome these drawbacks, an attempt has been made to develop a controlled release dosage form of aceclofenac embedded sodium alginate microbeads. The microbeads were prepared by employing various concentrations of sodium alginate (0.5, 1, 1.5, 2 and 2.5% w/v), aceclofenac (0.5%) and calcium chloride (2%w/v) by ionotropic gelation method. The prepared microbeads were evaluated for its physicochemical parameters such as particle size determination, drug content, and in vitro dissolution studies. A random sample of 50 microbeads from each batch was taken and their sizes were determined using vernier caliper method. The sizes of alginate beads were found to be in the range of 0.8 to 1.2 mm in diameter. The surface of the alginate beads was found to be spherical and smooth in nature. The drug content in the microbeads was found to be in the range of 82 to 93%. Aceclofenac release was studied in 900 ml of phosphate buffer (7.4) for 8 hours. The cumulative release of drug from the microbeads was in the range of 70 to 85%. The release of drug from the alginate beads was found to decrease as the
concentration of alginate was increased. This could be due to the gel strength of alginate in microbeads, which retards the drug release. It was observed that the release of drug from the prepared beads obeyed first order release kinetics with higuchi diffusion. It enhance the solubility of roxithromycin, in turn it may also increase the bioavailability of the drug.

PT-013

BIOADHESIVE PARTICULATE SYSTEM FOR ENHANCED WOUND HEALING

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Treatment of wounds with antimicrobial powders has the problem of falling from wound surface causing delay in wound healing. Extending the retention time of antimicrobials on the wounds would be helpful to quicken the healing process by formulating a free flowing powder with bio adhesive characteristics. The present work was to formulate an Bio adhesive powder for enhanced delivery of Silver sulfadiazine (SSD) in order to overcome the problem associated with conventional topical powders, which will help in preventing the falling down of SSD adherence of drug to cloths and maintain antimicrobial environment by controlling microbial recontamination through formation of gel cover on the wound. It also reduces the chances of microbial growth by absorbing the exudates to maintain a dried state on wound surface. Formulations were prepared by blending and evaluated for flow properties, wetting time, gel quality, swelling index, bio adhesive strength and release profiles. Formulation containing 80% Carbopol and 18.4% Xanthan gum exhibited optimum bio adhesion, wetting time (2 min), flow property (AOR 31.9), swelling index (446%) and sustained release (44.84% in 10 hr ). The optimum formulation showed enhanced wound healing activity in burn wound model (rat) compared to control formulations and placebos. Hence the developed formulation provides better mono drug therapy for wound healing in burn wound models and doesn’t need a synergist to show equivalent activity.
PT-014

FAST DISSOLVING ROXITHROMYCIN TABLETS CONTAINING SOLID DISPERSION OF ROXITHROMYCIN

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Roxithromycin is one of the macrolide antibiotics for respiratory and genital tract infections. It is very slightly soluble in water, in the present investigation, an attempt was made to improve the dissolution rate of Roxithromycin through the preparation of solid dispersions using mannitol as carrier at various proportions (1:1, 1:2, 1:4, 1:6, 1:8) with different techniques like physical mixture, Kneading method, Common solvent method, Melt method and melt solvent method. U.V.spectrophotometric method was selected for Assay as well as In-vitro dissolution studies at 203nm in distilled water. And the dispersions was evaluated for drug content uniformity, dissolution rate study, FTIR. And DSC was used to characterize the solid state of solid dispersions. A marked increase in the dissolution rate was observed with all solid dispersions. Among that the drug: polymer 1:4 ratio in melt method, gave the highest improvement in dissolution rate which was selected for formulation of tablets and evaluated for drug release characteristics. The promising formulation was then compared with existing marketed products. The release study shows that these are fast release formulations of Roxithromycin.

PT-015

“YANTRAS”:

THE SPECIAL MANUFACTURING EQUIPMENTS FOR AYURVEDIC FORMULATIONS

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Ancient ayurvedic science utilize its own specialized manufacturing techniques for most of the specific unique formulations. For this special “Yantras” are mentioned in classical texts. As per the Rastarangini & Rasasastra Yantras are the apparatus used to perform certain process like purification, fermentation, sublimation on mercury, other metals and traditional herbs. This presentation would be a comprehencive compilation of technical details of traditional “Yantras” mainly mentioned in Rastarangini, Rasasastra Yantras, Ayurvedic Pharmacopoeia and other ayurvedic classics. Few important yantras that would be discussed are as follows: Named basing on their shapes. i.e. Dola yantra (swinging apparatus), Damaru yantra(drum apparatus), Kacchapa yantra(tortoise apparatus), Palika yantra(saucer apparatus). Sometime, they
are named based on the procedure undertaken in that particular apparatus. i.e. Swedini yantra (vapour apparatus), Jarana yantra (digesting apparatus), Patina yantra (condensing apparatus). Sometimes they are named basing on the material used in assembly. i.e. Valuka yantra (sand apparatus), Lavana yantra (salt apparatus), Bhasma yantra (ash apparatus). The attempt has been made to understand and discuss the traditional Y

PT-016

SMART POLYMER BASED RELEASE OF PEPTIDES AND PROTEINS

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Peptides and proteins play a vital role in all biological processes and have received a growing attention in the recent years as drug entities. The advancement in understanding the pharmacology of proteins and peptides has developed leaps and bounds and more rapidly than the ability to deliver these compounds efficiently to the targeted sites. Oral routes have always been desirable among the patients but the main disadvantage; peptides are destroyed in the GI tract. There has been a significant interest in developing novel drug delivery systems which deliver peptide and protein drugs at controlled rates. Biodegradable polymeric systems represent promising means for delivering peptide and protein drugs. These systems are termed as smart polymers; they are macromolecules that display a dramatic physiochemical change in response to slight changes in the environment. Some undergo sol-gel transition on administration. In situ gel formation occurs in response to the external stimuli such as temperature, solvent change etc. These smart polymeric based injectable drug delivery systems have gained attention because of several advantages over conventional methods which include ease of manufacturing, administration, biodegradability and controlled release. The review paper will be discussed considering the latest developments, advantages and disadvantages and their variability in the commercial prospectus.

PT-017

PREPARATION AND EVALUATION OF ETORICOXIB SOLID DISPERSIONS AND ITS TABLETS

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Etoricoxib, a non-steroid anti-inflammatory drug, is used to Osteoarthritis, Rheumatoid arthritis and Acute Gouty arthritis. Etoricoxib is practically insoluble in water; hence present study was carried out to enhance dissolution properties of Etoricoxib. Through the preparation of Solid Dispersions using Mannitol, PEG6000,
as carriers at various proportions (1:1, 1:3, 1:6, 1:9) by using different techniques like Physical Mixtures, Kneading Method and Solvent Evaporation Method. The drug release profile was studied in 900ml., 0.1N HCl containing 0.75% SLS. U.V. Spectrophotometric method was selected for assay as well as invitro dissolution studies at 234 nm. The dispersions was evaluated for drug content uniformity dissolution rate study, DE60, Reproducibility, ANOVA, FTIR and DSC were used to characterize the solid state of solid dispersions. A marked increase in dissolution rate was observed with all solid dispersions, among that Etoricoxib with Mannitol (1:3) Kneading Method gave highest dissolution, which were selected for formulation of Tablets and evaluated for drug release characteristics. The promising formulations were then compared with existing marketed products. The release study shows similar to the marketed product

PT-019

DENDRIMERS: AN EXCELLENT PHARMACEUTICAL AID

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Dendrimers are repeatedly branched molecules. Basics dendrimers are spheroid or globular nanostructures that are precisely engineered to carry molecules encapsulated in their interior void spaces or attached to the surface. Size, shape, and reactivity are determined by generation (shells) and chemical composition of the core, interior branching, and surface functionalities. Dendrimers are constructed through a set of repeating chemical synthesis procedures that build up from the molecular level to the nanoscale region under conditions that are easily performed in a standard organic chemistry laboratory. The dendrimers diameter increases linearly whereas the number of surface groups increases geometrically. Dendrimers are very uniform with extremely low polydispersities, and are commonly created with dimensions incrementally grown in approximately nanometer steps from 1 to over 10nm. The control over size, shape, and surface functionality makes dendrimers one of the “smartest” or customizable nanotechnologies commercially available. Here as a part of research and review we are presenting the method of synthesis and application of pharmaceutically useful dendrimers. Key words: Dendrimers, nanostructures, synthesis, size control, application
PT-020

DESIGN AND EVALUATION OF NOVEL GASTRORETENTIVE FILMS OF POORLY SOLUBLE DRUG

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The aim of the present topic is to formulate and evaluate novel gastro retentive films of Furosemide using polyvinyl alcohol, carbopol 971P NF, Eudragit RLPO as polymers by solvent casting technique. Films of various concentration of polyvinyl alcohol were formulated for immediate release and 15% concentration was optimized to obtain a film of 50µm thickness. Films of various combinations of corbapol 971P NF and Eudragit RLPO were formulated for controlled release. The films of cabopol 971P NF and Eudragit RLPO were optimized on the basis of release profile. To improve the drug solubility and film properties different types of solubilizers were used, among them cremophore RH 40 and soluphor P were optimized. The results of preliminary trails indicated that the type and concentration of solubilizers add significant effect on film separation, flexibility, and aesthetic appearance. the prepared films were analyzed for thickness, tensile strength, folding endurance, elongation at break, weight, drug release and drug content. Final films of 6.5cm² areas were prepared and kept for stability by folding them in hard gelatin capsule shell(size 0).after the periodic analysis, the films was found to be stable. It can be concluded that combination of immediate release and controlled release mucoadhesive films for Furosemide offer a novel approach for drug delivery.

PT-021

RESUSCITATION VIA LYOPHILIZATION

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Lyophilization is a method of drying, achieved by freezing the wet substance and causing the ice to sublime directly to vapor by exposing it to a low partial pressure of water vapor and very low temperature. The substance may not be completely frozen, especially if non-aqueous solutions are present, and most processes are completed by a period of desorption drying. The principle consists of establishing and maintaining temperature within the enclosure which is subjected to a predetermined pressure. A growing number of products are prepared in two-chamber vials with the water for injection ready to use in the syringe. A difference in temperatures and vapour pressure between the trap and the racks produce an exchange of heat between the hot and cold sources. The pressure and temperature is chosen such that it is always below the point of change of condition of the water. Lyophilization equipment consists of drying chamber, condenser, cooling system vacuum system. It is used for chemicals, parenterals, vaccines, also in vivo and in vitro diagnostic products. Lyophilization can be used for preparation of solid dispersions. By using hard capsules it can be used for
enhancing the dissolution of poorly water-soluble drugs. Zydis, based on lyophilization technology, prepares an oral dose form. It also includes biotechnology products that consist mainly of protein-based products, vaccines, taxidermy, lyophilized nasal inserts, drying of micro-and nano-particles etc. Others applications are lyophilization of stool samples to prevent false low results in diarrhea, lyophilization of imunoparvum as an alternative to reduce its side-effects.

PT-022

CERTIFICATION FOR EXPORT OF PHARMACEUTICALS

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Pharmaceutical industry worldwide is one of the most stringently regulated business activities. The movement of pharmaceutical products in international commerce necessitates various safeguards on the part of importing countries. In this regard, WHO created the Certification Scheme on the Quality of Pharmaceutical Products Moving in International Commerce, as a means of assisting Member States to improve their national systems for quality assurance of drugs. Clauses of the scheme: a) The registration status of a particular product in the exporting country; and b) of the GMP compliance of the responsible manufacturer. GMP is a standard introduced by WHO to improve the quality of pharmaceutical products internationally. WHO has developed various certificates under the certification scheme, other certificates [non WHO type] are issued by drug regulatory authorities in the exporting countries. The WHO Certification Scheme requires that each Member State intending to use the Scheme to support the export of pharmaceutical products should first itself satisfy that it possesses an effective national licensing system for pharmaceutical products, manufacturers and distributors and GMP consonant with those recommended by WHO. In India the Drug and Cosmetics Act of 1940, the Drug and Cosmetics Rules of 1945 and the subsequent amendments are used for the control of import, manufacturing and export of pharmaceutical products. Drug control is exercised at central and state level. The scheme allows importing countries to receive formal assurance from the regulatory authorities of the exporting countries about the registration status and the quality of the pharmaceutical product they import.

PT-023

SOLID DISPERSIONS: A UNIQUE TECHNIQUE TO IMPROVE THE AQUEOUS SOLUBILITY OF POORLY SOLUBLE DRUGS – A REVIEW.


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Solid dispersion technology is the science of dispersing one or more active ingredients in an inert matrix in the solid state in order to achieve increased dissolution rate, sustained release of drugs, altered solid state properties, enhanced release of drugs from ointment, suppository bases, improved solubility and stability. Most of the drugs are passively absorbed and their rates of absorption depend upon the gradients in each case. By increasing the dissolution rate in the gastro intestinal tract, the rate of absorption is increased as long as the dissolution rate is still the rate-limiting step. Various carriers have been used in the formation of solid dispersion, which can facilitate in improving the dissolution rate of poorly soluble drugs to improve better bioavailability. The present review highlights various aspects of solid dispersion formulation, carriers used in their preparation, methods of preparation, physicochemical characterization and their application.

PT-024

NANOPARTICLES - A REVIEW

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Controlled drug delivery technology represents one of the frontier areas of research interest contributing to human health care system. For the past few decades, considerable researches in a drug delivery using particulate system like nanoparticles. They offer numerous advantages over the conventional dosage forms, which include improved efficacy, reduced toxicity and improved patient compliance and convenience. Nanoparticles used as a physical approach to modify the pharmacokinetic and pharmacodynamic properties and various drug molecules. Nanoparticles have important role in the administration of therapeutic molecules, peptide to the chosen or targeted site and to deliver the drug at a controlled and sustained rate to the site of action. Various polymers have been used in the formulation of nanoparticles for drug delivery to increase therapeutic effect, reduction in dose, minimizing side effects and better patient compliance. The present review highlights various aspects of nanoparticles formulation, carriers used in the preparation of nanoparticles, method of preparation of nanoparticles, physicochemical characterization of nanoparticles and their application in delivery of drug molecules and peptides.

PT-025

BIOSTENTS-AN ABSORBABLE REMEDY

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The development and progression of metallic stents, raised many concerns because of their permanent nature. Although metallic stents are effective in preventing recoil and
late restenosis after coronary angioplasty, they continue to have limitations such as stent thrombosis and mismatch of the stent to the vessel size. Thus, the concept of bioabsorbable stents has emerged as an alternative to permanent metal stents. The biodegradable stent can self-expand gradually for 3 months. Laboratory tests showed very good recoil, flexibility and visibility on MR, CT and x-ray. There are various groups of polymers available for biodegradable stents, including: PLA (polylactic acid), BVS biodegradable stent; Tyrosine polycarbonate; A magnesium alloy, the only metallic biodegradable stent. Biodegradable polymers are digested and become byproducts. There is degradation at one and three months, and ultimately between six and nine months the device disappears. They may eliminate the need for prolonged antiplatelet therapy and will be compatible with future noninvasive imaging of the coronary tree. By controlling the ideal absorption time and rate, they can be useful for other applications such as angiogenesis and gene transfer. Once they deposit the drug locally, the vehicle as a whole will disappear in the surrounding tissue. In the meantime, it would be interesting to follow whether the bioabsorbable stent concept will be adopted and thus eliminate the current practice in which many patients chronically carry metal prostheses in their coronary arteries.

PT-026

CHARACTERISTICS OF PHARMACOKINETICS AND PHARMACODYNAMICS IN INFANTS

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The process of development and growth in childhood represents an unstable and dynamic condition from the perspective of pharmacotherapy. The immaturity of the pediatric patient and the continuous state of development of body and organ functions influence both drug effects and drug disposition. Age-related differences in drug handling (pharmacokinetics) and drug sensitivity (pharmacodynamics) occur throughout childhood and account for many of the differences between drug doses at various stages of childhood. Therefore, children should not be considered as scaled down adults as the difference in dose is not purely dependent upon body mass. Processes controlling the absorption, distribution, metabolism, excretion, and pharmacologic effects of drugs are likely to be immature or altered in neonates and infants. The objective of my study focuses on aspects of the present knowledge of differences in pharmacokinetics and pharmacodynamics among neonates, infants and prepubescent children.
PT-027

FILLING TWO-PIECE HARD GELATIN CAPSULES WITH LIQUIDS

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The liquid filling in hard gelatin capsules is an advanced method in capsule manufacturing. The present option of using soft gelatin capsules involves handling messy production processes in addition to problems of cross contamination and like. For the past two decades researchers have been studying and evaluating the use of hard gelatin capsules for encapsulating molten formulations of drug substances. In keeping with the changing times of the pharmaceutical industry, technology is today available for filling liquids in hard gelatin capsules. Now available for the first time in India, this technology enables liquid filling of hard gelatin capsules followed by band sealing. This is indeed a stand out technology over soft gel as it makes the encapsulation process not only easy and cost effective, but also eliminates many of the problems related to soft gelatin capsules. What is more this technology also provides the formulation scientist with flexibility to quickly develop formulations when small quantities of drug substances are available. A smaller laboratory model deploying this technology comes in very handy in the development of products required for clinical trials as also in contributing to scale-up studies for production. The present topic provides an overview of the benefits of filling two-piece hard gelatin capsules with liquids. It discusses formulation requirements, compares two-piece hard capsules to soft gels, and offers strategies for liquid filling. It also describes one company’s approach to manufacturing capsules and its method for sealing the filled capsules.

PT-028

POLYPILL - A REVOLUTION IN DRUG THERAPY

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Innovations have always been an important part of pharmacy and one of them is polypill. A polypill is a unique combination of multiple drugs involving 4-6 medications used to treat a cohort of diseases, latest being cardiovascular polypill. It consists of a cholesterol lowering statin (Simvastatin), antiplatelet drug (Aspirin), folic acid and possible combinations of antihypertensive agents like beta blockers (Atenolol), ACE inhibitors (Linosopril) and diuretics (Thiazide). It holds a promising future for its attributes like patient compliance, affordability (especially in developing
countries like India), good blood pressure and cholesterol lowering properties, good tolerability and blood thinning. Pharma giants like Cadila, Dr.Reddy’s, Cipla are into the research with their phase 3 clinical trials on. With effective outcomes of their research, these polypills are expected in the Indian market within next two years. According to polycap studies in India, reduction in blood pressure could cut down the risk of heart diseases by 62% and strokes by 45% and that too at an affordable cost of Rs.100 per month. Making their way into market, polypills are facing few challenges like question of their safety in the long run, flexibility of dosage, possible drug interactions, overmedication and encouragement to lead unhealthy lifestyle. Having taken into consideration its advantages and challenges, it remains to be seen whether polypills will actually be accepted as the choice of remedy in the future. As pharmacists, we can potentially extend this innovation into avenues like treatment of diabetes, malaria, T.B. and HIV.

PT-029

COMPARATIVE STUDY OF FRAGMENT BASED LOGP PREDICTION SOFTWARES

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Between the administration and elimination of the drug it diffuses through variety of biological membranes which act as lipid like barriers. A major criterion in the evaluation of ability of the drug to penetrate lipid membranes is its apparent oil water partition co-efficient (P=Co/Cw). Hansch correlation explains a parabolic relationship between the log of reactivity of drug and logP. In the present study 25 different drugs from different class were selected and their ClogP were determined by three fragment based logP determination softwares (Bioloom,Chem Sketch, AlogPS). The ClogP calculated were compared with MlogP (measured logP) and % deviation in each case was tabulated. The comparison was also made among the three softwares using the ClogP data available in the published literature. The study revealed that Bioloom gives much precise results with least percentage deviation.

PT-030

IMPROVING THE DISSOLUTION STUDIES OF LANSOPRAZOLE USING POLYMERS


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Lansprazole is used in the treatment of ulcer and reflux oesophagitis. It is practically insoluble in water, shows poor dissolution characteristics and result into poor
bioavailability after oral administration. Among the various approaches to improve the dissolution rate of poorly soluble drugs, the preparation of solid dispersion (SD) has often proved to be successful. The main objective of the study is to improve the dissolution rate of lansoprazole. The physical mixtures and SDs of the compound were prepared to enhance its water solubility. By taking polyvinyl pyrrolidone (PVP) K-30, urea and polyethylene glycol by employing solvent evaporation method lansoprazole was released at a much higher rate from SDs and physical mixtures as compared to that of pure drug powder. The degree of dissolution rate enhancement depended on the nature and the amount of polymer. Among polymer studied SD of lansoprazole PVP K-30 at 1:9 (drug:polymer ratio) gave a highest dissolution. The increase in the dissolution rate of the drug may be due to increase of wettability. Hydrophilic nature of polymer and also possibly due to reduction in drug crystallinity.

PT-031

SIMULTANEOUS ESTIMATION OF RISPERIDONE AND TRIHEXYPHENIDYL IN TABLET FORMULATION BY UV SPECTROSCOPY

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Risperidone is an atypical neuroleptic drug employed as antipsychotic, effective against negative symptoms of schizophrenia. Trihexyphenidyl is a cholinergic blocking agent, chiefly employed as an antispasmodic and antiparkinsonian drug. In pharmaceutical market and in treatment, a combination of Risperidone (RIS) and Trihexyphenidyl (THP) is playing a major role. Sophisticated methods were available to analyze RIS, THP in tablet formulations. An UV spectroscopy procedure had been developed for the simultaneous estimation of RIS and THP in tablet formulations. Both compounds were estimated from tablet formulation using 0.1N HCl as a solvent. In the above method the RIS and THP has produced $\lambda$ max at 239nm and 206nm respectively. The developed method had a linear range from 2 to 10µg/ml for both the drugs. The $R^2$ values were found to be 0.9988 and 0.99, the intercept equations were $y = 0.03616x + 0.01259$ and $y = 0.02928x + 0.05551$ for RIS and THP respectively. The amount of RIS and THP present in the marketed formulation found to be 3.10gm (103.62%) and 1.93gm (96.45%) respectively.
PT-032

SIMULTANEOUS ESTIMATION OF DIETHYL CARBAMAZINE CITRATE AND CETIRIZINE HYDROCHLORIDE IN TABLET FORMULATION BY UV SPECTROSCOPY.

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Diethyl carbamazine citrate is an anthelmintic drug, belonging to chemical class of piperazines, having high selective effect on microfilariae. It is a drug of choice for filariasis and tropical eosinophilia. Cetirizine is a second generation antihistaminic, belonging to the chemical class of piperazines. It is indicated in upper respiratory allergies, pollinosis, urticaria and atopic dermatitis. In pharmaceutical market and in treatment a combination of Diethyl carbamazine citrate (DEC) and Cetirizine hydrochloride (CDH) is playing a major role. Sophisticated methods were available to analyze DEC, CDH in tablet formulations. An UV spectroscopy procedure had been developed for the simultaneous estimation of DEC and CDH in tablet formulations. Both compounds were estimated from tablet formulation using 0.1N HCl as a solvent. In the above method the DEC and CDH had produced λ max at 210nm and 231nm respectively. The developed method also produced a linearity curve for the concentrations 3 to 10µg/ml for DEC and 5 to 30µg/ml for CDH. The R2 values were 0.9908 and 0.9894, the intercept equations were y = 0.03278x + 0.09344 and y = 0.03728x + 0.00302 for DEC and CDH respectively. The amount of DEC and CDH present in the marketed formulation found to be 309.6gm (103.24%) and 9.6 (97%) respectively.

PT-033

A FACTORIAL STUDY TO EVALUATE THE INDIVIDUAL AND COMBINED EFFECTS OF Β-CYCLODEXTRIN AND TWEEN 80 ON THE SOLUBILITY AND DISSOLUTION RATE OF ACECLOFENAC

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Introduction and Objectives: Aceclofenac, a widely prescribed anti-inflammatory and analgesic drug belongs to class II under BCS and exhibits low and variable oral availability due to its poor aqueous solubility. Its oral absorption is dissolution rate limited and it requires enhancement in solubility and dissolution rate for increasing its oral bioavailability. Use of cyclodextrins and surfactants has gained good acceptance in recent years in industry for enhancing solubility and dissolution rate of poorly soluble drugs. Though cyclodextrin complexation and use of surfactants for enhancing the solubility and dissolution rate of poorly soluble drugs have been investigated individually, no reports are available on their combined use in enhancing
the solubility and dissolution rate. In the present investigation the individual and combined (or interactive) effects of β-CD and Tween-80 on solubility and dissolution rate of aceclofenac were evaluated in 22 Factorial study. Methods: The solubility of Aceclofenac in the four selected fluids containing β-CD and Tween-80 as per 22 Factorial study, was determined. An uv spectrophotometer method based on the measurement of absorbance at 275 nm in a phosphate buffer of pH of 6.8 was used for the estimation of aceclofenac. Aceclofenac-β-CD complexes with and without Tween-80 were prepared by kneading method and were evaluated for dissolution rate and dissolution efficiency (DE15) as per a 22 factorial design. The dissolution rate of aceclofenac as such and from β-CD complexes were studied in a 900 ml of phosphate buffer of pH of 6.8 using Disso-2000 (LabIndia) 8-station dissolution test apparatus with a paddle stirrer at 50 rpm and at 37 ±1 0 C. Results and Conclusions: The solubility and dissolution parameters (K1 and DE15) were subjected to ANOVA to find out the significance of the main and combined effects of β-CD and Tween 80 on the solubility and dissolution rate of aceclofenac. The individual and combined effects of β-CD and Tween 80 in enhancing the solubility of aceclofenac were significant (P<0.05). The solubility of aceclofenac was markedly enhanced by β-CD (1.57 fold), Tween 80 (7.91 fold) individually as well as combinedly (10.5 fold). β-CD alone gave higher enhancement in dissolution rate and DE15 of aceclofenac. The individual main effects of β-CD and Tween 80 in enhancing the dissolution rate and DE15 were significant (P<0.05). Whereas the main effect of Tween 80 was not significant (P>0.05).

PT-036

PREPARATION AND EVALUATION (IN VITRO AND IN VIVO) OF PIROXICAM SUSPENSIONS BY CO-PRECIPITATION METHOD EMPLOYING HYDROPHILIC POLYMERS

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Introduction and Objectives: Piroxicam, a widely prescribed anti-inflammatory and analgesic drug is poorly soluble in aqueous fluids and exhibits poor and variable oral bioavailability. Micronization and nanosizing are efficient techniques for enhancing the dissolution rate and bioavailability of hydrophobic and relatively insoluble drugs. The objective of the present study is to prepare micronized suspensions of piroxicam employing hydrophilic polymers namely hydroxy propyl methyl cellulose (HPMC), hydroxy ethyl cellulose (HEC) and polyethylene glycol 6000 (PEG) by co-precipitation technique and evaluating them by in vitro and in vivo methods. Methods: Micronized suspensions of piroxicam were formulated by employing hydrophilic polymers by co-precipitation technique and the resulting suspensions were evaluated for particle size, sedimentation characters, dissolution rate, absorption rate and oral bioavailability. The dissolution rate of piroxicam from various
suspensions was studied in a 900 ml of water using USP XXIII – 3 station dissolution rate test apparatus employing a paddle stirrer at 50 rpm and at 37 ±1 0 C. Pharmacokinetic evaluation was done on healthy rabbits of either sex by collecting blood samples at various time intervals after oral administration of selected formulations. Results and Conclusions: The size of the dispersed drug particles was much reduced in the suspensions prepared by co-precipitation method employing HPMC, HEC and PEG. These suspensions also exhibited good suspendability of solids and gave higher dissolution rate of piroxicam than those formulated employing piroxicam alone. Suspensions formulated employing HPMC gave highest improvement in the dissolution rate and dissolution efficiency of piroxicam. Good linear relationship was observed between particle size and dissolution efficiency of the suspensions. There was a 2.17 and 2.31 fold increase in pharmacokinetic parameters Ka and (AUC)2.5h respectively of the suspension formulated with HPMC when compared to that formulated employing piroxicam alone.

PT-037

COMBINATORIAL CHEMISTRY- EMERGING TREND IN DRUG DISCOVERY PROCESS

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The drug discovery process has been reshaped by a method that specially and efficiently make large number of molecules available for screening as drug lead. With biological activities is a challenging task and a driving force in the Combinatorial Chemistry. Combinatorial chemistry is a set of tools for generating vast chemical diversity rapidly and efficiently along with reducing the time and cost associated with producing effective and competitive new drugs. Hence, it finds a new place among the techniques developed for the pharmaceutical industry. The aim of combinatorial synthesis is the ability to generate large number of chemical compounds very quickly. Combinatorial Chemistry creates a large population of molecules-called-Libraries-that can be screened in one time against a variety of targets. In the past, chemistry has been characterized by slow, steady and painstaking work; however Combinatorial chemistry broke many of the pre-conceptions and permitted a level of chemical productivity undreamed of just ten years ago by producing larger and more diverse compounds so as to increase the chances to find more biologically active compounds.
PT-038

ENHANCEMENT OF SOLUBILITY OF CARVEDILOL USING SOLID DISPERSION TECHNIQUE

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The objective of this work was to improve the aqueous solubility of poorly water soluble drug carvedilol. The major drawback of carvedilol is its aqueous solubility, which results in reduced bioavailability of 25%. To overcome these drawbacks, an attempt has been made to formulate solid dispersions of carvedilol. Solid dispersions were prepared by using various ratios of PEG 4000 (25:75, 50:50 and 75:25) by solvent evaporation method. The prepared solid dispersions were evaluated for various physicochemical evaluations such as percentage yield, average particle size, angle of repose, bulk density, compressibility, drug content and in vitro dissolution studies. The FTIR studies and DSC revealed that there was no major interaction between the drug and carrier. The XRD studies were done to find out the crystalline nature of drug in solid dispersion. The results suggested that the drug was in amorphous form and little crystalline in nature. The in vitro study for pure drug and solid dispersions were carried out using 900 ml of phosphate buffer (pH 6.8) using USP XXIII dissolution apparatus (Paddle method). The results suggested that the rate and extent of dissolution of drug from the solid dispersion were found to be faster than pure drug. This could be due to the lack of crystallinity, increased wettability and reduction in particle size of the drug in the solid dispersion complex. The batch prepared using drug carrier (75:25) showed the maximum dissolution of drug as compared to pure drug. The results revealed that the prepared solid dispersions were found to follow first order kinetics. From the study, it can be concluded that the formulated solid dispersions could enhance the solubility of carvedilol, in turn it may also increase the bioavailability of the drug.

PT-040

ORODISPERSIBLE TABLETS PREPARED BY SUBLIMATION TECHNIQUE


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In the present work, Orodispersible tablets of alfuzosin were prepared by sublimation method with a view to enhance patient compliance. In this method, camphor was used as subliming agent along with varying concentrations of croscarmellose sodium, crospovidone and sodium starch glycolate (2-10%). The prepared batches of tablets were evaluated for hardness, friability, drug content uniformity, wetting time, water-absorption ratio and in vitro dispersion time. Based on in vitro dispersion time (approx. 5 s). Three promising formulations were tested for in vitro drug release
pattern (pH 6.8 phosphate buffer), short term stability (at 40o/75% RH for three months) and drug-excipient interaction (IR spectroscopy). Among the promising formulations, the formulations SCP3, the formulation containing 10% crospovidone and 30% w/w camphor as subliming agent emerged as the overall best formulation (t50%= 1.44 min) based on drug release characteristic (pH 6.8 phosphate buffer) compared to controlled formulation (t50%= 15 min). Short-term stability studies on the promising formulation indicated that there are no significant changes in drug content & in vitro dispersion time (p<0.05).

PT-041

INTELLIGENT PILL

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Philips has developed an “intelligent pill” that contains a microprocessor, battery, wireless radio, pump and a drug reservoir to release medication in a specific area in the body. ipill capsule measures acidity with a sensor to determine it’s location in the gut and can release drugs where they are needed. If the body temperature and pH reach certain levels, the ipill responds by pumping out more or less of its drug payload. ipill can also measure the local temperature and report it wirelessly to an external receiver. Delivering drugs to treat digestive tract disorders such as crohn’s disease directly to the location of the disease means doses can be lower, reducing side effect.

PT-043

THE NOBEL PROMISING HAEMATINIC & SIGNIFICANCE OF BIOTIN DURING PREGNANCY

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Haematinics are the agents which fulfill the iron deficiency. Especially in pregnant woman, anaemic patients. Literature review suggests that: The haematinic molecules which are available in the market is not fulfilling the required bioavailability. In the light of the above information and the American journal of Health and clinical research showed that Sodium Feretedate an iron chelated with EDTA is giving better re-absorption of iron, by preventing the destruction of iron molecule by the enzyme present in the GIT and releases iron at the colon region at PH-7.4 from where it gets absorbed. So by the above study we suggested that Sodium feretedate is a noble promising haematinic in case of pregnancy. In addition to this there is also a chances
of birth defects which occurs due to the deficiency of Biotin and Folic acid. During the first trimester of pregnancy the deficiency of biotin and folic acid may lead to foetal birth defect like neural tube defect, micro melia, micro gnethia, spina bifida, cleft palat. So our conclusion is that along with the above sodium feretedate molecule, biotin and folic acid has to be supplemented during pregnancy for a healthier child in all respect. Moreover these are having least side effect.

PT-044

DERMATOLOGICAL PREPARATION OF TULSI & VEKHAND FOR ACNE TREATMENT

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The present study is based on the anti acne effect of the mixture of the aqueous extracts of Tulsi & Vekhand. Acne (Acne vulgaris) is a dermatologic condition characterized by lesions on face and neck. Acne is characterized by pimples, cysts and abscesses. The sebaceous glands attached to hair follicles secrete an oily substance known as sebum. This sebum typically travels up the hair follicle to the skin. However, if the hair follicle is blocked, the sebum can’t get out, this causes blackhead. This is the result in blocked oil oxidizing, causing inflammation and an influx of WBC’s. Meanwhile, normally present bacteria (Propionibacterium acnes & Pseudomonas Areginosa) Starts breaking the trapped sebum within the hair follicle. As WBC’s attack the bacteria, this causes inflammation. An abscessa pus-filled pocket within the skin may form. The present research work describes the antiacne effect by conducting the anti microbial test on the Propionibacterium acnes & Pseudomonas Areginosa strains. Essential oil of Tulsi (Ocimum sanctum) is been used to study its activity on the bacterial strains. No study has been performed on Vekhand (Acorus calamus L.) Yet but it has various chemical constituents that has inhibitory effect on the bacterial strains. The Antimicrobial study is done by the zone of inhibition technique by preparing dilutions of the mixture. The anti microbial activity is tested by comparing with various marketed products inhibition. The dilution having the highest antimicrobial activity is taken as the best concentration.

PT-045

INTRA-DAY AND IINTER DAY STABILITY STUDIES OF MIXED STANDARDS OF PARACETAMOL AND DROTAVERINE HYDROCHLORIDE

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In recent years, analytical methodologies accompanied by stability studies have been gaining their importance owing to the significant advantages overcoming the existing inaccuracy of the methodologies. The mere identification of an analyte qualitatively does not necessitate accuracy which is mandatory in the analytical method.
development for the quantitative determination of an analyte or mixture of analytes. This led to the practice of stability studies for the betterment of an analytical method. The performance of stability studies of mixture of two drugs in combined dosage form is necessary to find whether both the drugs are not reactive with each other and are stable over a considerable period of time under normal assay conditions for the effective and accurate quantification of both the drugs by simultaneous method. The combined tablet dosage form containing paracetamol, a classical antipyretic in addition with a newer antispasmodic drug, drotaverine hydrochloride can be determined simultaneously by UV Spectrophotometric method. The present study indicated the stability of the mixed standards of paracetamol and drotaverine hydrochloride at all the absorption maxima of both (238 nm, 304 nm & 352 nm for Drotaverine hydrochloride and 257 nm for Paracetamol ) and the comparison of the same with that of the individual standards of Paracetamol and Drotaverine hydrochloride. Both the intra-day and inter-day stability studies were performed so that the quantitative determination can be conveniently and accurately performed.

PT-048

FORMULATION AND EVALUATION OF CARBAMAZEPINE FLOATING TABLET USING 32 FACTORIAL DESIGNS

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Purpose: To formulate floating tablets of carbamazepine having drug release upto 12 hrs. Method: Floating tablets of carbamazepine were prepared by direct compression method. A 32 factorial design was applied to investigate the combined effect of 2 formulation variables i.e. HPMC K100 and Carbopol. The floating lag time, time required for 50% (t50%) and 90% (t90%) were taken as responses. Result: Result of 32 factorial design indicates that formulation F5 containing zero level of HPMC K100 and Carbopol 971 gives less floating lag time with extended release up to 12 hrs than other formulations. Conclusion: On the basis of the above study we can conclude the effect of release retardants on floating tablet of carbamazepine on the dissolution profile. The present study signifies that the HPMC K100 and Carbopol 971 can be employed successfully for the development of floating drug delivery system.
PT-049

SUPAC GUIDELINES APPROVED BY FDA

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In the development of the new drug, the batch sizes used for studies are small and as one proceeds through the various phases of Clinical Trials the size of the batch gradually increases and finally after approval from FDA, the drug is scaled up to a significantly larger batch size to meet the demands of the anticipated market. Similarly, in the development of a generic version of an already approved marketed product, a small batch is produced and tested for, among other things, bioequivalence to the FDA reference listed drug product. When the generic product meets FDA approval criteria, the Abbreviated New Drug Application (ANDA) or generic antibiotic application (AADA) is approved for marketing. For this the batch size is scaled up to larger batch, in the process certain changes in formulation, manufacturing process, equipment or the site of production may differ from the smaller batch. These scale up changes which are made after FDA approval, are often called as Scale up and Post Approval Changes or SUPAC. The FDA has issued various guidance’s for SUPAC changes for various dosages forms like immediate release solid dosage form, modified release solid dosage form, non-sterile semi-solid dosage form. SUPAC reduces the regulatory burden on industries; it does not affect any compliance or inspection requirement. The major affect of SUPAC is a significant decrease in the time and the cost required to implement changes.

Key words: SUPAC, abbreviated New Drug Application

PT-050

TARGET VALIDATION

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The manner in which the drug travels from benchside to bedside has undergone a paradigm shift in the last two decades. The drug discovery pathway has now become a level playing field for both biology and chemistry. The number of NDAs (New Drug Applications) approved each year by the FDA has declined from 53 in 1996 to 35 in 1999 to 17 in 2002 to 15 in 2005. This review introduces and details out the concept of “target validation”. Target validation came about as The completion of human genome project gave the drug researchers a plethora of a number of uncharacterized biological targets. The market is demanding drugs that actually cure the disease rather than just give symptomatic relief prevalent a few decades back.
Concentration is shifting from developing “me-too” drugs towards developing “first in class molecules acting on a first in class targets that address unmet medical needs”. Thus target validation has now become an important step in drug discovery. Target identification and target validation goes hand in hand. This review throws light on basic sciences tools used in this process like genomics, proteomics, chemical biology, biomarkers, genetically engineered animals, RNAi, orthogonal ligand receptor pair. The review also looks at Gleevec as a success story of the approach of target validation as a case study. The review then looks at the commercial aspects of science wherein it throws light on the companies which provide validation of drug targets as a contract based service. It furthers looks on the synergies happening between such contract companies and Big Pharma. This review thus provides a platform to introduce a new facet of drug discovery, which is fast becoming a vital bottleneck in a molecule’s journey from benchside to bedside.

PT-051

NANO-BIOTECHNOLOGY WITH GREEN NANOTECHNOLOGY

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Nanotechnology is an amalgamation of science and engineering that has affected the measurement in the lowest units (nanometer-billionth of a meter). Nanotechnology is a valuable contribution of the profound research by scientists and engineers to create new systems with novel functionalities. This gives nanotechnology greater share of control over a wide range of usage in applications right from high-density data to detecting DNA sequence to improved taste and wider variety of fruits and vegetables. Nanotechnology giving high efficiency and profitability. Biotechnology is the application of biological research techniques to develop products that cater to the need of living beings. Nano-biotechnology, each of these technologies has a tremendous impact by itself and therefore when they complement each other it results in efficacious fourth dimensional solutions. Dendrimers, Nanowires, Carbon Nanotubes, Quantum Dots are now used in the field of nanotechnology. Green nanotechnology has two goals. One is we make nanomaterials and their products without harming the environment or human health. And then we produce nanoproducts that provide solutions to environmental challenges. Framework for green nanotechnology looks at two aspects. One is the production, and the other is the product. In production, we are making the nanomaterials and the products that contain those nanomaterials and nanoscale systems. And we make sure that in the production, there’s no harm to the environment. In the products, we build products that help the environment. We can also use nanoscale membranes and nanoscale catalysts to help make our current production a lot better. All of this has a pollution prevention emphasis.
PT-052

**UV- SPECTROPHOTOMETRIC METHOD DEVELOPMENT FOR THE DETERMINATION OF PARACETAMOL AND DROTAVERINE HYDROCHLORIDE IN COMBINATION TABLET DOSAGE FORM BY SIMULTANEOUS EQUATIONS METHOD**

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At present, simultaneous determination of drugs in the combination dosage forms has been enjoying renaissance in the field of pharmaceutical analysis. Paracetamol, a classical antipyretic in combination with a novel antispasmodic drug, drotaverine hydrochloride provides a synergistic effect in the treatment of spasms. From the reviewed literature, it was simultaneous uv-spectrophotometric methods have not yet been developed for the determination and quantification of paracetamol and drotaverine hydrochloride. The $\lambda_{\text{max}}$ of paracetamol is 257nm and that of drotaverine hydrochloride were scanned and found to be 308nm, 352nm. Both paracetamol and drotaverine hydrochloride were found to have significant absorbance of the $\lambda_{\text{max}}$ of each other and total absorbance was equal to the sum of the absorbance of paracetamol and drotaverine hydrochloride individually measured. So the present study involves the uv-spectrophotometric method development for the simultaneous determination of paracetamol and drotaverine hydrochloride by using simultaneous equations method. The mean % recoveries from this method were found to be 100.76% and 100.17% for paracetamol and drotaverine hydrochloride respectively proving that the method is accurate.

PT-053

**RASAYANA MEDICINES: ANCIENT CONCEPT FOR FUTURE OF DRUG DISCOVERY**

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The contemporary drug discovery scientists face many challenges due to complex life style disorders. The approach of systems biology and multifaceted drug development are obligatory to discover new molecule for such life style disorders which are affected by multiple intrinsic and extrinsic factors. The traditional “Rasayana
Therapy”, or rejuvenation, is a therapy through which one can achieve the perfect health. It not only helps in maintaining health, it also enhances the bala (strength), thus developing the Vyadhiksamatwa (immunity). Benefits of Rasayana therapy includes: increase in body tissues, improvement in digestive power, improvement in the metabolic process at a tissue level or improvement in endocrine gland function, removal of waste products, improvement in the functional capacity of the brain, increase in the strength and immunity of the body, destruction of disease and establishment of homeostasis of energy. Thus Rasayana provides long life, memory, intelligence, health, youthfulness, complexion and colour, voice and magnanimity, increase of strength of the body and the sense organs, perfection in speech, sexual prowess and brilliance. All these parameters are directly linked to life style disorders and thus “Rasayana Therapies” are being studied so as to utilize the concept for the development of future’s drug discovery. The paper describes the concept of Rasayana Therapy in views of advanced biomedical science.

PT-054

STABILITY TESTING OF NEW DRUG SUBSTANCES & PRODUCTS - AN OVERVIEW

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Today, many regulatory agencies or big multinational companies require stability studies or testing of drug products for dossier submission which is required for licensing approval of that drug product after relevant the satisfied data of that drug i.e. the drug could be stable for long time or even in different environmental condition like temperature, light, humidity etc. ICH, WHO, FDA has revised an accepted guideline & that defines the stability data package for new drug substance or drug products that is sufficient for a registration application within the three regions of the EC, Japan & the United States. The main purpose of stability testing is to provide evidence on how the quality of drug substances or drug products varies with time under the influence of variety of environmental factors such as temperature, light, humidity & to establish a retest period for the drug substances or a shelf life of the drug products & recommended storage condition. For registration of drug or for approving license for new drug product to be marketed or sold in USA, UK, Australia etc. required the proper information of drug product that including its stability studies in well establish file called dossier. It includes all stability studies like long term, intermediate & accelerated stability studies. In India, now a days, many pharmaceutical companies carry this stability studies of drug products & hence approved their product in USA, UK, or other countries for marketing or sale, so in present or future, it is one of the most important part of pharmaceutical company for approving license as USFDA or MHRA.
LIPOSOMES AS PHARMACEUTICAL CARRIERS

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Liposomes are micro particulate lipoid vesicles that are under extensive investigation as drug carriers for improving the delivery of therapeutic agent. The liposome formulations of these drugs have achieved significant reduction in the toxicity of the drug and have maintained or improved the efficacy of the active compounds. Encapsulated in conventional liposome showed a superior therapeutic effect than the commercial product. Liposomes have been used as carriers for delivery of a variety of drugs including antibiotic, antifungal and cytotoxic agents. As carriers for anticancer drugs they have been showed to reduce side effect such as anthracycline induced cardio myopathy. This review discusses classification of liposomes, their therapeutic applications and recent development in the drug delivery system. Key Words: - Liposomes, Therapeutic effect, Anticancer drugs, Drug delivery.

ORGANIC SOLVENT-FREE POLYMERIC MICROSPHERES PREPARED AQUEOUS COLLOIDAL POLYMER DISPERSIONS BY A W/O-EMULSION TECHNIQUE

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Polymeric micro spheres were prepared from water-insoluble polymers by a novel technique without the use of organic solvents. Aqueous colloidal polymer dispersions (latexes or pseudo latexes) were emulsified into a heated external oil phase to form a w/o emulsion. The colloidal polymer particles fused (coalesced) into homogeneous polymeric micro spheres at temperatures above the minimum film formation temperature upon removal of water. The formation of the micro spheres was affected by the glass transition temperature of the polymer, the type of oil and surfactant, the heating temperature and time, and the addition of plasticizers. Plasticizers had to be added to colloidal dispersions with high minimum film formation temperatures. The resulting micro spheres were spherical with a smooth surface and non-agglomerated. The particle size could be varied between 5 and 250/~m. Water-soluble compounds such as propranolol HC1 could be entrapped with drug loadings up to 40% within the micro spheres by dissolving the drug in the aqueous polymer dispersion prior to the
emulsification step. The drug release was sustained over a 6-h period with microspheres prepared with the acrylic pseudo latex, Eudragit RS 30D.

PT-057

BREAKING OF SCORED TABLETS: A REVIEW

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The literature was reviewed regarding advantages, problems and performance indicators of score lines. Scored tablets provide dose flexibility, ease of swallowing and may reduce the costs of medication. However, many patients are confronted with scored tablets that are broken unequally and with difficulty, reducing compliance and reliance on the drug. Possibilities to reduce breaking difficulties are breaking instructions, tablet-splitters and breaking in advance. Factors influencing the performance of score lines are shape, size, curvature and thickness of the tablet and the form and deepness of the score line. Performance of score lines can be defined by breaking ease, uniformity of mass of subdivided tablets and loss of mass by the subdivision. For breaking ease, an in-vivo reference test and a routinely applicable invitro test need to be established. For the uniformity of mass of subdivided tablets a requirement has recently been set by the European Pharmacopoeia. Loss of mass upon breaking can be limited to not more than 1%.

PT-058

SOFT TISSUE INJECTION OF HYDROCARBONS: A CASE REPORT AND REVIEW OF THE LITERATURE

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Hydrocarbon injection, while commonly seen in domestic accidents or attempted suicide, is not extensively addressed in the literature. This article comprises a review of the various complications of intravascular and soft tissue injection of petroleum distillates, and provides recommendations for patient management. An illustrative case involving the subcutaneous injection of dripless oil, a mixture of mineral oil, nonionic detergents, and petroleum naphtha, is presented.
PT-059

A GLIMPSE OF SOME SOFTWARES USED IN PHARMACY

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The major applications of computers in various aspects in the field of pharmacy are both general as well as specialized. The advantages include saving of time in evaluating the lead compound from library of compounds synthesized, thereby saving both time as well as resources as chemicals. Also, more predictable in vitro-in vivo correlations can be made with help of p/k soft wares therefore saving the usage of animals. Key words: - soft wares, DDI, COACS, SPINA, CINA, MINA PAS

PT-060

HAIR ANALYSIS: A NOVEL TECHNIQUE FOR TRACING DRUGS

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Hair sample, like blood, sputum or urine can act as reliable biological specimen for tracing drugs and chemicals. Drugs can be detected regardless of the pharmaceutical dosage form of the drug or its mode of consumption. Hair analysis may be regarded as a convenient technique for tracing the presence of drugs in minute amounts. Even after a gap of several months, furthermore it can be used not only for therapeutic drug monitoring but also for confirming prenatal drug exposure and drug abuse. Key words: - Hair, melanin affinity, drug abuse, toxicology, clinical diagnosis

PT-061

MICRONEEDLE TECHNOLOGY FOR ADVANCED DRUG DELIVERY

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Transdermal patches are considered as viable alternative to deliver the drugs having poor oral bioavailability. A number of drug delivery systems including iontophore sonophoresis electrophoration and microneedle technology have been developed for the penetration of even large molecular weight and are hydrophilic compounds across the skin. Micron scale needles assembled on a Transdermal patch are proposed as a hybrid between hypodermic needles and Transdermal patches to overcome the individual limitations of both injections as well as patches. A variety of methods including poke with patch, coat with poke are possible for fabrication of microneedle systems. The technique has a promising future and is considered as dosage form of interest for vaccines, peptides and genes. Key words: - Transdermal patch, poke with patch, coat with poke, iontophore, sonophoresis
PGY-001

FREE RADICAL SCAVENGING ACTIVITY OF THE TOTAL ALCOHOLIC EXTRACTS OF SIDA RHOMBIFOLIA

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The roots of Plants Sida rhombifolia Linn. (Malvaceae) are used in the Siddha medicine under the name ‘Bala or Atibala’in the treatment of rheumatism, seminal weakness and diarrhoea. The roots of sida rhombifolia was reported to have significant anti-inflammatory, anti-microbial activity, anti-nociceptive activity, anti-inflammatory anti-pyretic and anti lipase activity. It was used by traditional healers for snakebite. The roots were reported to possess an alkaloid ephedrine. The alkaloidal fraction was subjected to study its effect in complete freunds adjuvant induced male arthritic rats. The intracellular defence system constituting the superoxide dismutase, glutathione peroxidise, showed a significant increase while the lipid peroxide content and catalase activity found to decrease to a large extent on sida rhombifolia extract, treatment thereby indicating the extracts free radical scavenging property. Histopathological studies and radiographical studies of limb joints too supported antiarthritic potential of the roots of Sida rhombifolia.

PGY-002

PHARMACOLOGY OF AIRWAYS AND VESSELS IN LUNG SLICES IN SITU: ROLE OF ENDOGENOUS DILATOR HORMONES

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Small airway and vessels play a critical role in chronic airway and pulmonary vascular diseases, but their pharmacology has not been well characterised. We have studied airway and vascular responses in rat lung slices and separately in vitro using myography. In lung slices, under basal conditions, acetylcholine contracted airways, but had no vascular effect. The thromboxane mimetic, U46619 contracted both vessels and airways. In the presence of U46619, acetylcholine dilated vessels, but further contracted airways, an effect that was blocked by the nitric oxide synthase inhibitor L-NG-nitro-L-arginine or apamin plus charybdotoxin, which inhibit endothelial-derived hyperpolarising factor. Airway responses in lung slices were unaffected by L-NGnitro-L-arginine methyl ester, indomethacin or apamin plus charybdotoxin. By contrast, apamin plus charybdotoxin contracted bronchi studied in
isolation. Our observations are the first to identify mechanisms of endothelium dependent dilations in precision cut lung slices and the potential for transverse hormonal communication between airways and vessels.

PGY-003

SCREENING OF ANTIOXIDANT ACTIVITY AND PHENOLIC CONTENT IN CUCUMBER

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Antioxidants are vital substances which possess the ability to protect the body from damages caused by free radical-induced oxidative stress. A variety of free radical scavenging antioxidants is found in dietary sources like fruits, vegetables and tea. The purpose of this study was to evaluate the antioxidant activity of methanolic extracts of cucumber seeds (Cucumis sativus L., Cucurbitaceae), which are used by common Indian people as folk remedies and/or food supplements. The antioxidant activity was evaluated against linoleic acid peroxidation using 1,3-diethyl-2-thiobarbituric acid as reagent. At the same time the phenolic content of the extracts was determined using Folin-Ciocalteau reagent to evaluate their contribution to total antioxidant activity. The antioxidant activity (expressed as IC50) was in the concentration of 1.25 μg/ml and phenolic contents was 27.79 (mg/100 gmdry). The results of this study showed that there is no significant correlation between antioxidant activity and phenolic content of the studied plant material and phenolic content could not be a good indicator of antioxidant capacity.

PGY-004

ESTIMATION OF ANTI ULCER ACTIVITY OF POLYHERBAL FORMULATION USING “PYLORIC LIGATION” (SHAY MODEL) ON WISTER RATS

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Peptic ulcers constitute a major disease that effect human gastrointestinal tract. The common clinical features of peptic ulcers are hyper acid secretion and ulcer formation in stomach and duodenal part of intestine [1]. Ulcers can be caused by helicobacter pylori infections, prolonged usage of NSAIDs. Smoking, alcohol
consumption, caffeine beverages and severe stress conditions [2]. An alternative poly herbal formulation containing a powdered mixture of Withania somnifera, Tribulus terrestris, Green tea extract, Mucuna purinis, Citrus aurenrium, Coleus forskohlii has been tested for the anti-ulcer activity. The anti-ulcerogenic activity has been performed in Pyloric ligation ulcer model in wister rats. The aqueous solution of Traditional Herbal Formulation in the dose of 1gm/kg bodyweight showed significant protective effect in the model, it is confirmed by Ulcer index, Total gastric acid volume, PH, Free acidity, Total acidity values. The results revealed significant activity when compared to control and standard groups.

PGY-005

EVALUATION OF ANTICANCER ACTIVITY OF METHANOLIC EXTRACT OF CLEOME GYNANDRA

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The objective of present study is to explore the anticancer activity of the methanolic extract of the Cleome gynandra (MECG) of capaaridaceae family. This vegetable plant possesses very good antimicrobial activity. Anticancer activity of MECG is evaluated by using the EAC cell line on swiss albino mice. In MECG treated group (200mg/kg and 400mg/kg) tumour volume, tumor weight, viable cell count was decreased as compared to that of the EAC control group. Tumor volumes were found to be 2.92, 1.48 and 0.98ml for EAC control, 200mg/kg and 400mg/kg treated groups respectively. Nonviable cell counts were also increased 3.5%, 27% and 81% for EAC control, 200mg/kg and 400mg/kg group respectively. Life span increases 39.02% and 73.17% respectively for 200mg/kg and 400mg/kg treated groups as compared with EAC treated group. The haematological parameter study conclude that the drug treatment on the EAC cell bearing mice have significant improvement towards the normal level. WBC and lymphocyte count increases and RBC, haemoglobin count decreases in case of EAC control group. So, the extract has potent dose dependent anticancer activity and it is comparable with standard drug 5- fluorouracil (20mg/kg).

KEY WORDS: Cleome gynandra; EAC cell line; Anticancer activity
PGY-006

TNF-A RELATED APOPTOSIS INDUCING LIGAND (TRAIL) AND CANCER CELL APOPTOSIS

Deep Shah

Apoptosis is cell suicide by a built-in self-destruct mechanism consisting of a genetically programmed sequence of biochemical events. TNF-α Related Apoptosis Inducing Ligand (TRAIL) is a potent inducer of apoptosis that acts through a complicated receptor system. Much has been learned about the endogenous biochemical pathways leading to TRAIL induced apoptosis in cancer cells. This ligand appears to play an important role in immune surveillance by cells of innate immune system against viral infection and malignant transformation. Owing to the selectivity of soluble recombinant TRAIL towards transformed cells but not most normal cells, this ligand remains promising as a potential cancer therapeutic agent. Importantly, administration of soluble recombinant TRAIL in experimental animals, including mice and primates, induces significant tumor regression without systemic toxicity. Defining the context in which TRAIL may eliminate or spare normal tissues and why normal cells are generally resistant to TRAIL is also of great importance while considering manipulating the TRAIL pathway in novel cancer therapy. Efforts to identify agents that target death receptors directly or which confer synergy with TRAIL may be useful for cancer therapy.

PGY-007

ESTIMATION OF ANTIULCER ACTIVITY OF POLY HERBAL FORMULATION USING “STRESS INDUCED ULCER” MODEL ON WISTER RATS

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Peptic ulcer is one of the common gastrointestinal disorder [1]. An ulcer is a crater like lesion in a membrane; ulcers that develop in areas of GIT exposed to acidic gastric juice are called peptic ulcers. The most common complication of peptic ulcer is bleeding, which can lead to anemia if enough blood is lost. Three distinct causes of peptic ulcers are recognized: the bacterium Helicobacter pylori; prolong usage of NSAID’s like aspirin and hyper secretion of HCl, as occurs in Zollinger-Ellison syndrome[2] and severe stress conditions. Peptic ulcers can be treated by controlling the gastric acid secretion and promoting ulcer healing [3]. An alternative poly herbal formulation containing a powdered mixture of Withania somnifera, Tribulus terrestris, Green tea extract, Mucuna pruriens, Citrus aurentium, Coleus forskohlii has been
taken for the study of antiulcer property. The aqueous solution of formulation has been tested by orally administering a dose of 1gm/kg body weight to wister rats which have been subjected to severe stress conditions to induce ulcers [4]. The drug has been found to be effective in treating ulcers when compared with standard group – treated with Ranitidine and control group. The anti ulcer activity has been confirmed by comparing the ulcer index of the three groups by “Student T test”.

**KEY WORDS:** H2 Receptor Antagonist, Gastric Ulcers, Stress induced ulcers

PGY-008

**EFFECT OF A POLYHERBAL FORMULATION ON DELAYED ULCER HEALING INDUCED BY DICLOFENAC**


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Ulcers occur in the upper part of the digestive system. An ulcer is any break in the skin or in a mucous membrane. Major causes of ulcers are infection, few types of medical problems – Zollinger Ellison syndrome, prolonged usage of NSAID” s [1]. The main symptoms of ulcers include feelings of indigestion and heart burn, weight loss and repeated cases of bleeding in the stomach. Some common complications include- hemorrhage, perforation, penetration, obstruction. Anti secretory drugs and protective drugs reduces the amount of acid produced in the stomach and also reduces the risk of ulcer formation, surgical treatment such as partial gastrectomy or vagotomy [2]. Most common types of ulcers are Peptic ulcers, gastric ulcers, duodenal ulcers, stress induced ulcers, and drug induced ulcers. The present study was aimed at investigating the anti ulcer activity of the poly herbal formulation against drug induced ulcers in Wister rats. Ulcers were developed by injecting 20% glacial acetic acid into the sub mucosal region of the stomach [3,4]. The healing of ulcers was delayed by injecting in Diclofenac sodium-20mg/kg for up to one week, starting two days after ulcer induction [4,5]. The standard drug used is Ranitidine-40 mg/kg I.P. The drug to be tested for anti ulcer activity consisted of herbal extracts of Withania somnifera, Tribulus terrestris, Green tea extract, Mucuna pruriens, Citrus aurentium, Coleus forskohlii. The solution of the herbal extracts at the dose of 1 gm/kg orally has shown beneficial effect in preventing ulcers which was confirmed by ulcer index. Ulcers were assessed by macroscopic measurements of area. The activity produced by the extracts is almost comparable with standard drug- Ranitidine.
PGY-009

ANTIOXIDANT POTENTIAL OF ETHANOLIC EXTRACT OF SYMPLOCOS RACEMOSA ROXB STEM BARK

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Increased level of oxidative stress may be implicated in the etiology of many pathological conditions like such as cancer, renal failure, aging etc., protective antioxidant action imparted by many plant extracts and plant products make them promising therapeutic drugs for free radical induced pathologies. In this study we assessed the antioxidant potential of symlocos racemosa roxb was studied by using DPPH, Nitric Oxide, Hydroxyl radical and ABTS assay methods. the result of the study indicated that the ethanolic extract of symlocos racemosa (EESR) showed potent antioxidant activity in ABTS assay method and other methods (DPPH, Nitric Oxide, Hydroxyl radical) showed moderate activity.

PGY-010

INVESTIGATION OF ANTI-PLATELET ACTIVITY IN THE ROOTS OF SIDA RHOMBIFOLIA

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Sida rhombifolia (Malvaceae) roots called Chirangutti or Bala or Atibala is used by Siddha practitioners for the treatment of inflammatory conditions such as rheumatism. The total alcoholic extract of the roots of Sida rhombifolia has been reported to have anti inflammatory, antipyretic, antinociceptive, anti spasmodic, antimamoebic, hepatoprotective, urinartantiseptic, anti bacterial, antifungal and anthelmintic, activities besides antivenom property. Phytochemical screening revealed the presence of alkaloids, carbohydrates, glycosides, proteins, phytosterols and phenolic compounds. Hence an attempt has been made to find the effect of root extract of Sida rhombifolia on human platelet aggregation using platelet rich plasma in presence of ADP. The total ethanolic extract was used in various concentrations (62.5, 125, 250, 500, 1000µg) for the study. A pronounced anti platelet activity was observed in the lower concentrations (125 and 62.5µg) when compared to standard Aspirin. The above result claim its effect on inflammatory conditions and as antivenom property.
PGY-011

DRUG RESISTANCE: A GROWING HEALTH THREAT

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Dianne Murphy and Gary Chikami have proven that the issue of antibiotic resistance is a real problem and something that will not just go away. Their assessment of the situation suggests that several strategies including surveillance, education and hygiene will prevent the situation from getting worse. New antibiotics are needed in fighting the problem and most pharmaceutical firms have new products to be released in the market. Also, the development of vaccines against bacterial infections is in progress. The first and second phase of implementation of the empowerment zone program witnessed conflicting opinions and differences among various participants. The process has been beset by politics and partisan interests. The infighting and competition for program funds may cause a setback to the project similar to the failure of such previous efforts. Community groups representing local citizens, mayors and government officials need to be more cooperative to make the program effective.

PGY-012

MIGRAINE — CURRENT UNDERSTANDING AND TREATMENT

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Migraine is a common, chronic, incapacitating neurovascular disorder, characterized by attacks of severe headache, autonomic nervous system dysfunction, and in some patients, an aura involving neurologic symptoms.1,2 Recent advances in basic and applied clinical neuroscience3 have led to the development of a new class of selective serotonin (5-hydroxytryptamine [5-HT]) receptor agonists that activate 5-HT1B and 5-HT1D (5-HT1B/1D) receptors and are known as the triptans; these agents have changed the lives of countless patients with migraine. Despite such progress, migraine remains underdiagnosed and the available therapies underused. Before launching into a discussion as to why some patients fail to respond to currently available therapies, and therefore are deemed refractory, we must define what it means to be refractory. Refractory migraine (RM) is a term which has been used in the literature for more than 30 years, but until recently, there has been little attention paid to what it actually means to be refractory or how to define a patient as refractory. Indeed, the criteria used to define what makes a migraine patient refractory have varied considerably. In most circumstances, however, the definition has included failure to respond to a certain number of "standard" preventive medications. Unfortunately, these definitions are woefully inadequate and do not reflect the refractory patients that confront
clinicians, especially headache specialists. While headache specialists intuitively recognize when a patient is refractory, defining the patient population with operational criteria has not been easy.

PGY-013

STENTS: SILVER LINING IN THE TREATMENT OF CORONARY ARTERY DISEASE

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Stents are metal mesh tubes inserted after an angioplasty into an artery that has become partially or completely blocked. The main function of stent is to prevent restenosis (renarrowing of artery). The major application of stents lies in their use as coronary stents since the incidences of heart attack due ischemic heart disease are ever increasing throughout the globe. Stents are generally made up of SS316 or tantalum alloys. Stent is mounted on a balloon catheter in a “crimped” or collapsed state. When the balloon is inflated, the stent expands or opens up and pushes itself against the inner wall of the coronary artery. This holds the artery open when the balloon is deflated and removed. Stents can be a very good alternative to Coronary Artery Bypass Grafting (CABG). Stents have much better patient compliance.

The main disadvantageous factor with the stent is the chances of relapse and the reason for relapse was found to be restenosis due to inflammation on placing the stent. To overcome restenosis problem, drug eluting stents were developed. Drug eluting stents are bio-compatible polymer coated stents in which anti-neoplastic drugs like paclitaxel or immunosuppressant like sirolimus were incorporated. Recently research is being done to develop biodegradable stents which could revolutionize the treatment of coronary artery disease.

PGY-14

ANCILLARY CARE FOR CLINICAL TRIALS

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Clinical trials are research studies that test new interventions in people, new uses for existing medications, and new therapeutic options for existing drugs and find out whether an intervention is safe and effective. Clinical trials should be conducted in accordance with the ethical principles that originated in the Declaration of Helsinki, and that are consistent with International Conference of Harmonization. Ancillary care is “that which is not required to make a study scientifically valid, to ensure a
trial’s safety, or to redress research injuries.” Trial participants from developing countries are not duly compensated for time inconvenience and risks as compared to their counterparts from developed countries owing to undue inducements though they equally contribute towards the study by contributing the same product-data. Volunteers must be assigned to each of the study groups only after obtaining their medical and pharmacologic histories. Subjects should have information of the study that researchers are planning, should be given ample opportunity to consider their decision to take part in the study bearing in mind their own interest. An order of preference should be implemented in selecting subjects. Vulnerable subjects should be excluded unless their participation is needed for scientific reasons. All information of the trial must be kept confidential, given the potential risks like public discrimination or stigma. In order to avoid exploitation of humans in the name of scientific research ethical guidelines are put in place, with codes and guidelines on how to conduct a clinical trial.

PGY-015

PPARYRECEPTOR: AS A NOVEL THERAPEUTIC TARGET IN ALZHEIMER DISEASE

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The nuclear receptor peroxisome proliferator-activated receptor gamma (PPARγ) is a newly recognized therapeutic target for the treatment of Alzheimer’s disease. The suggestion that PPARγ might be of utility in treatment for AD arose from consideration of its effect on insulin action, energy metabolism, lipid metabolism and inflammation. The PPARs are a family of three (α/β/γ) related nuclear receptors that act as whole body lipid sensors, and each member function to regulate a unique subset of genes responsible for lipid and energy metabolism. More recently, a detailed study of gene expression has reported that messenger RNA levels PPARγ, but not of other PPAR isoforms, were vated in the brains of patients with Alzheimer’s disease. These findings suggested that PPARγ might play a role in regulating pathophysiological features of AD, and has established the basis for modulation of PPARγ activity in the treatment of disease.
PGY-017

MALE BREAST CANCER ON THE RISE TIME TO CREATE AWARENESS

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Breast cancer is not just a woman’s disease. Men also have breast tissue that can undergo cancerous changes. This paper aims at discussing the etiology, symptoms, risk factors and treatment modalities of male breast cancer. It also calls pharmacists to create awareness among the public about this disease. Breast cancer is 100 times more common in women than in men. It accounts for only about 1% of all breast cancers. Despite the small numbers, male breast cancer is a significant risk to life. It is most common between the ages of 60 & 70. The most common type is the invasive ductal carcinoma. In India, the number of cases is on the rise in recent years. The common sign of breast cancer for both men & women is a lump or thickening in the breast. About one in 6 cases of breast cancers are inherited; compared with about 5% to 10% of breast cancers in women. Excess weight, excess use of alcohol, liver disease, Klinefelter’s syndrome etc. are believed to be the other risk factors. Although widely believed to be a disease that is exclusively reserved for women; most men tend to overlook the fact that they too stand an equal chance of getting affected. It is high time that the pharmacists should immediately call for awareness campaigns to educate the public about this disease.

PGY-020

“PARACETAMOL” - A SELF MEDICATED POPULAR DRUG ABUSE BY YOUNG STUDENT COMMUNITY

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A questionnaire-based survey was conducted to know about the use, dependance and knowledge of Paracetamol a self-medicated drug that effectively infected the young student population of age between 14-18 years. The study was conducted on October - November 2008 in West Bengal where the people from all over India resides. Total number of volunteers (male and female) was three hundred and ninety four (394). The prevalence of self-medication in young student was quite high and that was 66.24%. Among the self-medicated student 47.64% utilize Paracetamol as their first choice of medicine. 72.58% of the same population agreed that not only Paracetamol but also the practice of self-medication is dangerous. The malpractice of taking Paracetamol - the OTC product comes from parental advice (16.61%) although they were highly educated, sometimes the lack of time and cost effectiveness of doctors fees also enhances the practice. All the data collected were statistically analyzed and validated.
which bring the conclusion that despite majority being aware of harmful effects of self-medication its prevalence is high in the educated youth. It was observed that almost half of the young population took Paracetamol as the first choice of medication. Although it is considered to be a safe OTC product but on prolong practice it shows hepatotoxicity and other complication, which the youth is unaware off. Hence, there is a need to educate the youth to ensure safe practices. Strict policies need to be implemented on the advertising and selling of OTC medications to prevent this problem from escalating.

PGY-021

NANOTECHNOLOGY: IN TREATMENT, DIAGNOSIS AND PREVENSION OF CANCER

Rachana K. Parekh, Dr. Rameshwar K. Patel

Nanotechnology may also be useful for developing ways to eradicate cancer cells without harming healthy, neighboring cells. Nanotechnology will create therapeutic agents that target specific cells and deliver the toxin in a controlled time release manner. Most animal cells are 10,000 to 20,000 nanometers in diameter. This means that nanoscale devices (having at least one dimension less than 100 nanometers) can enter cells and the organelles inside them to interact with DNA and proteins. Tools developed through nanotechnology may be able to detect disease in a very small amount of cells or tissue. They may also be able to centre and monitor cells within a living body. Reductions in the size of tools mean that many tests can be run on a single small device. This will make screening faster and more cost efficient. Nanobiotechnology may provide an ideal solution for the problems in current regime of chemotherapy and promote new concept of chemotherapy, which may include sustained, controlled and targeted chemotherapy; personalized chemotherapy; chemotherapy across various physiological drug barriers such the gastrointestinal (GI) barrier for oral chemotherapy and blood brain barrier (BBB) for treatment of brain tumors and other central nerve system (CNS) diseases; and eventually, chemotherapy at home.

PGY-022

NANOTECHNOLOGY AND CANCER TREATMENT

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Cancer is caused by damage of genes which control the growth and division of cells. Detection/diagnose/treatment is possible by confirming the growth of the cells and treated by rectifying the damaging mechanism of the genes or by stopping the blood
supply to the cells or by destroying it. Conventional detection of the cancer is done by observing the physical growth/changes in the organ by X-rays and/or CT Scans and is confirmed by biopsy through cell culture. However, the limitation of these methods is that these are not very sensitive and the detection is possible only after substantial growth of the cancerous cells. Nano Particles (NP) being of a few of nano meters size and the cells being of the size of few microns, NP can enter inside the cells and can access the DNA molecules/Genes and therefore, there is a possibility that the defect in the genes can be detected. In the nanotechnology methods, certain NP can be designed to absorb preferentially certain wave length of radiation and if they enters in the cancerous cells, they will burn them. Nanotechnology can be used to create therapeutic agents that target specific cells and deliver toxin to kill them. The NP will circulate through the body, detect cancer associated molecular changes, assist with imaging, release a therapeutic agent and then monitor the effectiveness of the intervention. In this paper, the details of these possible detection/ diagnose/ treatment methods of nanotechnology are presented. In addition the toxic effects of NP and their regulatory aspects are also discussed.

PGY-023

MOLECULAR BIOLOGICAL METHODS IN DIAGNOSIS AND TREATMENT OF LIVER DISEASES

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Molecular biology is making a tremendous impact on the diagnosis and treatment of liver diseases. Methods such as the polymerase chain reaction are changing the way physicians diagnose and monitor patients with viral hepatitis. Assays based on recombinant protein antigens allow for detection of specific autoantibodies in diseases such as primary biliary cirrhosis. The diagnosis of inherited metabolic diseases, such as hemochromatosis and Wilson disease, is being revolutionized by discovery of the defective genes involved and the development of methods to rapidly sequence DNA and identify mutations. Treatments and preventive measures are now possible with use of drugs and vaccines produced by recombinant DNA technology. Gene therapy and nucleic acid-based therapeutics are also realistic future treatment options for individuals with liver diseases.
PGY-024

GOOD LABORATORY PRACTICES FOR ANIMAL CARE USED IN BIOMEDICAL RESEARCH

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Experimentation is an essential tool to provide evidence regarding a drug moiety’s activity and use. In vitro results must corroborate with in vivo findings. Clinical studies protocol suggests experimentation on animals followed by humans. Animals used for biomedical research in an educational institution or in a recognized research institution, must be carefully and safely handled. Good laboratory Practices in handling of animals for experimentation are necessary and practical training is required. The procurement, breeding, and safety of animals are a must and should follow a strict scientific protocol. Signs of illness must be observed, diagnosed and treated well under the supervision of a veterinary physician. Animal house need to be clean and hygienic with proper food, bedding, adequate lighting, noise control, temperature and humidity control. A adequately spaced room with proper ventilation and 18° to 29°C temperature and a 30% to 70% RH would be suitable. Institutional Animal Ethical Committee must frame guidelines, SOP’s and protocols for proper, careful and safe handling of the animal. Guidelines and SOP’s must contain the purpose of the experiment, drugs used, any instruments used for the experiment, justifying the use of animal model. Periodical sanitation and cleanliness is to be carried out by trained personnel including proper waste disposal and pest control.

PGY-025

CARDIAC ACTIVITY OF SIDA CORDIFOLIA ON ISOLATED RAT HEART


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OBJECTIVE: The present work was designed to study the cardiac activity of ethanolic extract of roots of Sida cordifolia on isolated rat heart. Materials and METHODS: Isolated hearts from normal rats were mounted in a retrograde manner with Krebs-Henseleit solution gassed with carbogen at 370C at constant flow rate of 5ml/min for 15-30 minutes using modified Langendorff set up. Then starting from lowest concentration, 0.1 ml of diluted ethanolic extract of roots of Sida cordifolia was injected and the effect of various concentrations (from 30μg to 300μg) of Sida cordifolia on heart rate and developed tension were studied. RESULT: Increased developed tension of 12.99%, 21.44% and 23.48% at concentration of 30μg, 100μg and 300μg of Sida cordifolia respectively was shown when compared to normal
response. The mean increase in heart rate of 2.12% at concentration of 300μg in comparison with normal response was found to be negligible, however there was no change in heart rate at lower concentration. CONCLUSION: The ethanolic extract of roots of Sida cordifolia exhibited positive inotropic effect at higher concentration in the isolated rat heart preparation.

**KEYWORDS:** Sida cordifolia; Modified Langendorff set up; heart rate; developed tension.

**PGY-026**

**USE OF CDKIS A NEW APPROACH TO CANCER THERAPY**

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Targeting the Cell Cycle is a new approach to cancer therapy. The cell cycle comprises a series of tightly integrated events that allow the cell to grow and proliferate. CDKs (cyclin-dependent kinases) are required for the normal cell cycle which, when activated, facilitates the cell to move from one phase of the cell cycle to the next. The CDKs are stimulated by cyclins and inhibited by naturally occurring CDK inhibitors (CDKIs). Cancer represents a dysregulation of the cell cycle such that cells that over express cyclins or do not express the CDKIs continue to undergo unregulated cell growth. The cell cycle also serves to protect the cell from DNA damage. Thus, cell cycle arrest, in fact, represents a survival mechanism that provides the tumour cell the opportunity to repair its own damaged DNA. Thus, abolishing of cell cycle checkpoints, before DNA repair is complete, can activate the apoptotic cascade, leading to cell death. Now in clinical trials are a series of targeted agents that directly inhibit the CDKs, inhibit unrestricted cell growth, and induce growth arrest. Recent attention has also focused on these drugs as inhibitors of transcription. In addition, there are now agents that abrogate the cell cycle checkpoints at critical time points that make the tumour cell susceptible to apoptosis. An understanding of the cell cycle is critical to understanding how best to clinically develop these agents, both as single agents and in combination with chemotherapy. Conclusion: Inhibiting the CDKs of the cell cycle by CDKIs has lead to the latest chemotherapeutic agent for the most type of cancer in the class of antineoplastic agents.
INHIBITION OF HIV-1 INTEGRASE IN ANTI HIV THERAPY

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HIV is a lentivirus (a member of the retrovirus family) that can leads to AIDS, a condition in humans in which can fail the immune system leading to life-threatening infections. HIV-1 establishes a persistent infection with the depletion of CD4+ lymphocytes. To produce the infection by HIV-1 requires three key steps: (i) reverse transcription of viral genomic RNA into viral cDNA by the viral reverse transcriptase; (ii) integration of viral cDNA into host cell genome using the viral integrase; (iii) cleavage of newly synthesized viral polypeptide by the viral protease into individual viral proteins during new virion assembly. Nucleoside RT inhibitors (NRTIs) and non-nucleoside RT inhibitors (NNRTIs), such as AZT, ddi, nevirapine, delavirdine, efavirenz and protease inhibitors (PRIs) such as saquinavir, indinavir, ritonavir, and lopinavir. Highly active antiretroviral therapy (HAART) is a combination regimen which includes two or more classes of anti-HIV drugs given together to have synergistic effect. So all three viral enzymes were considered as targets for antiretroviral drugs. However, while multiple RTs and PRIs have been used since many years to treat HIV-infected individuals, recently only viral integrase enzyme emerged as an alternative, clinically validated target to block HIV-1 replication. Integrase inhibitors acts as the important class-welcome news for people with drug-resistant HIV. It inhibits a different molecular target than currently marketed HIV drugs. Preclinical studies have indicated that these drugs are used to treat patients with resistant strains of HIV.

EVALUATION OF ANTI MICROBIAL STUDIES OF STROPHANTHUS KOMBE SEED EXTRACT (APOCYNACEAE)


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The evaluation of antimicrobial activity was carried out from the seeds of Strophanthus kombe, (Apocynaceae) using solvents with increasing polarity viz. petroleum ether and methanol by cold extraction method. The antimicrobial activity of petroleum ether and methanol extracts were tested on Escherichia coli,
Staphylococcus aureus, Pseudomonas aeruginosa, Proteus vulgaris, Candida albicans. The bacterial and fungal pathogens were inoculated on Agar medium. Highly diffusible Cup plate method was used to evaluate antimicrobial activity. The extracts of different concentrations (50µg/ml, 100µg/ml, 250µg/ml, and 500µg/ml) were poured in the wells of microbe inoculated Agar medium and incubated at 37°C. The zone of inhibition was measured after 24 hrs for bacterial pathogens and 36 hrs for fungi, and compared with Ciproflaxin (10µg/ml) as a standard drug. The results showed that methonolic extract exhibited good antimicrobial activity compared with petroleum ether extract, it may be due to the presence of glycosides viz. Strophanthin present in methonal extract of Strophanthus kombe seeds.

**PGY-029**

**MICROCHIP USED IN RETINITIS PIGMENTOSA (RP) AND AGE-RELATED MACULAR DEGENERATION (AMD)**

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Artificial silicon retina(ASR) was designed to stimulate damaged retinal cells from within the retina to allow the cell to recreate visual signals that are processed and sent to the brain. It is a 2 mm in diameter and 25 microns in thickness ASR contains approximately 5,000 microscopic solar cell called “microphotodiodes” which can be implanted into the back of the eye. When light strikes these solar cells, it is converted into electric signal that travel through the optic nerve to the brain and are interpreted as an image. Two common forms of vision loss occur because of disruption or malfunction of the retinal layer and are the condition which may be responsive to treatment with the Artificial Silicon Retina(ASR) chip. They are: i) Retinitis Pigmentosa(RP) and ii) Age-related Macular Degeneration(AMD). This microchip was implanted in the eyes of five patients to treat vision loss caused by Retinitis Pigmentosa(RP) which is well tolerated in RP patients but high powered ultrasound procedures in implanted eyes should be avoided. Some RP patient may still be improving at 2 years postop.
PGY-031

PHARMACOLOGICAL AND BIOCHEMICAL INTERVENTION OF CIGARETTE SMOKE, ALCOHOL AND SEXUAL MATING FREQUENCY ON IDIOPATHIC RAT MODEL OF PARKINSON’S DISEASE

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Epidemiological studies have found a negative association between cigarette smokings, alcohol drinking with Parkinson’s disease. The aim of this study was to determine the effect of chronic cigarette smoking, alcohol drinking and frequent sexual mating on MPTP induced rat model of Parkinson’s disease. The animals were treated with cigarette smoke, ethanol and frequent sexual mating for 60 days followed by intraperitoneal injection of MPTP (20mg/kg) in normal saline on zero day. At the end of study we evaluated effect of these factors by pharmacological and histochemical evaluation. Treatment with cigarette smoke, alcohol and frequent sexual mating significantly reduced anxiety, muscle grip strength when compared with control group. A brain histochemical iron staining should significant increase in brain iron asymmetry ratio in cigarette smoke, alcohol and frequent sexual mating groups when compared to control group. So by concluding all results summary we would like to focus a message that these three factors may lead to clinical parkinsonism by interfering with any of nigro chemical or physiological pathways.

PGY-032

ANTIOXIDANTS-USES IN HEALTH CARE

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An Antioxidant is a molecule capable of slowing or preventing the oxidation of other molecules. Oxidation is a chemical reaction that transfers electrons from a substance to an oxidizing agent. Oxidation reactions can produce free radicals, which start chain reactions that damage cells. Antioxidants terminate these chain reactions by removing radical intermediates, and inhibit other oxidation reactions by being oxidized themselves. As a result, antioxidants are often reducing agents such as thiols and polyphenols. Although oxidation reactions are crucial for life, they can also be damaging; hence, plants and animals maintain complex systems of multiple types of anti oxidants, such as glutathione, vitamin-C, and vitamin-E as well as enzymes such as catalase, superoxide dismutase and various peroxidases. Low levels of antioxidants, or inhibition of the antioxidant enzymes causes oxidative stress and may damage or kill cells. Antioxidants are also widely used as ingredients in dietary supplements in the hope of maintaining health and preventive diseases such as cancer and coronary heart disease.
PGY-033

RISK FREE ALTERNATIVE FOR NSAIDS PREVENTS PREDOMINANT MORTALITY BY KNEE OSTEOARTHRITIS

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NSAIDS including COXIBS reduces short term pain associated with knee osteoarthritis.

BACKGROUND INVESTIGATION: NSAID adverse effects cause an estimated number of 2000 deaths annually, to estimate the analgesic effects of NSAID, including COXIBS in patients with knee osteoarthritis, the analysis results of 23 placebo-controlled trails involving 10,845 patients, 7767 of whom received NSAID therapy and 3078 placebo therapy. It seems that the adverse effect debate has overshadowed the other important factors, efficacy, which is needed to balance benefit and harms.

EXPERIMENTAL APPROACH: Induction of NSAIDS into patients have shown surprising results. The analysis results indicate that change in overall intensity of pain with NSAIDS and COXIBS were proved clinically insignificant even after 13 weeks of administration.

RECOMMENDATION AND CONCLUSION: Disfavor of NSAIDS & COXIBS pave the road for some of risk free alternative like laser therapy with specific optimal dose.

PGY-034

CLINICAL STUDY ON SQUAMOUS CELL CARCINOMA OF CERVIX AND ITS TREATMENT BY COMBINED THERAPY

Ashish Kumar Pal and G. Sindhu Reddy

Squamous cell carcinoma (SCC) is the most common type of cervical cancer, accounting for 85% to 90% of cervical cancer. It develops from the cells that line the inner part of the cervix, called the squamous cells. A clinical study was done at Bharath Cancer Hospital, Mysore to evaluate the response rate of combination of chemotherapy and radiation in treatment of cervical cancer. Eligibility included patients with previously untreated stage of IIB and IIIB squamous cell carcinoma with good performance status. Drugs like cisplatin, carboplatin and taxol were given along with the radiation therapy. Carboplatin/ Taxol were administered intravenously on days 1, 8 and 15, followed by cisplatin given intravenously on day 1. Treatment
was repeated every 4 weeks for a total of two or three cycles. Among 200 eligible patients (median age: 56 years), 49 showed complete response (32%), 88 showed partial response (58%), for an overall response rate of 76% (95% confidence interval 58–90%). Stable disease was observed in 12 cases (8%) and progressive disease in three (2%). During the treatment, anorexia, anemia, white discharge and breast ulcers were observed in 30-75% cases. There were no therapy-related deaths. The study suggested that combination chemotherapy (a combination of two or more chemotherapy drugs) may be more effective than any single drug. Further, the combination of drugs and radiation therapy was a promising regimen for treatment of locally advanced cervical cancer.

**Key words**: Cervical Cancer, Radiation, Cisplatin, Carboplatin, Taxol

**PGY-035**

**ADULT MESENCHYMAL STEM CELLS (MSCS): AN EMERGING TREND FOR THE TREATMENT OF OSTEOARTHRITIS (OA)**

Garima Sharma, Irshad Mohiddin Mulani

Osteoarthritis (OA), the most common form of joint disease is characterized by degeneration of the articular cartilage and ultimately joint destruction. OA is a major cause of work disability over age 50 and its prevalence is expected to increase dramatically over the next 20 years. Despite considerable efforts put into development of molecules for use in treating OA, clinical success with respect to the prevention of further cartilage matrix breakdown or cartilage restoration in OA remains elusive. Restoration of the diseased articular cartilage in patients with OA is, therefore, a challenge of considerable appeal. Adult MSCs which have the ability to differentiate into cells of the chondrogenic lineage have emerged as a candidate cell type with great potential for cell-based articular cartilage repair. MSC-based strategies include the use of MSCs as progenitor cells to engineer cartilage implants that can be used to repair chondral and osteochondral lesions, or as trophic producers of bioactive factors to initiate endogenous regenerative activities in the OA joint. Delivery of MSCs can be attained by different techniques like direct intra-articular injection, by cell suspension or by graft of engineered constructs which further makes the approach more efficient. Promising experimental and clinical data is available which supports the use of MSCs for regenerative applications. In the long term, it is hoped that MSC-based technologies will permit the engineering of cartilage not only for repair of focal lesions but also as a treatment option for OA, so as to realize the goal of a fully biological prosthesis.
PGY-036

GENOTOXICITY IN DRUG DISCOVERY

Vinaya Chaphekar and Chaitali Surve.

Genotoxicity describes the amount of damage a genotoxin can cause to DNA molecule by affecting its integrity. Genotoxic substances (mutagenic/carcinogenic) includes chemical compounds, radiation, intracellular oxidants (superoxides, hydrogen peroxide) arising as intermediate byproducts of aerobic metabolism and accumulation under oxidative stress condition, resulting in deleterious effect. Aromatic amines forms covalent bonds with DNA resulting in adduct formation, preventing accurate replication. Micronucleus formation is a hallmark of genotoxicity. Mutation, the cause of genotoxicity, is an alteration or heritable change in the base-pair sequence of DNA. There are different types of mutations in which point mutation causes replacement of single base nucleotide with another nucleotide and be categorized as Nonsense mutation (can truncate the protein), Missense mutation (code different aminoacids), Silent mutations (codes without any functional change in protein), in frameshift mutation, a stop codon will not be read or could be created at an earlier or later site. Genotoxicity test (Ames test, In vitro test for chromosomal damage in mammalian cells) is a regulatory requirement for drug discovery, performing animal studies to characterize effects on fertility, reproduction; and ability of drugs to induce tumors, enabling identification of potential toxicities occurring upon human administration of drug. The disadvantages include non-specificity of genotoxicity tests, ambiguity between positive and negative test results, nonaccountability of carcinogenicity mechanisms. Future research includes classification of germ cell mutagen and the risk they pose according to the stage they affect. Thus we conclude that genotoxicity studies are an important step in regulatory affairs.

PGY-037

APPLICATIONS IN CANCER AUTO IMMUNE DISEASE – BY NANO DRUG DELIVERY

Akram Khan

Polymer-based nanotechnologies are now proposed as an alternative to classical formulations for drug administration, delivery and targeting. Therapeutic applications of the first generation of nanotechnologies include the treatment of cancer liver diseases. Avoiding the recognition by the liver is also possible by developing long circulating polymeric colloidal carriers (‘stealth’ systems) which is able to avoid the opsonization process and the recognition by the macrophages. The design of such carriers of second generation is based on the physio-chemical concept of the ‘steric repulsion’: by grafting poly ethylene glycol chains at the surface of nanoparticles.
The adsorption of steric proteins may be dramatically reduced due to steric hindrance. Such an approach allows maintaining the drug carrier for a longer time into the circulation and the resulting extravasation towards non reticulo endothelial-located cancers may become possible. New applications and exciting perspectives are proposed for the delivery of drugs to previously non accessible diseased sanctuaries, like the brain (treatment of glioma and autoimmune diseases of the brain) or the ocular tissues (treatment of the autoimmune uveitis), and the use of nanotechnologies for the delivery of nucleic acids (oligonucleotides).

PGY-038

TAKE A SCORPION BITE

Santanu Sinha, Supratim Ghosh.

OSTEOARTHRITIS: LOOKING AT MODERN CURES

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Osteoarthritis or degenerative joint disease is a rheumatologic disorder. It results from a combination of genetic abnormalities and joint injuries. It is estimated 70 to 90 percent of persons older than 75 years are affected. The risk among women is twice as high, especially following menopause. Osteoarthritis wears down cartilage. When joints are unable to react properly to physical stress on them, the cartilage is damaged and arthritis develops. The joints most commonly affected by osteoarthritis are weight bearing joints, such as feet, knees, hips and spine. Others such as finger and thumb joints may also be affected. Regular exercise, based on a person’s tolerance level, is a key element in preventing disability among arthrosic patients. Several techniques have been developed such as debridement or abrasion, microfracture, mosaicplasty or osteochondral autograft, transplantation surgery, autologous chondrocyte implantation, osteochondral allografts. Bioengineers have discovered that intense pressure stimulates cartilage cells to grow new tissue and that new tissue possesses nearly all of the properties of natural cartilage. Acupuncture has been widely used for treating the pain caused by osteoarthritis. NSAIDs are commonly used as first-line treatment for OA pain, along with exercise and weight. UC-II, a novel undenatured type II collagen derived from chicken sternum cartilage can decrease arthritis pain. Boswellic acid also known as Indian Frankincense reduced inflammation and elicited a marked reduction in edema levels in arthritis patients. These are just some of the myriads of cures that will take centre-stage in the future.

MAJOR DEPRESSIVE DISORDER

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Major depressive disorder (MDD) is a condition characterized by a long-lasting depressed mood or marked loss of interest. Children and adolescents with MDD may be irritable instead of sad. Major depressive disorder is a serious mental disorder that
profoundly affects an individual's quality of life. For some, the pain and suffering accompanying MDD becomes so unendurable that suicide is viewed as the only option; MDD has the highest mortality rate of any mental disorder. Three types of causes are commonly identified: intrapsychic, environmental, and biological. The core symptom of major depression is a sad mood that does not go Loss of interest or pleasure in activities. Insomnia(waking in the middle of the night and having difficulty returning to sleep, or waking too early in the morning) or hypersomnia(sleeping much more than normal). Problems with clear thinking, concentration, and decision-making. Recurrent thoughts of death or suicide, or making a suicide attempt are the other symptoms The diagnosis of MDD involves a constellation of symptoms in addition to depressed mood. Psychotherapy, Electro convulsive therapy (ECT.), (light therapy) are the main stream approaches for MDD. While programs specifically aimed at preventing MDD are not widespread, early interventions with children to address some of the issues related to depression have met with success. It is realistic to expect that appropriate treatment will become more available and accessible to people experiencing less dramatic setbacks to their ability to function in the future.

PGY-041
THE THERAPEUTIC POTENTIAL OF STATINS

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Statins, or 3-hydroxy-3-methylglutaryl coenzyme A reductase (HMGR) inhibitors, are front-line therapeutic agents for the prevention of cardiovascular disease (CVD) and atherosclerotic disorders related to hypercholesterolemia. Statins reduce serum cholesterol levels by reversibly inhibiting 3-hydroxy-3-methyl glutaryl coenzyme A reductase, the rate-limiting enzyme in cholesterol biosynthesis, in the nanomolar range. Mounting evidence suggests that in addition to their vascular effects such as stabilization of atherosclerotic plaques and decreased carotid intimal–medial thickness, statins have additional properties such as endothelial protection via actions on the nitric oxide synthase system as well as antioxidant, anti-inflammatory and anti-platelet effects. These effects of statins might have potential therapeutic implications in various neurological disorders such as stroke, Alzheimer's disease, Parkinson’s disease, multiple sclerosis and primary brain tumors Statins have an established record of human safety and efficacy in the prevention of cardiovascular disease and show promise for the prevention of CNS malignancies. In addition to their potent anti-atherosclerotic and cardioprotective effects, compelling clinical and preclinical studies delineate the neuroprotective efficacy of statins in various neurological disorders. It is apparent from these studies that most patients with CNS disorders probably benefit to some extent from lipid-lowering therapy.
PGY-042

INSILICO LIGAND IDENTIFICATION STUDY OF G PROTIEN COUPLED
BETA-2 ADRENERGIC RECEPTORS

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The main pharmacological properties of the beta-2-adrenergic stimulants are, their bronchodilator effect and their uterine relaxant effect to which correspond two therapeutic uses: preventive and curative treatment of asthma and treatment of risk of preterm delivery. The Beta-2 adrenergic receptors have a genetic polymorphism, four types of receptors having different sensitivities to beta agonists, were described. This polymorphism could play a part in the pathogenesis of asthma. Adrenergic receptors specifically bind and are activated by their endogenous ligands, the catecholamine epinephrine and norepinephrine. Beta-adrenergic receptors mediate the catecholamine induced activation of adenylate cyclase through the action of G proteins. The beta-2-adrenergic receptor binds epinephrine with an approximately 30-fold greater affinity than it does norepinephrine. This experiment studies the docking of small molecules of ‘catecholamines, 2 existing beta-2 receptor stimulants and its 18 new molecular analogues’ to the pockets of its macromolecular receptor target ‘beta-2-adrenergic receptors’ and compare the docking results of new molecular analogues with existing beta-2 receptor stimulants and other catecholamines. The three dimensional structure of the receptor was obtained from the Protein databank. The macromolecular receptor having 3 chains (A, L & H) of amino acids, structural weight of 88421.10 and 100 pockets of binding sites. From these binding sites it’s found that one of the binding site has more affinity than others to bind with ligands. Isolated the binding site with the help of CASTp (Computed Atlas of Surface Technology of Protein) and dock the catecholamines, beta-2 receptor stimulants and its analogues in the binding site. Then docking is performed by the Argus lab, and the best legand pose energy obtained for salbutamol, terbutalin, epinephrine and 5-bromo-N-(3-hydroxymethyl phenyl) pyridine-3-carbohydrazide i.e. -8.3658 kcal/mol, -8.2248 kcal/mol, 9.4528 and -10.9393 kcal/mol respectively. The energy values were found to be promising for the ligand, 5-bromo-N-(3-hydroxymethyl phenyl) pyridine-3-carbohydrazide. The docking analysis has shown that this ligand has the maximum binding affinity with the receptor molecule. The ligand is presented for further analysis involvin
SCORPION VENOM WITH NANOPARTICLES FOR TREATING BRAIN CANCERS

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For more than a decade scientists have looked at using chlorotoxin, a small peptide isolated from scorpion venom, to target and treat cancer cells. Chlorotoxin binds to a surface protein overexpressed by many types of tumors, including brain cancer. Chlorotoxin also disrupts the spread of invasive tumors -- specifically, it slows cell invasion, the ability of the cancerous cell to penetrate the protective matrix surrounding the cell and travel to a different area of the body to start a new cancer. The MMP-2 on the cell's surface, which is the binding site for chlorotoxin, is hyperactive in highly invasive tumors such as brain cancer. Researchers believe MMP-2 helps the cancerous cell break through the protective matrix to invade new regions of the body. But when chlorotoxin binds to MMP-2, both get drawn into the cancerous cell.

BREAST-FEEDING HIV-INFECTED INFANTS

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Vertical transmission of Human Immunodeficiency Virus (HIV) from mother to infant can happen during childbirth, post-partum or during breast feeding. World Health Organization (WHO) advises against nursing if mothers are HIV-Positive. This led to a misconception that HIV infected mothers should not breastfeed even if the infant is HIV infected. More than 200,000 of the 500,000 new HIV infections occur each year in children as a result of vertical transmission. Peri-partum prophylaxis with a single dose or a short course (14 weeks) of antiretroviral agents effectively reduces intra-partum HIV transmission. Human milk contains all of the different antibodies (M, A, D, G, E), but secretory immunoglobulin A (sIgA) is the most abundant. Oligosaccharides contain domains resembling binding sites for bacteria in the intestinal tract. Thus, these sugars can intercept bacteria, forming harmless complexes that the baby excretes. Human milk also contains mucins that are capable of adhering to bacteria and viruses eliminating them. Macrophages comprise 40-60% of the cells in colostrum and offer protection against bacterial infections. CONCLUSION: HIV-infected children are at higher risk of malnutrition and failure to thrive. Therefore, breast feeding is vital to infant’s survival and should be strongly recommended especially if the infant is HIV positive.
PGY-045

CLINICAL TRIALS: ANTIDIABETIC DRUG (PHASE 3)


Clinical trials are biomedical or health related research studies in human beings that follow a pre-defined protocol. Clinical trials include both interventional and observational types of studies. Interventional studies are those in which the research subjects are assigned by the investigator to treatment or other intervention, and their outcomes are measured. Observational studies are those in which individuals are observed and their outcomes are measured by the investigators. Clinical trials are classified into 4 phases. If the drug successfully passes through Phase 1, 2 and 3, it will usually be approved by the national regulatory authority for use in the general population. Phase-4 is post-approval studies. India has a high prevalence of Diabetes mellitus (DM) and the members are increasing at an alarming rate. It is a chronic condition, characterized by hyperglycemia due to impaired insulin secretion with or without insulin resistance. It is classified into Type1 and Type2. Type1 is Insulin dependant DM that causes destruction of insulin producing pancreatic beta cells. Type2 is non-insulin dependant DM caused by relative insulin deficiency and/or insulin resistance. The prototype for clinical trial selected is an anti-diabetic drug which is known to show its action in small intestine that inhibits the activity of sucrase and maltase enzyme. Major objective of this drug’s phase-3 trial is to confirm the effectiveness of the anti-diabetic drug for glycemic control of patients with Type2 DM who are not taking other medication for the condition; patients may be under diet control and exercise.

PGY-046

A NOVEL APPROACH FOR CANCER THERAPY USING MAGNETIC NANO PARTICLES

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Magnetic nanoparticles are a class of nanoparticles which can be manipulated under the influence of a magnetic field. Such particles commonly consist of magnetic elements such as iron, nickel and cobalt and their chemical compounds. The small size of nanoparticles endows them with properties that can be very useful in cancer therapy, particularly in imaging (in MRI) and drug delivery. Nanoparticulate delivery systems (like liposomes) provide better penetration of therapeutic and diagnostic substances within the body at a reduced risk in comparison to conventional cancer therapies by controlled delivery, targeting etc. Hyperthermia is one of the promising techniques in which tumor cells can be heat killed. There are many techniques for the
synthesis of magnetic nanoparticles like micro-emulsion, co precipitation, reduction of metal-salts, gas-phase reduction of metal complexes, thermolysis of metal-polymer complexes, and thermal decomposition of metal-carbonyl complexes. Thus these are nano-submarines patrolling body for tumor cells having a potential to create a revolution in cancer therapy in near future.

PGY-047

RESPIROCYTES: THE MECHANICAL ARTIFICIAL RED BLOOD CELLS

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Respirocytes are artificial red blood cells that can supplement or replace the function of much of the human body's normal respiratory system by mimicking the action of the natural hemoglobin-filled red blood cells. The tank can be filled up with oxygen and carbon dioxide, making one complete transfer point at the lungs, and the reverse transfer at the body's tissues. Replacement of a quarter of red blood cells with respirocytes would increase the body's O2 capacity by 300%. The respirocyte is a blood borne 1-micron-diameter spherical nanomedical device designed by Robert A. Freitas Jr. It is designed as a diamondoid 1000-atmosphere pressure vessel with active pumping powered by endogenous serum glucose, and can deliver 236 times more oxygen to the tissues per unit volume than natural red cells while simultaneously managing carbonic acidity. An individual respirocyte consists of 18 billion precisely arranged structural atoms plus 9 billion temporarily resident molecules when fully loaded. An onboard nanocomputer and numerous chemical and pressure sensors allow the device to exhibit behaviors of modest complexity, remotely reprogrammable by the physician via externally applied acoustic signals. Medical nanorobots have been proposed in pharmaceutical research, to diagnose diseases, mechanically reverse atherosclerosis, supplement the immune system, rewrite DNA sequences in vivo, repair brain damage, and reverse cellular insults caused by cryogenic storage of biological tissues. Benefits of respirocytes would be in their ability to sustain people during physical trauma where greater reserves of O2 are needed, increasing the ability for deep sea and rescue diving and eliminating the necessity of O2 tanks etc.
ULTRASONIC-ACTIVATED MICELLAR DRUG DELIVERY FOR CANCER TREATMENT

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The use of nanoparticles and ultrasound in medicine continues to evolve. Great strides have been made in the areas of producing micelles, nanoemulsions and solid nanoparticles that can be used in drug delivery. An effective nanocarrier allows for the delivery of a high concentration of potent medications to targeted tissue while minimizing the side effect of the agent to the rest of the body. Polymeric micelles have been shown to encapsulate therapeutic agents and maintain their structural integrity at lower concentrations. Ultrasound is currently being used in drug delivery as well as diagnostics, and has many advantages that elevate its importance in drug delivery. The technique is non-invasive, thus no surgery is needed; the ultrasonic waves can be easily controlled by advanced electronic technology so that they can be focused on the desired target volume. Additionally, the physics of ultrasound are widely used and well understood; thus ultrasonic application can be tailored towards a particular drug delivery system. In this article, we review the recent progress made in research that utilizes both polymeric micelles and ultrasonic power in drug delivery.

STEM CELLS RESEARCH: CURRENT PROGRESS AND FUTURE CHALLENGES

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Considerable progress has been made the last few years in our understanding of stem cell biology and devising sources of cells for transplantation. New methods are also being developed for cell delivery and targeting to affected areas of the body. Many diseases that affect the nervous system hold the potential for being treated with stem cells. Stem cells hold promise as a therapy to regenerate damaged myocardium. However, the use of these cells in this setting is currently in its infancy—much remains to be learned about the mechanisms by which stem cells repair and regenerate myocardium, the optimal cell types and modes of their delivery, and the safety issues...
that will accompany their use. There is potential of stem cells to treat type 1 diabetes and to improve the quality of life for those with type 2 diabetes. Human embryonic stem cells are easily accessible for controlled and specific genetic manipulation. However, sporadic chromosomal abnormalities in human embryonic stem cell culture have been reported. Additionally, undifferentiated embryonic stem cells have the potential to form a type of cancer called a teratocarcinoma. If stem cells are not autologous, they eventually cause immuno-rejection of the transplanted cell type. Although human Embryonic Stem Cells are thought to offer potential cures and therapies for many devastating diseases, research using them is still in its early stages.

PGY-050

PROGERIA

Guduru Sriraj, Beeram Harish Reddy

Progeria is an extremely rare genetic disorder where symptoms resembling aspects of rapid aging are manifested at an early age resulting in the death of the children in their early teens with average life expectancy of 13. The children with progeria develop striking physical geriatric symptoms including premature baldness, cardiovascular diseases, arthritis. Progeria is caused by tiny mutation in a gene known as LMNA, the mutated form of LMNA is commonly known as progerin. It is diagnosed by symptoms such as skin changes, failure to gain weight and loss of hair that were not fully apparent until a child’s first or second year of life. There is no perfect cure for progeria but is treated symptomatically. High caloric dietary supplements may help to prevent weight loss and ensure adequate nutrition. Lots of research work is going on to find out different ways to cure progeria. New drugs known as FTIs which were developed for treating cancers show promise in laboratory studies in correcting the cell defects that cause progeria. FTIs and growth hormone treatments are still need to be tested in clinical studies for treatment of progeria.

PGY-052

THERAPEUTIC DRUG MONITORING-NEED AND RELEVANCE IN DEVELOPING COUNTRIES : AN OVERVIEW

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Therapeutic drug monitoring [TDM], a comparatively new investigational procedure in clinical pharmacology – useful for some drugs in any patient and for most drugs in some special populations. In developed countries, TDM practice had started out in 1970 and since then the concept is well accepted. This review is based on literature...
review and some in of experiences over a last few years in our local hospitals and
department of clinical pharmacology. It explains the history of TDM, development of
TDM in developing countries and problems such as lack of insufficient funding,
special issues to be considered for the TDM development in poor countries and the
future prospects.

PGY-054

COGNITION AND HOMOCYSTEINE- A REVIEW

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Homocysteine is an amino-acid produced in the metabolism of methionine with the
aid of vitamin B-12, vitamin B-6 and folic acid. Homocysteine degrades and inhibits the
formation of the three main structural components of the artery, collagen, elastin, and
proteoglycans. Homocysteine permanently degrades cysteine disulfide bridge and
lysine amino acid residues in proteins, gradually affecting function and structure. The
normal range of homocysteine in males above 60 yrs is 5.9 to 15.3 µmol/L. Deficiencies of the B-vitamins folic can lead to high homocysteine level. High level
of homocysteine will auto-oxidise and react with reactive oxygen intermediates and
damage endothelial cells, a risk factor for cardiovascular disease, diabetes mellitus
and dementia in the elderly. A Cross-sectional analysis showed that higher
concentrations of homocysteine were significantly related to poorer performances at
all neuropsychological tests. The odds of cognitive decline was 2.8 folds (p<0.05)
higher in subjects with homocysteine levels above 15 µmol/L than those with
homocysteine levels below 10 µmol/L. Analysis of a cross-sectional database review
by Linghi, et al., 2004 showed an inverse correlation with age, plasma levels of total
homocysteine and LDL cholesterol. In a case series study by Andrew McCaddon, et
al., 2006, all patients showed subjective clinical improvement by the addition of anti-
oxidant N-acetylcysteine while five from the seven patients showed objective
improvement in cognitive scores. These studies show that elevated plasma
homocysteine is an indicator for the cognitive decline in geriatric patients. Further
research has to be done to investigate the effect of anti-oxidants on homocysteine to
on cognitive function.
PGY-055

EFFECT OF ALLIUM CEPA LEAVES ON ISOPROTERNOL INDUCED MYOCARDIAL INFARCTION IN ALBINO RATS

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The ethanolic extract of Allium cepa (Liliaceae) leaves was evaluated for the protection against isoproternol (150mg/kg/day for two day) induced in myocardial infarction in albino rats. The heart damage induced by isoproternol was indicated by elevated levels of the marker enzymes such as aspartate transaminase (AST), alanine transaminase (ALT) alkaline phosphate (ALP), creatinine kinase (CK), creatinine kinase MB fraction (CK-MB). Microscopical examination was also performed on the myocardial tissue. Oral pretreatment with an ethanolic leaf extract of A. cepa at a dose of 200 & 400 mg/kg body weights for 15 days, reduced significantly (p<0.01) the marker enzyme levels in serum. Histopathological observation revealed a marked protection by the extract in myocardial necrotic damage.

PGY-056

REVERSAL OF LEFT VENTRICULAR HYPERTROPHY BY p38 MAP KINASE INHIBITOR

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OBJECTIVE: Cardiovascular disease is the leading cause of premature death in developed and developing countries. Cardiac hypertrophy is an independent risk factor for heart failure, arrhythmia and sudden death and is one of the most potent predictors of adverse cardiovascular outcomes. Cardiac hypertrophy is characterized by an increment in cardiomyocyte size, with increased protein synthesis. This study was designed to investigate the role of p38 mitogen activated protein kinase (MAPK) inhibitor in partial abdominal aortic constriction (PAAC) induced left ventricular hypertrophy.

METHODS: Wistar rats were employed in the present study. Rats were anaesthetized using thioental (35 mg/kg) and PAAC was produced by ligating the aorta between the diaphragm and the renal artery, using a non absorbable silk suture. SB-239063 (1 mg/kg and 2 mg/kg), specific p38 MAPK inhibitor was administered for 4 days before surgery and were continued for 28 days to investigate the role in PAAC induced left ventricular hypertrophy.
RESULTS: The animals subjected to PAAC for four weeks showed decreased ratio of left ventricular weight to total heart weight. The observations were also confirmed biochemically using LV protein content and LV wall thickness. Administration of SB-239063 significantly attenuated PAAC induced left ventricular hypertrophy.

CONCLUSION: The findings of the present study indicate that the inhibition of p38 MAPK by B-239063 may be responsible for attenuation of left ventricular hypertrophy.

PGY-057

IMPACT OF PATIENT COUNSELING ON KNOWLEDGE OF DIABETES MELLITUS AND ITS MANAGEMENT IN SRN HOSPITAL IN ALLAHABAD

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Diabetes mellitus is a chronic metabolic disorder characterized by a high blood glucose concentration caused by insulin deficiency, often combined with insulin resistance. Lack of knowledge about the complications and treatment is one important reason for improper control of diabetes mellitus. In this study we made an attempt to counsel the patient on the knowledge about diabetes mellitus and its management. The work was carried out at Swaroop Rani Nehru Hospital, Allahabad, and OPD of endocrinology department. Respondents were selected randomly. A total of 200 patients were included in the study and data was collected based on face to face interview with structured questionnaire which included information related to age, sex, weight, anti-diabetic drugs, side effects and its complications etc. Analysis was made on the basis of frequency method. The group in which pharmacist provided counseling showed a significant increase in the patient’s knowledge about all aspects of diabetes mellitus and its management. Increase in awareness about disease prompted patients desire to keep their diabetes in control. Therefore, there is a need of proper counseling in terms of awareness along with knowledge of balanced diet, regular medications and side effects. Proper counseling and consulting the physician at every interval helps to control and prevent the complication of diabetes mellitus.
PGY-58

PHARMACOLOGICAL EVALUATION OF CURCUMIN FOR ITS NEPHROPROTECTIVE ACTIVITY IN 5/6 NEPHRECTOMIZED RAT MODEL

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The present study was to investigate the effect of curcumin in Wistar rats in 5/6 nephrectomized rat model. The curcumin was administered at 100 mg/kg and 200 mg/kg orally for 60 days. After 60 days parameters such as body weight, blood pressure, haemoglobin, cholesterol, triglycerides were estimated. The kidneys from all the groups were subjected to histopathological evaluation. Treatment with curcumin 200 mg/ kg showed significantly reduced body weight, cholesterol and triglycerides levels as compared to nephrectomized control. A significant increase in blood pressure and haemoglobin was observed at 200mg/kg curcumin. Histological study of kidney tissue showed no congestion of interstitium, tubular capillaries and glomerular tuft of capillaries without focal haemorrhage. Curcumin ameliorated the parameters by normalizing the elevated levels in experimental rats. Thus the efficacy of curcumin of curing or alleviating CRF is a potential herbal, medicine.

PGY-059

ROLE OF QUERCETIN AND NARINGENIN IN ISOPROTERENOL INDUCED MYOCARDIAL INFARCTION

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Cardiovascular diseases are the leading cause of death and disability in developing and developed countries with acute myocardial infarction (AMI) accounting for most of the cardiovascular events. Myocardial infarction is the rapid development of myocardial necrosis caused by a critical imbalance between the oxygen supply and demand of the myocardium. Since allopathic drugs cause potential side effects, the current trend is to scrutinize herbal medicines for use in such treatment due to their effective constituents and also as compared to allopathic medicines the side effects of herbal medicines are less. The present study was aimed to study the effect of quercetin, naringenin and their combination (in a fixed ratio) on an animal model of Myocardial infarction through induction of Isoproterenol (ISO – 85mg/kg). Observations were made based on the heart weight, Creatinine Kinase, (CK), Creatinine Kinase-MB (CK-MB), Aspartate Amino Transferase (ASAT), Alanine
Amino Transferase (ALAT), Lipid Profile and Lactate Dehydrogenase (LDH) levels. Results showed a significant increase in the heart weight of ISO-induced myocardial infarcted rats which might be due to increased water content, edematous intramuscular space and extensive necrosis of the cardiac muscle fibers. Pretreatment with quercetin and naringenin significantly decreased the heart weight in ISO-induced rats. An increase in activity of CK, CK-MB, ASAT, ALAT, Lipid Profile and LDH was seen in ISO-induced rats. However, the rats treated with quercetin, naringenin and their combination showed a significant decrease in the levels of these enzymes. Thus, the potential cardioprotective role of these flavonoids in Myocardial Infarction is worth exploring.

PGY-060

STUDIES OF SESANUM INDICUM LINN ON THE POST MENOPAUSAL CONDITIONS IN OVARIECTOMISED WISTAR RATS

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Menopause is a universal phenomenon who live beyond an age of 50-55 years. It is defined as the permanent cessation of menstruation that results from the loss of ovarian follicular activity. Hormonal replacement therapy has proved to be effective in preventing the physical and physiological symptoms which includes hot flushes, osteoporosis, and decrease in cholesterol levels. The animals were induced post menopausal conditions by the bilateral removal of the ovaries. Two doses of the standard drug ethynyl estradiol 0.1mg/kg, was selected for the prevention of osteoporosis and 0.3mg/kg for the CNS activity was found to be effective. Two doses of the hydro alcoholic extract of Sesanum Indicum Linn was selected for the present study and 100mg/kg & 200mg/kg was found to be effective in lowering the elevated cholesterol levels, and at a dose of 200mg/kg showed the prevention of significant depletion in the bone trabaculae. It is also effective in preventing the reduction in ash weight, bone calcium, phosphorus. The biochemical parameters such as serum calcium and phosphorus, serum cholesterol, alkaline phosphatase, total protein, showed significant changes. However the treatment with Sesanum Indicum Linn at a dose of 200mg/kg was showed to be effective in treating the post menopausal conditions. Thus the research on the Sesanum Indicum Linn to treat the post menopausal conditions is worth worthy.
PGY-061

IMPLICATION OF HYDROALCOHOLIC EXTRACT OF MORINGA OLEIFERA ON ATHEROSCLEROSIS INDUCED BY HIGH FAT DIET IN EXPERIMENTAL ANIMALS

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Different parts of Moringa oleifera have been claimed to be effective in various diseases. The leaves of Moringa oleifera on chemical analysis are found to contain β-sitosterol, flavonoids, sesquiterpenoids and other phytoconstituents and also used in traditional Indian ayurveda medicine and indicated for treatment of lipid lowering. The present study is therefore an attempt to study the possible antiatherogenic activity of hydroalcoholic extract of Moringa oleifera leaves on hyperlipidemia. Albino rats of Wistar strain were fed with atherogenic diet to induce hyperlipidemia. The hydroalcoholic extract of Moringa oleifera and atorvastatin (positive control, 2mg/kg, oral) were administered for 28 days. Body weight changes and various biochemical parameters were evaluated on day 14 and 28. The leaves of Moringa oleifera were found to contain β- sitosterol, flavonoids, sesquiterpenoids and other phytoconstituents. The plant extract showed significant decrease in body weight, lipid profiles, pro-inflammatory cytokines such as TNF-α and IL-1α (analysed by SDS PAGE) and lipid peroxidation and increase in superoxide dismutase and catalase levels. Foam cells number decreased in histological reports of aorta. Hence as per present study, hydroalcoholic extract of Moringa oleifera was found to have positive implications in treating atherosclerosis.

PGY-062

CATARACT - CAUSES, PREVENTION, TREATMENT


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Cataract is the most common cause of blindness in the world. Cataracts develop over the lens of the eye and interfere with vision. Inside the eye, oxygen from the air can be converted to active oxygen radicals (highly reactive atoms with unpaired electrons) that cause tissue damage and may be involved in cataract formation. The eye has protective enzymes, such as superoxide dismutase, that destroy oxygen radicals. Antioxidant vitamins, such as vitamins C and E, also act as oxygen radical scavengers (inactivators of oxygen radicals). Therefore, antioxidant vitamins may be of clinical
use in preventing cataracts. Studies in patients with cataracts indicated that these patients had blood levels of vitamins C and E and beta-carotene that were lower than those of patients without cataracts. Through this paper I want to outline the causes, various preventive steps and treatments of cataracts.

PGY-063

SAFETY PHARMACOLOGY

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The safety pharmacology studies are defined as those studies which investigate the potential undesirable pharmacodynamic effects of a substance on the functions in relation to the exposure in the therapeutic range and above, e.g., using the in-vitro studies, including the human material. The animal models that are thought to be similar to the human disease may provide further insight in the pharmacological action, the pharmacokinetics, and dosing in the patients. They may also help the determination of the safety. The results from the previous safety pharmacology studies. The ligand binding or enzyme assay data suggesting a potential for the adverse effects. The time course (e.g., onset and duration of response) of the adverse effect has to be investigated. Generally, the doses eliciting the adverse effect have to be compared to the doses eliciting the primary pharmacodynamic effect in the test species or the proposed therapeutic effect in the humans.

PGY-064

EVALUATION OF LARVICIDAL ACTIVITY OF CASSIA OCCIDENTALIS EXTRACTS AGAINST CROFTIAN FILARIASIS IN VECTOR MOSQUITO CULEX QUINQUEFASCIATUS.

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Human lymphatic filariasis is an endemic infective disease caused by nematode worms of Wuchereria bancrofti, transmitted through vector mosquito culex quinquefasciatus bites. The micro filariae enter the body of a vector mosquito whenever it feeds on the
blood of a person receding micro filariae, after filarial infection newly exposed person often develops acute lymphatic inflammation, chronic sequelae. The eradication of the mosquitoes culex quinquefasciatus responsible for the spreading of this disease have been controlled by the native peoples of Nilgiris using the naturally available plant extracts of Cassia occidentalis (family: caesalpiniaceae ) on the vectors of mosquitoes in the larva stage . The petroleum ether and n-butanol extracts of cassia occidentalis was screened for larvicidal bioassay method as prescribed by the guidelines of WHO. The larvae were exposed to different concentration of each extracts and the expected mortalities of the larva were based on probit regression analysis for different concentrations of Cassia occidentalis. The estimated LC50 and LC90 values showed 1.6 times less efficacious under n-butanol extracts when compared to petroleum ether extracts. These results show the extracts of Cassia occidentalis is a naturally obtaining plant to control the vector mosquitoes culex quinquefasciatus of the larva stage itself.

PGY-065

STEM CELLS

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“Fueled by the promise of regenerative medicine, currently there is unprecedented interest in stem cells” Stem cells are unspecialized cells that go on to develop into any of more than 200 types of cells that the human body holds. Stem cells have great applications in the treatment of diseases like Parkinson’s disease, Alzheimer’s disease, Spinal cord injury, Heart Diseases etc.. Stem cell therapy has moved from lab to clinic and early clinic trials hint that stem cells may be able to regenerate damaged cells of brain and heart etc.. The use of stem cells to generate replacement cells for damaged heart muscles, valves, vessels and conducting cells hold great potential. Recent identification of multipotent progenitor cells in heart and improved understanding of developmental process relevant to pluripotent embryonic stem cells may facilitate the generation of specific type of cell that can be used to treat human heart diseases .Although delivery of stem cell in clinical trials has resulted in a modest functional improvement of myocardial performance in the setting of infraction on going efforts at the bench and beside are taking place to increase stem cell propensity for engraftment and homing in to diseased myocardium. The ability of the cells to differentiate potentially in to any human cell type has spawned great hope for a revolution of regenerative medicine. Embryonic stem cells which have the greatest potential to differentiate in to all cell types, are harvested from 5-7 day old embryo in the blastocyst stage, these embryos are then discarded. In the present view, I concisely explore the concepted framework of stem cell biology and recent advances pertinent to the heart.
HOMOLOGY MODELING AND DRUG - PROTEIN INTERACTION STUDIES OF NEURAMINIDASE AND HEMAGGLUTININ FROM H1N1 FLU VIRUS

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Swine influenza flu (SIV) is any strain of the influenza family of viruses that is usually hosted by pigs. As of 2009’s, the known SIV strains are the influenza C virus and the subtypes of the influenza A virus known a H1N1, H1N2, H3N1, H3N2, and H2N3. To investigate the Drug and protein interaction mechanism, the protein sequence of Neuraminidase and Hemagglutinin was retrieved from NCBI database and the target sequence was searched for similar sequence using BLAST against PDB. The protein conservity has been verified by performing MSA using Clustal W. The 3D structure of two proteins was developed with the help of Swiss PDB server. An attempt was made to identify the potential drug targets and inhibit the enzyme as well as to modify their side chain to improve the bindings efficiently. The 3D structure of ligand (Zanamivir hydrate, Oseltamivir Phosphate and Ristomycin, Ristocetin A) was retrieved from Pubchem. With the 3D structure, the molecular docking operations were conducted to find the most favorable bindings of Neuraminidase and Hemagglutinin.

KEYWORDS: Neuraminidase, Hemagglutinin, H1N1 flu virus

ANTI ANGIOGENESIS – INVOLVED IN THE CANCER TREATMENT

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Angiogenesis is a physiological process involving the development of new blood vessels from the preexisting vessels. It is a natural process in case of reproduction but seems unnatural for cases like diabetic retinopathy, cancer etc. The attack on genomically stable endothelial cells which form tumors by angiogenesis in cancer is advantageous over the chemotherapy of cancer cells. Blocking angiogenesis is a disease specific therapy for cancer and can be approached by: Inhibiting the release of angiogenic growth factors (VEGF, FGF, PDGF etc) from tumors, Inhibiting the endothelial cells such as protease inhibitors, angiostatic steroids, fungus derived angiogenesis inhibitors. If cancer growth can be slowed or halted, using antiangiogenesis this offers more time as well as opportunity for other therapies to
actually kill the cancer. It is also known that immune therapy will be greatly improved when combined with antiangiogenesis. Hence antiangiogenesis is considered as an useful method in cancer treatment.

PGY-O69

ADVANCED THERAPIES IN MANAGEMENT OF CARDIO VASCULAR DISORDERS IN HUMAN BEINGS

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Cardio Vascular Disorders (CVD) include group of diseases such as myocardial infarction, congestive heart failure, atherosclerosis, cardiac arrest, arrhythmias, tumors of heart etc. These disorders are the most leading cause of morbidity and mortality in industrialized countries worldwide. CVD are the number one worldwide killer and also reported 45% of the deaths in India and one person dies every 30 seconds and over 2,600 people every day worldwide. Thus, treatment of cardiac diseases is a challenging practice for the life securing of human beings. Despite advancements in medical therapy morbidity and mortality remains high. Hence the need of the hour is to develop novel therapies for treatment of CVD. This review article focuses on some of the novel techniques and non pharmacological measures in management of CVD such as stem cell therapy, novel imaging techniques, gene therapy, cardiac tissue engineering, thrombolytic therapy, cardiac devices, physiotherapy, naturotherapy and yoga therapies. Promising achievements have been reported in the field of cardiac tissue engineering which encompasses the production of bioartificial heart valves and stem cell therapy in regeneration of myocardium. While these new approaches have opened great opportunities, it has also created new challenges which are in field of controlling costs effectiveness, regulating appropriateness of use. Proper recognition and management of CVD at both clinical and health care policy levels are urgently needed in which the development of these new therapies may serve the purpose. This review is aimed to enlighten recent advances in management of CVD.
LACTOSE INTOLERANCE – CAUSES AND TREATMENT

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Lactose intolerance is a potentially deadly allergic reaction to one or more of the proteins found in dairy products. It differs from milk intolerance, which is a sensitivity to the sugar found in milk products and does not involve the immune system. Symptoms of a milk allergy often include itchiness, rash etc. Symptoms can range from mild anaphylaxis, which involves breathing problems and lowered blood pressure. It is impossible to know whether a person with a milk allergy is likely to have severe symptoms after ingesting the proteins. Therefore people with milk allergies need to avoid all foods containing milk proteins and need to seek immediate medical attention in the case of accidental exposure. The only effective treatment for lactose allergies is to completely remove milk and dairy products from the diet. By practicing diligent avoidance, an individual can successfully remove the threat of a milk allergy reaction. This presentation explains about the causes, mechanism and treatment of lactose intolerance.

EFFECT OF CATHEPSIN D IN ARTHRITIC RATS TREATED WITH CARDIOSPERMUM HALICACABUM

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Cathepsin D, a liposomal enzyme plays a major role in the pathogenesis of adjuvant induced arthritis the hydro alcoholic extract (100mg/kg p/oral) of the shade dried powdered aerial parts of cardiospermum halicacabum was subjected to anti inflammatory activity by complete freunds adjuvant induced arthritis method in female wista rats. The paw of volume was measured on 0th, 4th, 14th, 21st, 28th 35th and 42nd day. The different groups were treated with the test drug (CHHA) and diclophenac (0.3mg/kg/p/oral) on 42nd day the level of liposomal enzyme cathepsin D was found to be significantly reduced in the drug treated group compare to the disease induced group. The results prove the effect of C. Cardiospermum halicacabum treatment of rheumatitis as mentioned in the traditional medicine.
PGY-072

THE RETURN OF THALIDOMIDE: NEW USES AND RENEWED CONCERNS

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In the 1950s thalidomide was prescribed to treat morning sickness of pregnancy. In 1961, the FDA withheld thalidomide from the market because it caused babies to be born with deformed arms and legs. The one-time horror drug thalidomide may be making a comeback in the war against certain cancers, erythema nodosum leprosum, oral and genital ulceration, graft versus host disease, actinic prurigo, discoid lupus erythematosus, nodular prurigo, and disorders associated with HIV. The use of thalidomide for any condition remains contentious. It must only be given with extreme caution, under close supervision and with full knowledge of the potential hazards. Nevertheless, its equivocal effect in leprosy and behcet’s disease has stimulated exploration of its action in other diseases, and research continues. Recent reports indicate benefit in uremic pruritus, chon’s disease and possibly in sarcoidosis. At the same time research into derivatives and analogues of the drug which might have increased efficacy and reduced toxicity is also underway. This would offer new therapeutic options in a range of distressing disorders that can otherwise be difficult to manage. The past might have been devastating but the future for thalidomide is looking promising.

PGY-073

NANOTECHNOLOGY IN CANCER THERAPY

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Nanotechnology has the potential to have a revolutionary Impact on cancer diagnosis and therapy. It is universally accepted that early detection of cancer is essential even before anotemic anomalies are visible. Recently, findings on use of synthetic Nano-low density lipoproteins as Targeted drug delivery vehicle for glioblastoma multiforme have appeared. In mice receiving injections of human epithelial Cancer cells, the nanoparticle based therapy using folic acid and Methotrexate was found to have delayed tumour growth Ten times better than Methotrexate alone. However, because many anticancer drugs are designed to simply kill cancer Cells, often in a semi-specific fashion, the distribution of Anticancer drugs in healthy organs or tissues is especially Undesirable due to the potential for severe side effects. Cancer treatment is very dependent on method of delivery. The present review focuses on Nanotechnology for cancer Therapy.
FROM TRADITIONAL TO NOVEL ORAL ANTICOAGULANTS—AN OVERVIEW


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Oral anticoagulants have been used widely for the treatment of venous thromboembolism and stroke prevention. The vitamin K antagonists (VKAs), such as warfarin, have been around for the last 65 years and its efficacy as thromboprophylaxis remained largely unchallenged, at least until recently. On the other hand, the need for laboratory monitoring and dose adjustment, and the risk for bleeding complications, are the main pitfalls of treatment with VKAs and limit their use for long-term anticoagulation. Novel oral antithrombotic agents currently in development have the potential to improve on these limitations. The novel oral anticoagulants are in 2 broad drug classes - the oral direct thrombin inhibitors and oral direct factor Xa inhibitors. Direct thrombin inhibitors are characterized by their reversible or irreversible binding to the active site on thrombin and antagonize the effects of clot-bound thrombin. Dabigatran etexilate and ximelagatran are the orally available prodrugs of the small-molecule direct thrombin inhibitors dabigatran and melagatran, respectively. Direct factor Xa inhibitors act directly upon Factor X, a key enzyme in the production of thrombin from its precursor prothrombin in the coagulation cascade and is an important target for antithrombotic drug development. Direct factor Xa inhibitors under clinical development include rivaroxaban, apixaban and otamixaban. It is hoped that these anticoagulants will allow us to enter an era of convenient, oral anticoagulation, without the need for regular monitoring or dose adjustment.
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PGG-077

**SWINE INFLUENZA VIRAL CHARACTERISTICS, SIGNS AND SYMPTOMS**

P. Sandhya Rani, A. Tejaswini

Trinity college of pharmaceutical sciences, Peddapalli, A.P

A swine influenza virus (SIV) is any strain of the influenza family of viruses that is usually hosted by (is endemic in) pigs. The known SIV strains are the influenza C virus and the subtypes of the influenza A virus known as H1N1, H1N2, H3N1, H3N2, and H2N3. Transmission of swine influenza virus from pigs to humans is not common and does not always cause human influenza, often only resulting in the production of antibodies in the blood. The strain has been circulating among pigs, possibly among multiple continents, for many years prior to its transmission to humans. The new H1N1 influenza virus is very unstable, meaning it could mix and swap genetic material when exposed to other viruses by undergoing mutations. The WHO declared a Pandemic Alert Level of six, out of a maximum six, describing the degree to which the virus had been able to spread among humans. The signs of infection with swine flu are similar to other forms of influenza, and include a fever, coughing, headaches, pain in the muscles or joints, sore throat, chills, fatigue and runny nose, diarrhea and vomiting. The use of vaccines on swine to prevent the infection is a major method of limiting swine to human transmission. Influenza spreads between humans through coughing or sneezing and people touching something with the virus on it and then touching their own nose or mouth. Antiviral drugs can make the illness milder and make the patient feel better faster.
PGY-078
CARCINOGENESIS – MOLECULAR BASIS OF CANCER

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Cancer can be described as a genetic disease of the somatic cell. Three types of genes are affected: tumour-suppressor genes, oncogenes and stability genes. The classical tumour-suppressor gene RB1 is implicated in the pathogenesis of retinoblastoma and a variety of other tumours. It plays an essential role in cell cycle control. In contrast, p53 functions as a ‘gatekeeper’ inducing cell-cycle arrest or programmed cell death (apoptosis). Genetic alterations in MYC oncogene family members also contribute to dysregulated cell growth and have become important diagnostic and prognostic markers in specific paediatric tumours. Knowledge of the molecular basis of cancer has already had a profound impact on the management of paediatric tumours and promises to continue to contribute significantly in the future.

PGY-079
THE ROLE OF THE PHARMACIST IN IMPROVING GLAUCOMA COMPLIANCE

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Amongst all treatable diseases, glaucoma is one of the most likely to have poor patient compliance. In fact, as many as one half of all glaucoma patients fail to take their eye drops correctly. Glaucoma is a classic late onset condition with over 4% of the over 65s with the disease. And the percentages are on the increase. Many individuals are unaware that they have glaucoma until late in the course of the disease. A significant amount of treatment failure is due to poor patient compliance and this can lead to the progression of glaucomatous damage.As the health care provider with whom patients have the most frequent contact, pharmacists bear an important role in helping patients adhere to therapy by educating patients about proper administration and storage techniques. Pharmacists should advise patients who pick up prescriptions to wait the appropriate amount of time between eye drops. This avoids the “washout effect,” thus improving the effectiveness of two or more concurrent medications. Another technique is to remind patients to refrigerate eye drop solutions, so that patients can
feel the drop entering the eye. This reduces waste of medication. The move to once-a-day medications and the improved efficacy of single-drug therapy will help to improve adherence to glaucoma therapies. Before the first medication is prescribed, however, communication with patients and educating them about their disease are important first steps to facilitating adherence and to improving outcomes.

PGY-080

siRNA - DIRECTED INHIBITION OF HIV-1 INFECTION

Sri Rama Chandra College Of Pharmacy, Sri Rama Chandra University, Porur, Chennai

RNAi (RNA interference) are the RNA that can stop the gene functioning (make it silence). It is proved through siRNA (short interfering RNA). RNA interference silences gene expression through short interfering 21-23 mer double-strand RNA segments that guide mRNA degradation in a sequence specific fashion. siRNA directed at HIV can shut down the AIDS virus in the test tube. It shut down the window through which the HIV enters by targeting T-cell that HIV normally infects. By linking siRNA to an antibody that delivers them directly to T-cells to a molecule that carries them to the cell nucleus where it can attack HIV genes and one siRNA that keeps T-cells from expressing the CCR5 molecule to which HIV attacks. Here we report that siRNA’s inhibit virus production by targeting the mRNA’s for either the HIV-1 cellular reporter CD4, the viral structural Gag protein or green fluorescence protein substituted for the Nef regulatory protein. siRNA’s effectively inhibit pre and/ or post integration infection events in the HIV-1 life cycle. Thus siRNA may have potential for the therapeutic intervention in HIV-1 and other viral infections.

PGY-081

COLORECTAL CANCER: NEWER INSIGHTS

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Colorectal cancer is the third most common cancer in U.K. after the lung and breast cancer. The development of colorectal cancer is still poorly understood, although there is evidence for the influence of a range of environmental and genetic factors which include age of over 50 years, smoking, nutrition, inflammatory bowel disease, family history of bowel cancer. Most cancers develop as a result of a step wise progression from normal mucosa to adenoma to invasive cancer. Development involves the lymphatic and blood vessels with subsequent spread commonly to the
liver. Colonoscopy is the gold standard for investigation. Ultra sound, computed
tomography and magnetic resonance imaging may be used to evaluate tumour size. 5-
Fluorouracil, Oxaliplatin, Irinotecan and oral fluoropyrimidines are the choice for the
treatment of disease. This paper focuses the disease management and the commonly
used chemotherapy regimens for colorectal cancer of colorectal cancer.

PGY-083

VACCINES –ENSURING A HEALTHY FUTURE

G.Vaishnavi Devi, T.Venu and V.Prabhakar Reddy
St. Peters Institute of Pharmaceutical sciences, Vidyanagar, Hanamkonda, AP.

Vaccines are wonderful technique for the eradication of the infectious disease,
millions of people have been saved falling victims to infectious diseases like Polio,
Bird flu, Swine flu etc. Man from day one itself modulates his body so as to survive
against the odds due to various ailments as prevention is better than cure. So vaccines
serve as a protecting shield. Vaccines are the biological preparations with
antigenicity, but not virulence that makes the person immunogenic to disease. It
contains a small amount of an agent that resembles a micro-organism. These will
stimulate the primary responses and which in turn stimulates secondary response
when micro-organism encounters again. The presentation deals with role of vaccines,
types, mode of action, constituents of vaccines, mode of administration, recent list of
vaccines available in India, list of vaccines that have been made mandatory and list of
vaccines needed when migrating to other countries.

PGY-84

ROLE OF NEVIRAPINE DRUG IN PREVENTION OF MOTHER TO CHILD
TRANSMISSION (PMTCT) OF HIV

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Prevention of mother to child transmission (PMTCT) is an important part of the
effort to control HIV. PMTCT services are mostly provided at public sector
government hospitals in India. Systematic data on the cost and efficiency of
providing PMTCT services in India are not available readily for further planning.
The objective of this study was to determine the percentage of infected children
for whom nevirapine (NVP) was used to prevent peripartum mother-to-child
transmission (MTCT) of HIV in MGM hospital, Warangal district of Andhra
Pradesh. The study was a prospective Public Health Pilot Program covering a 3-
year period (January 2005-December 2008). Counseled and consenting HIV-1-
positive pregnant women were given a single dose of NVP at the onset of labor.
Babies were given 2 mg/kg NVP syrup within the first 72 hours of life. NVP-treated children were regularly followed up and examined for HIV-1 infection at 6-8 weeks and 5-6 months through HIV antibody testing with tridot kit. One hundred twenty-three children were diagnosed with perinatal HIV-1 infection at 6-8 weeks and 5-6 months. Thirteen children (10.6% [13/123]) were infected. One hundred nine children (87%) were considered not infected at 6-8 weeks of age. Our results indicate that the HIV-1 MTCT rate 6-8 weeks after NVP administration was not >13% (16/123), thus demonstrating the effectiveness of NVP for lowering the risk of HIV-1 MTCT in real-life settings.

PGY-085

TARGETING THE IMMUNE RESPONSE IN ASTHMA


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It is well recognized that an aberrant immune response to certain aerosolized allergens and pathogens can result in the impairment of lung function that is associated with asthma. Chronic inflammation of the respiratory tract mediated by the increased expression of multiple inflammatory mediators (cytokines, chemokines, adhesion molecules, inflammatory enzymes and receptors) results in variable and reversible airway obstruction in asthma. Great advances have been made in our understanding regarding the role that immune cells, their surfaces molecules and soluble mediators play in causing this decline in lung function. This knowledge coupled with significant technological advances in the ability to target molecules both inside and outside these immune cells, has resulted in the discovery and early development of exciting new therapeutic strategies for the treatment of asthma.

PGY-086

WHY DO ALZHEIMER’S DISEASE AND PARKINSON’S DISEASE TARGET THE SAME NEURONS?


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The puzzle is to explain how cerebral involvement in the sporadic forms of Alzheimer’s disease (AD) and Parkinson’s disease (PD) can target the same population of vulnerable neurons. These neurons are poorly-myelinated projection neurons, lack of
Myelin being associated with high metabolic demand, high oxygen consumption, and high baseline oxidative stress. Yet the two diseases are clearly separable, with different intracellular markers, different risk factors, and different patterns of subcortical involvement. A theory is developed to show how two different pathophysiology can preferentially affect the same neurons. In the case of AD, the hypothesis is as follows: the so-called vascular risk factors of AD, which include hypertension, diabetes, hyperlipidemia, and smoking, are all associated with increased systemic extracellular oxidative stress. High extracellular oxidative stress synergizes with high baseline intracellular oxidative stress to cause the disease. In case of PD, mitochondrial failure associated with normal aging leads to diminished energy production and increased leakage of reactive oxygen species from mitochondria, a process which preferentially targets neurons with high baseline oxidative stress comes from outside the cell and, in the other case, it comes from inside the cell, i.e., from mitochondria. There is also evidence that neurofibrillary tangles are a protective mechanism against extracellular oxidative stress and that alpha-synuclein is a marker for mitochondrial failure. The basic pathophysiological difference is that AD is caused by stress alone, whereas PD is caused by oxidative stress plus failure of energy production.

PGY-087

THE NOBEL PROMISING HAEMATINIC & SIGNIFICANCE OF BIOTIN DURING PREGNANCY

Mr. Santhosh Kumar & Santosh Kumar R
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Haematinics are the agents which fulfill the iron deficiency. Especially in pregnant woman, anaemic patients. Literature review suggests that: The haematinic molecules which are available in the market is not fulfilling the required bioavailability. In the light of the above information and the American journal of Health and clinical research showed that Sodium Feretedate an iron chelated with EDTA is giving better re-absorption of iron, by preventing the destruction of iron molecule by the enzyme present in the GIT and releases iron at the colon region at PH-7.4 from where it gets absorbed. So by the above study we suggested that Sodium feretedate is a noble promising haematinic in case of pregnancy. In addition to this there is also a chances of birth defects which occurs due to the deficiency of Biotin and Folic acid. During the first trimester of pregnancy the deficiency of biotin and folic acid may lead to foetal birth defect like neural tube defect, micro melia, micro gnethia, spina bifida, cleft palat. So our conclusion is that along with the above sodium feretedate molecule, biotin and folic acid has to be supplemented during pregnancy for a healthier child in all respect. Moreover these are having least side effect.
PGY-087

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PGY-089

DIET FOR DIABETICS

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Diet plays a significant role in controlling the diabetes. The diabetic diet may be used alone or else in combination with insulin doses or with oral hypoglycemic drugs. Main objective of diabetic diet is to maintain ideal body weight, by providing adequate nutrition along with normal blood sugar levels in blood. The diet plan for a diabetic is based on height, weight, age, sex, physical activity and nature of diabetes. While planning diet, the dietician has to consider complications such as high blood pressure, high cholesterol levels. Glucose is a sugar released from carbohydrate so, if we want to control blood sugar we have to limit the consumption of simple carbohydrate. Nutrition experts say that there is no one diet for diabetes, but people with diabetes should follow the nutrition guidelines in the Food Pyramid, while paying special attention to carbohydrate intake.
PARKINSONISM

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Parkinson's disease was then known as paralysis agitans, the term "Parkinson's disease" being coined later by Jean-Martin Charcot. The underlying biochemical changes in the brain were identified in the 1950s due largely to the work of Swedish scientist Arvid Carlsson, who later went on to win a Nobel Prize. Parkinson's disease (PD) belongs to a group of conditions called motor system disorders, which are the result of the loss of dopamine-producing brain cells. The four primary symptoms of PD are tremor, or trembling in hands, arms, legs, jaw, and face; rigidity, or stiffness of the limbs and trunk. The symptoms of Parkinson's disease result from the loss of pigmented dopamine-secreting cells in the substantia nigra. Most people with Parkinson's disease are described as having idiopathic Parkinson's disease. PD is both chronic, meaning it persists over a long period of time, and progressive, meaning its symptoms grow worse over time. Although some people become severely disabled, others experience only minor motor disruptions. There are currently no blood or laboratory tests that have been proven to help in diagnosing sporadic PD. Therefore the diagnosis is based on medical history and a neurological examination. At present, there is no cure for PD, but a variety of medications provide dramatic relief from the symptoms. Current research programs funded by the NINDS are using animal models to study how the disease progresses and to develop new drug therapies.

HEPATOPROTECTIVE ACTIVITY OF GARDENIA JASMINOIDES ELLIS IN CCL 4 – INDUCED LIVER DAMAGE

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OBJECTIVE: To study hepatoprotective effect of fruits of Gardenia jasminoides.

METHODS: Liver damage in Wister rats was induced by administering carbon tetrachloride (0.7 ml/kg, ip.) alternative days for one week. Gardenia jasminoides (80,200,400 mg/kg, po.) was given for one week. Silymarin (100 mg/kg, p.o.) was given as a reference drug. Levels of marker enzymes (SGPT, SGOT, and ALP),
bilirubin, triglycerides, and cholesterol were estimated in serum. Histopathological studies were done to confirm the biochemical changes.

**RESULTS:** The Mean ± SEM serum SGPT, SGOT, ALP levels in control animals were 42.16 ± 1.2, 36.61 ± 0.4, 101.01 ± 0.86 IU/L respectively whereas in carbon tetrachloride treated rats, the level rose to 350.73 ± 0.6, 380.42 ± 0.9, 469.54 ± 0.2 IU/L respectively. Gardenia jasminoides (400 mg/kg) reduced the SGPT, SGOT and ALP levels to 49.01 ± 0.1(97%), 42.28 ± 0.2(98%), 110.69 ± 0.2(90%) IU/L respectively. Silymarin reduced SGPT, SGOT and ALP levels to 47.64 ± 0.2, 38.24 ± 0.3, 104.09 ± 0.2 IU/L respectively. There was a significant increase in serum Bilirubin (total (100%), direct (100%)), Triglycerides (96.79%), and cholesterol levels (97.84%) after carbon tetrachloride, which was reversed by Gardenia jasminoides and Silymarin. The rats treated with ethanolic extracts of Gardenia jasminoides (80, 200, 400 mg/kg, po) prevents the rise in the levels of these enzymes. A comparative histopathological study of liver exhibited almost normal architecture, as compared to control group.

**Conclusion:** Gardenia jasminoides treatment exhibited hepatoprotective action against CCl4-induced toxicity. The effect of Gardenia jasminoides was comparable with that of Silymarin.

**PGY-092**

**A VISION FOR IMPROVING BIRTH OUTCOMES IN EMPLOYING PREGNANT WOMEN**

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A possible influence for the motivation for the employment by women is related to personal fulfillment of economic necessity — “privilege effect” or “desperation effect” and thus there is an enormous improvement in political, social, and economic status of women during past decade. Mostly, the pregnant employed women are at an increased risk of poor pregnancy outcomes, as well as post partum depression, anxiety, poor functional health status if they are exposed to high levels of occupational stress. Physical and environmental exertions, irregular work schedules psychological stress during work are the main risk factors and these may lead to premature deliveries, fetal death and several other serious defects. The working women should have sufficient knowledge regarding the physiology of stress on pregnancy and consequent fetal health disparities like low birth weight, neurological disorders and several abnormalities including epidemiological evidences. During work, some inevitable adverse conditions may arise but however, recommendations and safety measures can
be followed to diminish the deleterious effects of work to certain extent. So there is a need to enlighten the employing pregnant women with proper vision for safe birth outcomes.

PGY-093

IN-VITRO ANTHELMINTIC ACTIVITY OF SEED EXTRACT OF LAGENARIA SICERARIA (MOLINA.) STANDLEY FRUIT

Patel Sarfaraz Yakub Mohammed, Patel Mohammed Farooque, Patel Sakil Daud MCE. Society’s Allana College of Pharmacy, Azam Campus, Hidyatullah oad, Camp, Pune.

The aim of present study was to evaluate anthelmintic potential of crude extract of seeds of lagenaria siceraria (Molina) standley using Pheretima posthuma as test worms. Various concentrations (10-100 mg/ml) of the extract were tested in the bioassay, which involves determination of time of paralysis (P) and time of Death (D) of the worms. Piprazine citrate (10 mg/ml) was included as standard reference and distilled water as control. The present result of present study indicated that the methanol and benzene extract significantly demonstrated paralysis and also caused death of worms especially at higher concentration of 100mg/ml, as compared to standard reference Piprazine citrate. In conclusion, the traditional use of seeds of the plant lagenaria siceraria as an anthelmintic have been confirmed and further studies are suggested to isolate the active principle’s responsible for the activity.

PGY-094

DIAGNOSTIC TEST: OXIMETRY

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the oxygen stores of the body are small, so life-threatening hypoxaemia can develop very rapidly with few clinical signs. the availability of robust and reliable pulse oximeters has revolutionised the safe monitoring of patients with unstable cardiorespiratory conditions, and those having medical and surgical procedures. while oximetry is now best practice in these circumstances, care must be taken in interpreting the results. there are confounding factors that may produce an erroneous signal and physiological factors that will affect the interpretation of the result. in the absence of these factors, the instruments are accurate detectors of arterial oxygen saturation, in the range between 100% and 70% with varying but reasonable performance down to 55%. the basic principles of operation are important to
understand so that physiological interpretation is adequate and erroneous results can be identified. Pulse oximetry measures the percentage of hemoglobin (hb) saturated with oxygen. This oxygen saturation is a measure of how much oxygen the blood is carrying as a percentage of the maximum it could carry.

PGY-095

HEPATOPROTECTIVE EFFECT OF SOLANUM TRILOBATUM IN GROUNDNUT FED ALBINO MICE

Anoop Narayanan, Sudeesh Edavalath, Anish John

Acharya & B M Reddy college of Pharmacy, Bangalore
St. James College of Pharmacy, Chalakkudi, Kerala

In traditional medicine Solanum trilobatum was used in treatment of asthma, chronic tebrile affections and difficult parduridion. Solanum trilobatum is also proved effective in bronchial asthma. Hepatoprotective studies were carried out by non-invasive method by estimation SGOT, SGPT, total protein, total bilirubin, cholesterol, glucose. Twenty four animals of adult swiss albino mice 6-8 weeks old; divided into 6 groups of 4 animals each. Control group receiving the groundnut and coconut feed and other groups received aqueous extracts of Solanum trilobatum dried powder. Blood was collected from each group of animals, on 3th 5th 7th and 10th days after administration. These blood samples are analyzed for the total serum protein, serum cholesterol, serum bilirubin, SGOT, SGPT and glucose. The elevated serum enzyme levels of SGPT, SGOT, total bilirubin and total protein in animals which receives various doses of Solanum trilobatum extract is more significantly reduced indicating the hepatocellular protection and acceleration of the regeneration process of the liver cells. The aqueous extract of Solanum trilobatum act as scavenger for free radicals through the release of intracellular antioxidant and thus will help in repair of biochemical lesions. To conclude the results revealed that fatty food may induce liver damage due to the production of free radicals and that may be cured by the doses of Solanum trilobatum.

PGY-096

ANTI-OBESEITY DRUGS: A CRITICAL REVIEW OF CURRENT THERAPIES AND FUTURE OPPORTUNITIES

Shah Jay J., Patel Hardik M., Shah Viral V.,
Dr. Praful D. Bharadia, Patel Poras, Dr. Madhubhai Patel

The last 25 years have seen a great increase in the incidence of obesity, both in the Western world and in developing third world countries. Despite the seeming
inexorable progression of this disease, there have been limited advances in the pharmacotherapy of this condition. Of the newest introductions to the obesity drug portfolio, orlistat, which acts to prevent dietary fat absorption, and sibutramine, which seems to affect both arms of the energy balance equation, were the first new chemical entities to be introduced for the treatment of obesity in 30 years. In this article, we review these and other agents available in various countries for the treatment of obesity. Perhaps more importantly, we have focussed on areas of potential productivity in the future. The huge recent increase in our knowledge in this area has largely stemmed from discovery research at the genomics level. Over the last 5 or so years, this impetus in obesity research has provided us with exciting new drug targets involved in the regulation of feeding behaviour and cellular mechanisms involved in energy expenditure. Compared with the last 25 years, the future offers more hope.

PGY-097

EVALUATION OF ANT-INFLAMMATORY ACTIVITY OF FUMARIA OFFICINALIS LINN. HERB EXTRACT ON EXPERIMENTAL ANIMAL.

Neha Singh, Anish, Uday Raj Sharma, Prakash T, Divakar Goli.

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Fumaria officinalis Linn. is a local medicinal plant used in ethnomedicine for the treatment of constipation, bronchitis and asthma. The aqueous decoction and the ethanolic extracts were subjected to anti-inflammatory activity using experimental animal model, in the presence of the positive control drugs. The inflammation was induced by carrageenan. From the results obtained the ethanolic extract showed significant activity (P < 0.001) comparable to the reference drug used. At the different dose range used (100, 200 and 500 mg/kg), there was significant differences in their anti-inflammatory activity hence they were dose-dependent. The results of the study showed the justification of the use of the plant in the treatment of inflammatory disease. Key words: Anti-inflammatory activity, Fumaria officinalis Linn., carrageenan.
EVALUATION OF ANT-INFLAMMATORY ACTIVITY OF RHODODENDRON ARBORETUM HERB EXTRACT ON EXPERIMENTAL ANIMAL.

Ashok S, Tanu Shekhawat, Uday Raj Sharma, Prakash T, Divakar Goli.

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Rhododendron arboretum is an important medicinal plant which is used for treatment of various ailments in Ayurvedic system. The plant R. arboreum have been reported for Hepatoprotective activity. The aqueous decoction and the ethanolic extracts were subjected to anti-inflammatory activity using experimental animal model, in the presence of the positive control drugs. The inflammation was induced by carrageenan. From the results obtained the ethanolic extract showed significant activity (P < 0.001) comparable to the reference drug used. At the different dose range used (40, 60 and 100 mg/kg), there was significant differences in their anti-inflammatory activity hence they were dose-dependent. The results of the study showed the justification of the use of the plant in the treatment of inflammatory disease.

Key words: Anti-inflammatory activity, Rhododendron arboretum, carrageenan.

HOW STRESS CAUSES SEXUAL DYSFUNCTION?

Abhishek Chakrabarty, Prasenjit Goswami

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Scientists know that stress boosts levels of stress hormones - glucocorticoids such as cortisol - that inhibit the body's main sex hormone, gonadotropin releasing hormone and subsequently suppresses sperm count, ovulation and sexual activity. This small protein hormone, a so-called RFamide-related peptide (RFRP), puts the brakes on reproduction by directly inhibiting GnRH. In the reproductive system, the brain's hypothalamus produces GnRH, which stimulates the pituitary gland to produce the peripheral hormones, luteinizing hormone and follicle-stimulating hormone, which in turn stimulate production of testosterone, estradiol and sexual behavior. Stress makes the adrenal gland produce glucocorticoids, which act directly on the hypothalamus to suppress GnRH production. UC Berkeley researchers have now found that glucocorticoids also boost hypothalamic GnIH production, which acts to reduce GnRH production as well as to directly lower pituitary secretion of sex hormones, thereby suppressing the entire reproductive system.
NALMEFENE

Mahesh Babu

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In humans, mu- and kappa-opioid receptor agonists lower tuberoinfundibular dopamine, which tonically inhibits prolactin release. Serum prolactin is, therefore, a useful biomarker for tuberoinfundibular dopamine. The current study evaluated the unexpected finding that the relative mu- and kappa-opioid receptor selective antagonist nalmefene increases serum prolactin, indicating possible kappa-opioid receptor agonist activity. In all, 33 healthy human volunteers (14 female) with no history of psychiatric or substance use disorders received placebo, nalmefene 3 mg, and nalmefene 10 mg in a double-blind manner. Drugs were administered between 0900 and 1000 on separate days via 2-min intravenous infusion. Serial blood specimens were analyzed for serum levels of prolactin. Additional in vitro studies of nalmefene binding to cloned human kappa-opioid receptors transfected into Chinese hamster ovary cells were performed. Compared to placebo, both doses of nalmefene caused significant elevations in serum prolactin (p<0.002 for nalmefene 3 mg and p<0.0005 for nalmefene 10 mg). There was no difference in prolactin response between the 3 and 10 mg doses. Binding assays confirmed nalmefene's affinity at kappa-opioid receptors and antagonism of mu-opioid receptors. [35S]GTPγS binding studies demonstrated that nalmefene is a full antagonist at mu-opioid receptors and has partial agonist properties at kappa-opioid receptors. Elevations in serum prolactin following nalmefene are consistent with this partial agonist effect at kappa-opioid receptors. As kappa-opioid receptor activation can lower dopamine in brain regions important to the persistence of alcohol and cocaine dependence, the partial kappa agonist effect of nalmefene may enhance its therapeutic efficacy in selected addictive diseases.

EVALUATION OF ANTIOXIDANT POTENTIAL OF DIFFERENT FRACTIONS OF CYNARA SCOLYMUS LINN

R. Rajesh Kumar, J. Alin Bose

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The present study estimates the free radical scavenging activity of different fractions of Cynara scolymus flowers by different standard in vitro method. Among the methanolic extracts tested for In vitro antioxidant activity, n-butanol fractions of Cynara scolymus flower exhibited potent antioxidant activity in DPPH radical scavenging method, nitric oxide radical inhibition assay, scavenging of hydroxyl
radical by p-NDA method, scavenging of H2O2, scavenging of ABTS radical cation with IC50 values of 5.38±0.02, 5.04±0.11, 9.0±0.06, 37.5±0.07, 0.414±0.45 µg/ml respectively. The values were found to be comparable to the standard used. In conclusion, the n–butanol fractions of Cynara scolymus flower showed very promising antioxidant activity. Further studies using In vivo models using this extracts may prove its significance in many disease conditions. Isolation of active constituents from the active extracts may lead to invention of a new lead molecule for therapeutic use.

PGY-102

NUTRITION ISSUES IN CHRONIC DRUG USERS LIVING WITH HIV INFECTION

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Human immunodeficiency virus (HIV) infection and chronic drug abuse both compromise nutritional statuses. For individuals with both disorders, the combined effects on wasting, the nutritional consequence that is most closely linked to mortality, appear to be synergistic. Substance abuse clinicians can improve and extend patients lives by recommending healthy diets. More studies are needed on the nutritional consequences of using specific illicit drugs, the impact on health of specific micronutrient & metabolic deficiencies seen in people with HIV, and the causes and clinical implications of body fat changes associated with HIV.Key words:- Micronutrient, Human immunodeficiency virus(HIV), illicit drugs
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Fax: 0478-2820279
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Eligibility: First B.Pharm: +2/HSE/VHSE
Pass with 50% Marks in Physics, Chemistry, Biology/ Maths / Computer Science aggregate

Second B.Pharm: Lateral Entry- Diploma in Pharmacy (ER 1991) with 50% marks

D.Pharm: 2 Years

Eligibility: Pass in +2/HSE/VHSE with, Physics, Chemistry, Biology/Maths

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The college is situated at B.G. Nagara (Commonly known as Bellur cross), about 100 Kms from Bangalore towards Mangalore (NH-48) and 80 Kms from Mysore, Hassan, Tumkur and Arasikere.

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<td>Pharmaceutical Chemistry &amp; Pharmacy Practice (Pharma-Analysis, Pharmacology, Pharmaaceutics)*</td>
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- Special Features
- Library
- Laboratories
- Instrumentation
- Animal House
- Lecture Halls
- Play Ground
- Hostels
- Extra Curricular Activities

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- B.G. Institute of Technology, B.G. Nagara.
- Adichunchanagiri College of Nursing, B.G. Nagara.
- B.G.S Biotechnology & Cancer Research Institute, B.G. Nagara.
- B.G.S Vocational Training Centre, B.G. Nagara.
- Kelva�ya Sanskrit & Veda College, B.G. Nagara.
- S.J.B.G.S Institute of Technology, Bellary.
- Sri Kalabhairaveshwara Ayurvedic Medical College, Bangalore.
- B.G.S. Global Hospital, Bangalore.
- B.G.S. National Public School, Bangalore.
- B.G.S. Academy of Nursing Sciences, Mysore.
- B.G.S. Apollo Hospital, Mysore.
- Adichunchanagiri Institute of Technology, Chikkamagalur.
- S.J.C. Institute of Technology, Chikkaballapur.
- B.G.S. International Public School, New Delhi.
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