2014

National Seminar

on

Pharmaceutical Profession and Research in India- Present Scenario and Future Perspectives

Venue:

SEMINAR HALL

BENGAL COLLEGE OF PHARMACEUTICAL SCIENCES AND RESEARCH

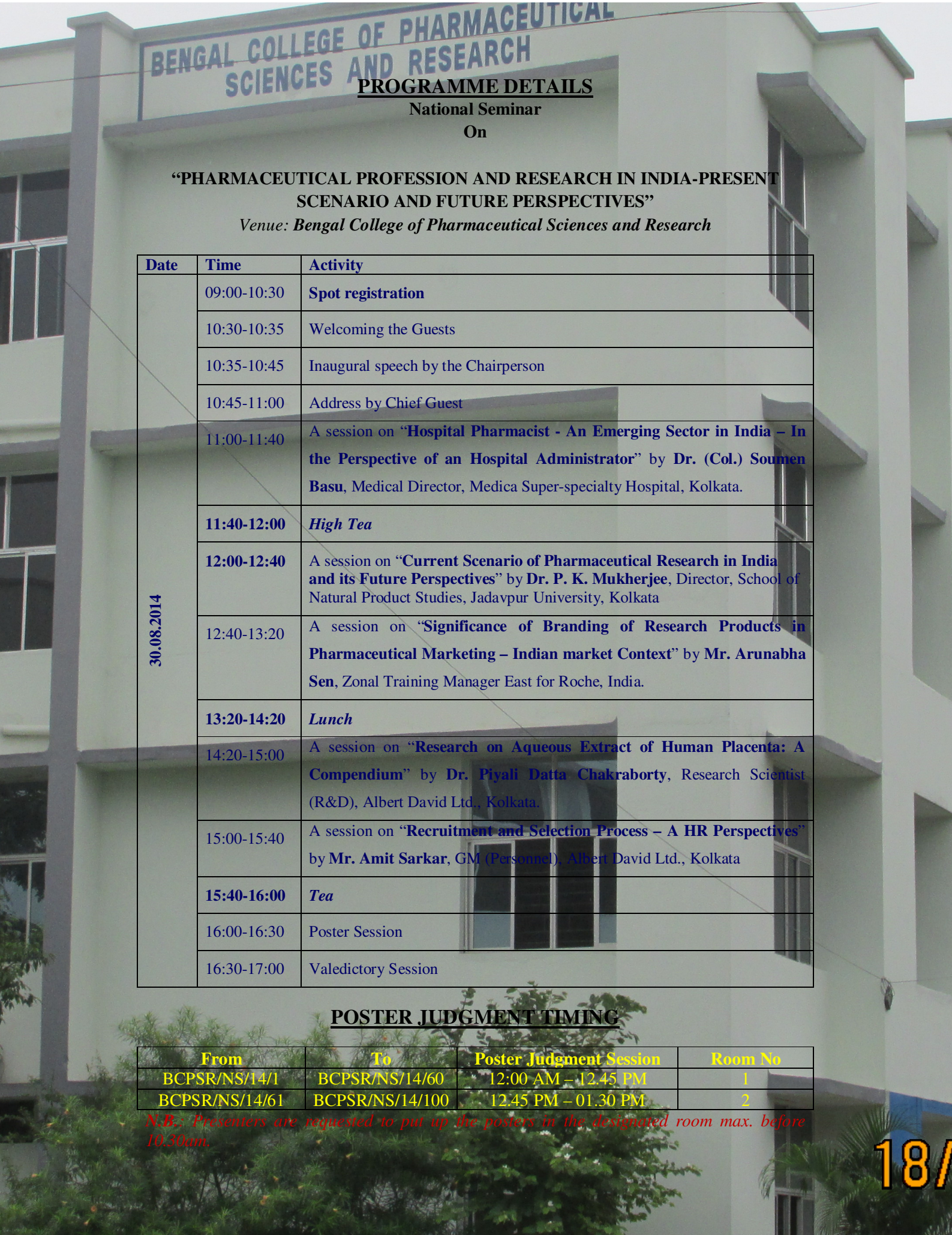
B.R.B.SARANI, BIDHANNAGAR, DURGAPUR-713212

Organized by

BCPSR, Durgapur

In Association with

APTI, Bengal Branch



PROGRAMME DETAILS

National Seminar

On

"PHARMACEUTICAL PROFESSION AND RESEARCH IN INDIA-PRESENT SCENARIO AND FUTURE PERSPECTIVES"

Venue: ***Bengal College of Pharmaceutical Sciences and Research***

Date	Time	Activity
30.08.2014	09:00-10:30	**Spot registration**
	10:30-10:35	Welcoming the Guests
	10:35-10:45	Inaugural speech by the Chairperson
	10:45-11:00	Address by Chief Guest
	11:00-11:40	A session on "**Hospital Pharmacist - An Emerging Sector in India – In the Perspective of an Hospital Administrator**" by **Dr. (Col.) Soumen Basu**, Medical Director, Medica Super-specialty Hospital, Kolkata.
	11:40-12:00	***High Tea***
	12:00-12:40	A session on "**Current Scenario of Pharmaceutical Research in India and its Future Perspectives**" by **Dr. P. K. Mukherjee**, Director, School of Natural Product Studies, Jadavpur University, Kolkata
	12:40-13:20	A session on "**Significance of Branding of Research Products in Pharmaceutical Marketing – Indian market Context**" by **Mr. Arunabha Sen**, Zonal Training Manager East for Roche, India.
	13:20-14:20	***Lunch***
	14:20-15:00	A session on "**Research on Aqueous Extract of Human Placenta: A Compendium**" by **Dr. Piyali Datta Chakraborty**, Research Scientist (R&D), Albert David Ltd., Kolkata.
	15:00-15:40	A session on "**Recruitment and Selection Process – A HR Perspectives**" by **Mr. Amit Sarkar**, GM (Personnel), Albert David Ltd., Kolkata
	15:40-16:00	***Tea***
	16:00-16:30	Poster Session
	16:30-17:00	Valedictory Session

POSTER JUDGMENT TIMING

From	To	Poster Judgment Session	Room No
BCPSR/NS/14/1	BCPSR/NS/14/60	12:00 AM – 12.45 PM	1
BCPSR/NS/14/61	BCPSR/NS/14/100	12.45 PM – 01.30 PM	2

N.B.: Presenters are requested to put up the posters in the designated room max. before 10.30am.

Institute profile

Bengal College of Pharmaceutical Science & Research was established in the year 2008 by SKS Educational and Social Trust, having an impressive campus is dedicated to develop and nurture pharmaceutical education and research. The campus gives an aesthetic and pleasant look where it will be our endeavour to produce the best graduates in learner focused environment. The institute has well stocked library, modern laboratories, offering latest technology equipment and classrooms for materializing the dream of SKS Group of Institutions to contribute more in the area of Pharmaceutical Sciences & Research.

Durgapur, a brainchild of great visionary, Dr. Bidhan Chandra Roy, is an industrial metropolis of West Bengal, located about 180 K.M. from Kolkata. It is the home to the largest industrial unit in the state, Durgapur Steel Plant, one of the integrated steel plants of Steel Authority of India Limited. The splendid development of 60 years past independence has made Durgapur an extraordinary eco-friendly place where natural forest all around the city blend with sophisticated urban infrastructure. BCPSR has been located in the serene Bidhan Nagar area of steel city Durgapur. Durgapur is well connected to Kolkata, or for that matter, the Eastern region of the country both by Railway and by Road through the excellent Grand Truck Road (NH#02). Apart from taxies and auto rickshaws, one may board a bus of route 8B to reach BCPSR from the railway station. The institution is only 5 K. M. away from the Durgapur Railway Station. The obvious locational advantage of the institution in Durgapur makes it a think tank to reap the benefits of the institution-industry synergy.

About SKSgi

SKS Group of Institutions was established in 1980 by renowned industrialist and educational Shri S. K. Sharma. Today SKS Group stands as a conglomerate of Nine educational institutions at two distinct easily accessible strategic locations, apart from several other businessman. All Technical Institutes of SKSgi are AICTE approved and are affiliated to concerned universities. All schools are CBSE affiliated.

SKSgi is management by a team of professionals and entrepreneurs. Besides running several Engineering, Management & Pharmacy Institutes, SKSgi is also under the process of established a General Hospital and Medical College at its Campus - Mathura. The commitment to excellence is reflected in the robust infrastructure combined with a congenial and invigorating academic atmosphere which is visible in all the institutions promoted by the group.

Institute Highlights

- An ISO 9001: 2008 Certified Institution
- Bengal Branch of Association of Community Pharmacists of India (ACPI), Manipal.
- NSS Unit under State Youth Affairs.
- Member of Drug Discovery Network, (DDN)
- Only Pharmacy College in Eastern India as National Entrepreneurship Network (NEN)
- Specialized and serene learning environment.
- Highly competent, dynamic, qualified and dedicate faculty.
- Well equipped, sophisticated state-of-the-art Labs with modern instruments.
- CPCSEA approved Natural animal house facility housing various species of experimental animals.
- High speed internet connectivity.
- Grooming classes and Soft Skill Development.
- Compulsory English Language Lab for all.
- Regular exposures to workshops, seminars and cultural activities.
- Hobby classes (Music. Photography, Film etc.).
- Rich spacious library service with nearly 4100 books,
- 36 hard copy journals, more than 550 e –journals and e-books.
- Mentor-Mentee system with individual student care.
- Excellent results in University Exams.
- Regular Industrial Visits.
- 100% Placement in Blue Chip Pharma, FMCG and KPO Companies.
- Separate hostel facilities for boys and girls.
- Modern and hygienic on-campus cafeteria.
- On-campus bank with ATM.
- Separate Multi-gym for boys and girls.
- Free health-check facility for the students and staffs
- Medicinal Plant garden housing 130 species of plants

Shri S. K. Sharma

Chairman

SKS Group of Institutions

Message

It gives me immense pleasure to know that Bengal College of Pharmaceutical Science and Research is going to organize a National seminar on **"Pharmaceutical Profession and Research in India- Present Scenario and Future Perspectives".**

Bengal College of Pharmaceutical Science and Research is a courageous and innovative stride in the dynamic process of training the present generation of pharmacy graduates. The four year full time B. Pharmacy programme of Bengal College of Pharmaceutical Sciences and Research, Affiliated to West Bengal University of Technology (WBUT), Kolkata and Approved by All India Council of Technical Education (AICTE), New Delhi, Pharmacy Council of India (PCI) aims at blooming the buds of aspiring young graduates into competent, hardcore and dedicated professionals. We have created an ambience of latest infrastructure to promote interactive teaching- learning process. We are proud of our excellent faculty members having adequate academic and industrial experience who ensure confidence, creativity and competence in perfect development of young minds. I express my sincere thanks to all faculty, staff and students and I am confident that we will rise to the future challenges in our quest for excellence and achieve greater heights in the years ahead.

I congratulate the entire organizing team for their sincere efforts for organizing such a wonderful scientific event and wish them a grand success.

Dr. A. C. Ganguly
Director (Administration)
SKS Group of Institutions

Message

It gives me great pleasure to know that Bengal College of Pharmaceutical Sciences and Research is going to organize a National seminar on **"Pharmaceutical Profession and Research in India- Present Scenario and Future Perspectives"**.

I believe that the seminar will provide a right forum for extensive interaction of the participants and also exchange of ideas and sharing the experience between the experts from the academics as well as industrial and research institutions in light with current trends of Pharmaceuticals research and its future prospects.

I congratulate the entire organizing team for their efforts for organizing a wonderful scientific event and wish them all the success.

Prof. (Dr.) Amitava Ghosh
Principal
Bengal College of Pharmaceutical Sciences and Research

Message

It gives me immense pleasure to welcome you all to the National seminar on **"Pharmaceutical Profession and Research In India- Present Scenario and Future Perspectives"** being organized by Bengal College of Pharmaceutical Sciences and Research, B.R.B. Sarani, Bidhannagar, Durgapur-713212 on 30th August, 2014. I extend my heartiest welcome to all the participants.

I am sure the interactive deliberations by the resource personnel as well as the scientific poster presentations by the delegates will unlock a new horizon of exploration and developments in the field of Pharmaceutical Sciences and Technology.

I express my heartiest thanks to the entire team of Bengal College of Pharmaceutical Sciences and Research and well wishers for their support without which it would have been impossible.

Organizing Committee

Shri S.K.Sharma
Chief Patron

Dr. A. C. Ganguli
Patron

Dr. Amitava Ghosh
Chair Person

Dr. Sanjay Dey
Convener

Mr. Sajal K. Jha
Co- Convenor

Scientific Committee

Mr. Prithviraj Chakraborty

Dr. Sagar Naskar

Mr.Supriya Datta

Mr. P K. Dutta

Registration Committee

Mr. Sujit Karmakar

Mrs. Debarupa D.Chakraborty

Mrs. Sipra Sarkar

Hospitality Committee

Dr. Jyotirmoy Deb

Mr.Amites Ganguly

Stage Committee

Mrs. Simli Sarkar

Mrs. Chandrima Chatterjee

Hosting Committee

Mr. Raja Chakraverty

Speaker's Profile

Pulok K. Mukherjee
M. Pharm., PhD., FIC, FRSC
School of Natural Product Studies
Jadavpur University, Kolkata 700 032, India

Dr. Pulok Mukherjee is a pharmacist and completed his master and PhD in pharmacy from Jadavpur University, Kolkata and post doctoral research from Leiden/Amsterdam Center for Drug Research, The Netherlands.

Dr Mukherjee is a Fellow of the Royal Society of Chemistry [FRSC], UK. His research career has been outstanding, including globally acclaimed contributions on evaluation of the holistic medicine are useful bio-prospecting tools for the traditional medicine based drug discovery program so as to make them available from 'Farm to Pharma'. His work has led to many important national and international projects in the field of Natural Health Products. He has worked on leveraging innovations in traditional Indian medicine, particularly on rationally designed, carefully standardized, synergistic traditional herbal formulations and botanical drugs for their scientific validation on evidence based approaches

Based on his works, he has to his credit above 160 publications in peer reviewed impact journals, several patents, 20 books and chapters on evaluation of botanicals. His research publications have cumulative Impact Factor of 185.31. His works has h-Index- 39, i10-index - 117; which has been cited for over 6945 times. He has worked as visiting scientists in several renowned Universities abroad including The School of Pharmacy, University of London; King's College London; Leiden/Amsterdam Center for drug Research, Netherlands; School of Health science, Tokushima University, Japan; Medical Research Council, Cape Town, South Africa and others. He has developed several products, process with partnership between industry and institute.

For his excellent research career he has been awarded with so many laurels from Govt of India and abroad; to name a few: he has been awarded with the prestigious Commonwealth Academic Staff Fellowship from Association of Commonwealth Universities [ACU], UK; Out Standing Service Award from Drug Information association [DIA], USA; Career Award for Young Teacher from All India Council for Technical Education (AICTE), Govt. of India; Overseas Award from Department of Biotechnology (DBT), BOYSCAST Fellowship from Department of Science & Technology (DST), Govt. of India; Young Pharmacy Teacher Award from Association of Pharmaceutical Teachers of India; IPA Fellowship Award from the Indian Pharmaceutical Association [IPA] and many others. He has delivered over 200 lectures in different international and national podium. He has organized 17 potential national and international conferences, workshops, seminars with the involvement of the scientists all over the world. He is the Secretary fo the Society for Ethnopharmacology India [SFE-India], which is working on Globalizing local knowledge and localizing global technologies.

Dr Mukherjee is serving as Associate Editor of the Journal of Ethnopharmacology, Elsevier Science. He is the member of the editorial board of ten other Indian and international journals. He is also associated as advisor to different organizations and administrative bodies of government of India and abroad.

≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈

"Current Scenario of Pharmaceutical Research in India and its Future Perspectives"

- Different aspects of pharmacy professions
- Opportuntites in Research and development
- National and International coordination and collaboration
- Job oportunties
- Supports for research in india
- Exchange programs
- Publishing your work and its impact through impact factor

Speaker's Profile

Dr.(Col.) Soumen Basu
M.D (Hospital Administration)
Medical Director
Medica Superspeciality Hospital, Kolkata

Dr. (Col.) Soumen Basu is presently working as Medical Director at Medica Superspeciality Hospital, Kolkata. He has obtained his MBBS from Calcutta National Medical College (Kolkata) with first class Honours and MD in Hospital Administration from Armed Forces Medical College (Pune) with securing first in order of merit. He ranked first position in Basic and Advanced Courses in Military Medicine and qualified as Instructor in Nuclear Biological and Chemical Warfare course and has experience as Instructor in Officers Training College, Army Medical Corps Centre & College involving teaching, course planning, training coordination and maintenance of records. Dr. Basu secured 1st position in MOSCC -Medical Officers Senior Command Course which is devoted to training as senior level managers. He became the Organiser/Resource person/Speaker of various Continuing Medical Education Programmes on Grading, Rating, Accreditation, Certification of Hospitals (2006), Planning and designing of Hospitals, Nuclear, Chemical & Biological Warfare (2007) Supply Chain Management Human Performance Technology by WHO & Training in Armed Forces Medical Services Physician Executives, Global and National perspectives (2012). Dr. Basu is the Post Graduate Examiner in AIIMS, New Delhi, Pune University, MUHS (Nashik) and Rajiv Gandhi Institute of Medical Sciences, Karnataka. He has guided several M.Phill and PG students of different reputed University. Dr. Basu is the advisor for NABH accreditation of Biochemistry & Pathology Dept of AFMC, Pune and Coordinator of Student Exchange Programme with AIIMS, New Delhi in Hospital Adm. He is the referee for Articles of Medical Journal of Armed Forces Medical Services (MJAFI). Dr. Basu contributed as a Counselor and Under Graduate Teacher in AFMC on Medical Ethics, Consumer Protection Act, Medicolegal issues. Dr. Basu is recognized for facilitation and implementation of various studies like Inventory Control of Medical Stores of a Command Hospital, Bed utilization Statistics, Fire Fighting and safety measures, Equipment audit, Medical audit (1000 bedded Multi Specialty Referral Hospital). Dr Basu is the recipient of Commendation Card Award in recognition to the exceptional contribution to the service. Dr Basu has published several research papers in reputed international journals and contributed chapters in a book entitled 'Guide to Medical Officers' and published management books entitled 'Management of Military Hospitals'. Beside this, Dr. Basu is also life member of several national & international bodies like Academy of Hospital Administration and Indian Society of Hospital Administration.

≈≈≈≈ ≈≈≈≈ ≈≈≈≈ ≈≈≈≈

Hospital Pharmacist- An Emerging Sector in India- In the perspective of a Hospital Administrator".

Role and contribution of pharmacy can be traced back in Indian scripted history to 3rd and 4th century AD in Charaka samhita, Sushruta Samhita and Sharngadara Samhita.

Pharmacy has come a long way to the present days of modern and science based pharmacy. The role of pharmacy in the pharmaceuticals, retail market and in the field of research is well defined and needs no special mention. This deliberation focuses on the role of pharmacy and the pharmacists as an

integral part of active and direct patient care. Hence, the designation of the pharmacists as hospital pharmacists.

Hospital pharmacy can be defined as 'the department or service in a hospital which is under the direction of a professionally competent, legally qualified pharmacist, and from which all medications are supplied to the nursing units and other services, where special prescriptions are filled for patients in the hospital, where prescriptions are filled for ambulatory patients and out-patients, where pharmaceuticals are manufactured in bulk, where narcotic and other prescribed drugs are dispensed, where injectable preparations should be prepared and sterilized, and where professional supplies are often stocked and dispensed.

They also participate in patient education programs, poison control center activities, preparation of patient drug use profiles, parenteral nutrition program participation, cooperating in the teaching and research programs of the hospital, communicating new product information to nursing service and other hospital personnel and dispensing radiopharmaceuticals
American Society of Hospital Pharmacists, in its Constitution, sets forth the following objectives:

(a). To provide the benefits of a qualified hospital pharmacist to patients and health care institutions, to the allied health professions, and to the profession of pharmacy.

(b). To assist in providing an adequate supply of such qualified hospital pharmacists.

(c). To assure a high quality of professional practice through the establishment and maintenance of standards of professional ethics, education, and attainments.

(d). To promote research in hospital pharmacy practices and in the pharmaceutical sciences in general.

(e). To disseminate pharmaceutical knowledge by providing for interchange of information among hospital pharmacists and with members of allied specialties and professions.

More broadly, the primary purpose is the advancement of rational, patient-oriented drug therapy in hospitals and other organized health care settings.

A very recent practice of utilising the services of licensed pharmacists which is presently being followed by only a handful of hospitals in this country is 'ward pharmacists'. This is a category which deals with correct indenting, receiving, appropriate storage and handing over of appropriate medicines to the medication nurses for correct dispensing and administration. In addition they also contribute in prevention of wastage from ward stores, advisories to the physicians, consultations with the dieticians and eventually are expected to take part in patient counselling and various research activities. Hospital accrues its benefit of providing the right drug to the right patient in the right dose in right time through right route. This reduces the medication errors to a substantial extent.

The role of pharmacists in the hospital pharmacy and also in the wards as members of Drugs and Therapeutic committee and as advisory to physicians and other departments and above all in alleviating the concerns of patients can make a paradigm shift in the quality of patient care rendered in the hospital therapeutic arena.

The role of pharmacists in hospital or in the health care delivery system as a whole requires a special mention and appreciation.

Speaker's Profile

Arunabha Sen
Zonal Training manager
East Zone
Roche Products India Private Limited

-

Mr. Sen is an IMA and University Gold Medalist in MASTER OF BUSINESS ADMINISTRATION (Marketing and Human Resource Management) from Bangalore University. He completed his graduation with honors (B.Sc Zoology) From Assam University. He has more than 11 year experience in Sales in reputed Pharma MNC's. He worked as **Regional Manager** with **Roche Products (India) Pvt. Limited** for Nephrology portfolio business both Aneamia and Transplantation for east zone for 3 years, worked as **Territory Business Manager** with **Novartis India Ltd**, Transplantation and Immunization B.F . Covered Bihar, Jharkhand, Orrisa and West Bengal markets, Worked as **Territory Manager**, with **Johnson and Johnson Medical India** and as **Senior Territory Manager** with **Eli Lilly and Company (Ind) Ltd** in Diabetic segment. His knowledge and Experience Domain lies within Team/People Management, Sales and Marketing Management, Relationship Management. He is presently working as Z**onal Training manager, East Zone, Roche Products India Private Limited.**

≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈

- **"Significance of Branding of Research Products in Pharmaceutical Marketing – Indian market Context"**

Over the last decade there is a tremendous demand for pharmacy graduates around the world and the demand of pharmaceutical degree programs is increasing every day. The pharmaceutical education is the backbone of pharmaceutical industry and pharmaceutical industry is generally considered as the index of the growth and development of any nation. With the growth of pharmaceutical industry and globalization of health care, the need for Sales and Marketing professionals in Pharmaceutical industry has grown many folds and today is a lucrative career option for Pharmacy graduates. Objective of this presentation is to highlight the marketing concepts in Pharmaceutical industry with emphasis on significance of Branding of Research molecules. Both multinational companies and domestic players are examining the prospects offered by the local market as the government moves forward with initiatives aimed at providing India's more than one billion inhabitants, for the first time, with access to the life-saving drugs they need. A further huge boost to the local market is emerging from the rise of India's new affluent consumers, who lead more Western-style lives and are demanding innovative drugs to treat the chronic illnesses that these changing lifestyles may produce. The next part of the presentation emphasize on the Need of Innovation in pharmaceutical industry, which is the mission of pharmaceutical research companies to take the Path from understanding a disease to bringing a safe and effective treatment option. The drug discovery process is discussed in brief from discovering the right molecule to get the new drug into the hands of doctors and patients. Subsequently, the presentation highlights the Marketing concepts used in industry touching upon Definition of Marketing. The presentation then glides towards a practical research which justifies the Significance of Marketing of Research Products in transforming it to a successful brand. Upon concluding that Branding plays an important role in Pharmaceutical marketing and discussing the advantages and disadvantages of it, The presentation concludes with a discussion about meaning of branding, concepts, strategies that are effective for this industry, Products vs. Brand and finally naming, labeling of a pharmaceutical product.

Speaker's Profile

Piyali Datta Chakraborty, Ph.D. (Science)

Research Scientist (R & D)

Albert David Ltd

Dr. Piyali Datta Chakraborty is a Ph. D. in Biochemistry and Pharmaceutical Sciences from Jadavpur University, Department of Structural Biology and Bio-Informatics, Indian Institute of Chemical Biology (IICB) (CSIR, India), Jadavpur, Kolkata. She did her M.Sc. in Physiology from Calcutta University. She worked as SRF and JRF in Department of Structural Biology and Bioinformatics, Indian Institute of Chemical Biology (IICB), Kolkata (CSIR, India). She has a number of International and National publications in reputed journals like Journal of Pharmaceutical and Biomedical Analysis, Journal of Chromatography B, Journal of Cellular Physiology, International Immunopharmacology and many more. She is a Regular Manuscript Reviewer of the Journal 'Placenta' (a peer-reviewed International Journal of International Federation of Placenta Associations of Elsevier) & Journal of Biomedical Science and Engineering (of Scientific Research), a Member of the Society of Biochromatography and Nanoseparations (SBCN), Bordeaux, France and recipient of Shakuntala Dasgupta Medal (Gold) award in 1999, for securing highest marks in M.Sc. with the specialization in Nutrition and Dietetics. She also authored a book named "Aqueous Extract of Human Placenta as a Therapeutic Agent, 'Recent advances in Research on the Human Placenta in 2012. She has also presented papers in both national and international conferences as invited speaker like 13th International Symposium of Biochromatography and Nanoseparations held at University of Bordeaux, France, 12th International Symposium of Biochromatography and Nanoseparations, Lyon, France and many more. Her area of research lies in Aqueous Extract of Human Placenta. She is presently working as a Research Scientist (R& D) in Albert David Ltd.

≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈≈

Research on aqueous extract of human placenta: A compendium

Placenta supplies all the nutrients and protective agents required for the development of the growing fetus. Being the only discarded human organ, an extensive research has been done on it. It is an immunologically privileged organ and has unique pharmacological effects like wound-healing, anti-inflammatory action etc. Aqueous extract of human placenta is used as wound healer from distant past and it contains several bioactive therapeutic molecules. The composition of the extracts depends on the method of its preparation and consequently, they show different therapeutic activities.

In India, an aqueous extract of human placenta is sold under the trade name 'Placentrex', manufactured by Albert David Ltd. is used mainly as wound healer and for treatment of Pelvic Inflammatory Diseases (PID). Clinical efficacy of the 'Placentrex' is well established in various skin conditions, including chronic wounds, pressure ulcers, burns etc. Efficacy of 'Placentrex' injection in Pelvic Inflammatory Diseases (PID) is also well documented. Though clinically well-tested, emphasis is now being laid in understanding the bioactive components involved in the curative process.

In the present era of modern pharmaceutical and biomedical research, it has become necessary to verify the pharmacological effects of the drugs in order to check whether they correspond to the ancient texts and to study how the drugs work, and also to isolate the active principles that result in the specific pharmacological actions. Research on 'Placentrex' has highlighted some important components like Polydeoxyribonucleotides (PDRNs), fibronectin type III, ubiquitin like peptides and some small molecules e.g. NADPH, amino acids etc that might play roles in the process while few more are yet to be identified. The biochemical characterization and mechanism of actions of the drug 'Placentrex' as well as the rationality of its use have been briefly described.

Speaker's Profile

Mr. Amit Sarkar
General Manager (Personnel),
Albert David Ltd, Kolkata

Mr. Sarkar has done his Master in Human Resource Management (MHRM). His education qualification also includes L L B, PGDTD and PGDPMIR. He is Certified on Community Based Disaster Risk Management (CDRM) from National Institute of Disaster Management, New Delhi, Certified on The RTI Act, 2005 from CGG, HYDB and DOPT of Ministry of Personnel Govt. Of India. He has a total 33 years of experience in core Human Resource Management . He is actively joined with different professional bodies like he is the Vice Chairman of National Institute of Personnel Management, Life Member of National HRD Network, Industrial Relations Institute of India of Mumbai, State Productivity Council, Calcutta Management Association, I.S.T.D, Delhi, Visiting faculty of Government as well as non government institute / professional bodies. He is also Certified on Competency Mapping./ "Human Resource Management" and on Basic Human Process Lab of I S A B S. He is also involved in different social trusteeships like he is a Member of 'Beauty without Cruelty' – Pune, Member of Forum of Free Enterprise – Mumbai, Executive member of one NGO called "Mission for Vision having its own day care center" which works for the downtrodden/BPL citizens of eastern India.

Author Index

15.	Kanchan Kumar Dey	BCPSR/NS/14/15	Potential of Natural Polymer as Drug Delivery Carrier to the Colon	15
16.	Sayantan Chatterjee	BCPSR/NS/14/16	A Steaming Cup of Medicine: Green Tea	16
17.	Chinar Chandanlal Chakrabarthy	BCPSR/NS/14/17	Mechanism and Kinetics of Drug Release from Ocular Inserts	17
18.	Anindya Jana	BCPSR/NS/14/18	Nanocapsule: Advanced Drug Delivery in Future Medicine	18
19.	Tapabrota Mahapatra	BCPSR/NS/14/19	Rationality of using FDC Products in HIV Treatment: A Review on Indian Perspective	19
20.	Sulagna Kar Bhowmik	BCPSR/NS/14/20	Co –Processed Excipients –A Class of Novel Excipients	20
21.	Antesh Jha	BCPSR/NS/14/21	Development of Controlled Release Matrix Tablets of Glipizide Using Natural Matrix Forming Agent	21
22.	Subhajit Hazra	BCPSR/NS/14/22	Recent Trends of Phytosomes for Enhancement of Bioavailability of Botanicals and Neutraceuticals	22
23.	Juhi Singh	BCPSR/NS/14/23	Fast Dissolving Tablets: An Innovative Technology for Suffering Mankind	23
24.	Subham Das	BCPSR/NS/14/24	UV- Spectrophotometric Method for Estimation of Paractamol in Solid Oral Dosage Form	24
25.	Niladri Bhattacharjee	BCPSR/NS/14/25	Natural Products Used in the Treatment of Rheumatoid Arthritis	25
26.	Sougata Jana	BCPSR/NS/14/26	Polysaccharide Based Interpenetrating Network Particulate System for Controlled Drug Delivery Applications	26
27.	Laliteshwar Pratap Singh	BCPSR/NS/14/27	Synthesis and Antimicrobial Activity of Some Benzoxazole, Benzimidazole and Benzothiazole Derivatives	27

28.	Brijyog	BCPSR/NS/14/28	The *In Vitro* Antioxidant Activity and Total Phenolic Contents of *Achyranthus aspera Linn*	28
29.	Ashish Sarkar	BCPSR/NS/14/29	Seasonal and Geographical Variations in Chemical Constituents of *Bauhinia purpurea* Linn and *Centipeda minima*	29
30.	Jugal Sutradhar	BCPSR/NS/14/30	Cosmetic Technique Its Role in Pharmacy	30
31.	Pradeep Kumar	BCPSR/NS/14/31	Impact of New WTO Agreement in Patent Act on Indian Pharmaceutical Industry	31
32.	Neetu Pandey	BCPSR/NS/14/32	*Parthinium* a Potential Weed for Preparing Alfa Cellulose and Its Cellulose Sulfate Derivative	*32*
33.	Alok Maithani	BCPSR/NS/14/33	Designing of Prototype from Potential Anti-Dengue Phytoconstituents	33
34.	Manish Kumar Gupta	BCPSR/NS/14/34	Captopril Loaded Bovine Serum Albumin Microparticles for Novel Drug Delivery System	34
35.	Bibek Laha	BCPSR/NS/14/35	Fabrication of Metronidazole loaded Tamarind Seed Polysaccharide Patch for Buccal Drug Delivery	35
36.	Mehulee Acharya	BCPSR/NS/14/36	Human Placenta-A Detailed Study	36
37.	Debapriya Bera	BCPSR/NS/14/37	A Literature Review on "Gestational Diabetes	37
38.	Shilpa Majumder	BCPSR/NS/14/38	Japanese Encephalitis	38
39.	Debayan Chakraborty	BCPSR/NS/14/39	Encephalitis: Origin, Diagnosis and Treatment	39
40.	Sarthak Adhikari	BCPSR/NS/14/40	Current Scenario and Future Prospective of Polymeric Nanotechnology in Prolong Drug Delivery	40

41.	Sayan Chatterjee	BCPSR/NS/14/41	MicroRNA: Novel Therapeutic Approach in Rheumatoid Arthritis	41
42.	Vikas Sharma[1]	BCPSR/NS/14/42	Conservation of Biodiversity	42
43.	Abhilash Mittal	BCPSR/NS/14/43	Overview of *Chlorella* as a Potent Nutraceuticals Product	43
44.	Bankim Chandra Nandy	BCPSR/NS/14/44	Optimization and *In Vitro-In Vivo* Evaluations of Delayed Release Multi-Particulates System of Celecoxib	44
45.	Ekta Singh	BCPSR/NS/14/45	A Study of CNS Effects of Ebastine, a Newer Antihistamine Compared to Pheniramine Maleate, a First Generation Agent in Suitable Animal Models	45
46.	Tuhina Sarkar	BCPSR/NS/14/46	Epigenetic Mechanisms Underlying the Pathology of Post-Traumatic Stress Disorders	46
47.	Ayantika Sil	BCPSR/NS/14/47	Analytical Method Validation of Quantitative Analysis of Aciclovir Tablet I.P	47
48.	Raja Chakraborty	BCPSR/NS/14/48	Evaluation of the Antiulcer and Hepatoprotective Activity of the Aqueous Extract of Aerial Parts of *Ocimum canum*	48
49.	Vivek Kumar Mishra	BCPSR/NS/14/49	Plant Product Use for Treatment of Hypertension	49
50.	Anurag Priyo Majumder	BCPSR/NS/14/50	Natural Binders in Formulation of Tablets	50
51.	Rupchand Pandit	BCPSR/NS/14/51	A Novel Nano Particle Vector for Tumor Directed Drug Delivery	51

52.	Nilanjana Deb	BCPSR/NS/14/52	Apoptogenic Activity of Secretion Extract of *Bellamya bengalensis* f. Annandalei against Hepatocellular Carcinoma	52
53.	Smriti Rekha Chanda Das	BCPSR/NS/14/53	Phytochemical Screening and Investigation of Antimicrobial Activity of Ethanolic Leaf Extract of *Paederia foetida*	53
54.	Indranil Chanda	BCPSR/NS/14/54	Development and Validation of UV-Spectroscopic Method for Estimation of Niacin in Bulk and Pharmaceutical Dosage Form	54
55.	Debarati Roy	BCPSR/NS/14/55	Date Rape Drugs	55
56.	Sanjib Das	BCPSR/NS/14/56	Drug Discovery in India Present Scenario and Future Prospective	56
57.	Pankaj Agrawal	BCPSR/NS/14/57	Phytochemical Investigation of Leaf of *Toona ciliata* (Roem.)	57
58.	Sipra Sarkar	BCPSR/NS/14/58	Herbal and Natural Medicines: Pros and Cons	58
59.	Suparna Halder	BCPSR/NS/14/59	Alzheimer Disease and its Treatment	59
60.	Silajit Dutta	BCPSR/NS/14/60	Reverse Pharmacology: A Tool in Herbal Drug Discovery	60
61.	Prakash Kumar Palai	BCPSR/NS/14/61	Future Prospects of Raman Spectroscopy as a Non-Invasive Tool for Diagnosis of Skin Cancer	61

62.	Paloma Patra	BCPSR/NS/14/62	Binding Mode Analysis of Few Polysubstituted Triazoles as Lanosterol-14α-demethylase Inhibitor	62
63.	Narendra Kishore Guin	BCPSR/NS/14/63	One-pot Synthesis-An Overview	63
64.	Adwiti Banerjee	BCPSR/NS/14/64	Green Chemistry: *Preventing Pollution Sustaining the Earth*	64
65.	Piyush Tomar	BCPSR/NS/14/65	Formulation and Evaluation of Orodispersible Tablets of Amlodipine Besilate	65
66.	Deepak Kumar	BCPSR/NS/14/66	Formulation and Evaluation of Chewable Tablets of Paracetamol and Metoclopramide Hydrochloride	66
67.	Pragati Khare	BCPSR/NS/14/67	Current Concepts of Types and Causes of Alzheimer's Disease	67
68.	Shashi Verma	BCPSR/NS/14/68	Natural Treatment of Neurodegenerative Disorders	68
69.	Simli Sarkar	BCPSR/NS/14/69	A Literature Review on *Abelmoschus esculentus* in Pharmaceutical Science	69
70.	Nilanjan Chowdhury	BCPSR/NS/14/70	Immunisation Schedule Throughout the World	70
71.	Chencho Wangmo Lama	BCPSR/NS/14/71	Fast Dissolving Tablets: A New Era in Novel Drug Delivery System	71

72.	Sohom Kumar Mitra	BCPSR/NS/14/72	Phthalimides as Novel Antibacterial	72
73.	Ravi Bhushan Singh	BCPSR/NS/14/73	Synthesis and *In Vitro* Antimicrobial Evaluation of Some Novel 2,4,6-Trisubstituted 1,3,5-Triazine Derivatives	73
74.	Vashisth Anita	BCPSR/NS/14/74	Solid Lipid Nanoparticles: A Boon in Nanoparticle Technology	74
75.	K. Praveen	BCPSR/NS/14/75	Recent Technologies in Ocular Drug Delivery System	75
76.	Yadav Prakash	BCPSR/NS/14/76	Colon Targeting Drug Delivery System	76
77.	Keshwani Bhawana	BCPSR/NS/14/77	Novel Concepts in Vaginal Drug Delivery	77
78.	Shailender Mohan	BCPSR/NS/14/78	Formulation and *In-Vitro* Evaluation of Bilayered Tablets of Oral Hypoglycemic Drugs for Type II Diabetes	78
79.	Thakur Deepika	BCPSR/NS/14/79	Transdermal Drug Delivery Systems: An Overview	79
80.	Kiranmoy Karmakar	BCPSR/NS/14/80	Excelency of Natural Colour: A Review	80
81.	Moumita	BCPSR/NS/14/81	MORE Chemistry: Synthesizing	81

	Banerjee		Chemicals in Eco Friendly Environment	
82.	Manisha Khandelwal	BCPSR/NS/14/82	An Insight of Oral Thin Films	82
83.	Nita Yadav	BCPSR/NS/14/83	Water Soluble Derivatives of Cyclodextrins as Drug Carrier	83
84.	Rajesh Yadav	BCPSR/NS/14/84	Steroid Hormones and Their Importance: A Review	84
85.	Henna Patel	BCPSR/NS/14/85	Role of BMN-111 as a Prospective Treatment Option for Achondroplasia: Revelations from Clinical Trails	85
86.	Shalmoli Seth	BCPSR/NS/14/86	Novel Drug Targets for Diabetes Mellitus Type II	86
87.	Swarnadeep Banerjee	BCPSR/NS/14/87	Novel Drug Target for Hyperlidemia	87
88.	Urbashi Barman	BCPSR/NS/14/88	Suitability of Modified Starch as a Drug Delivery Carrier for Controlled Release of Drug	88
89.	Gopal Gupta	BCPSR/NS/14/89	Herb-Drug Interactions and Some Strategies to Minimize Their Adverse Effects	89
90.	Ratnamala Dutta	BCPSR/NS/14/90	Metronomics Chemotherapy- A Newer Approach for the Treatment of Cancer	90

91.	Roopsha Das	BCPSR/NS/14/91	G-Protein Coupled Receptor - An Overview	91
92.	Sonia Auddy	BCPSR/NS/14/92	Treatment of Rheumatoid Arthritis with Therapeutically New Biological Agents	92
93.	Sudipta Biswas	BCPSR/NS/14/93	Transungual Drug Delivery System for the Treatment of Nail Disorders - An Overview	93
94.	Dibya Sinha	BCPSR/NS/14/94	*Musa paradisiaca*: A prospective overview as pharmaceutical excipient	*94*
95.	Sourav Chakraborty	BCPSR/NS/14/95	An Overview on Schizophrenia	95
96.	Sankha Subhra Ta	BCPSR/NS/14/96	Evolving Soft Computation in Pharmaceutical Research and Data Management	96
97.	Swarnadeep Dutta	BCPSR/NS/14/97	Anti Snake Venom Property of Herbal Medicine-A Challenge to Anti Snake Venom Serum	97
98.	Ananya Pal	BCPSR/NS/14/98	Therapeutic Potential of Russell's Viper Snake Venom in Coagulant Treatment	98
99.	Simli Sarkar	BCPSR/NS/14/99	Formulation, Preparation and *In-Vitro* Evaluation of Silymarin Tablets Using Isabgul Powder as Tablet	99

			Excipient	
100.	Dhananjay Rai	BCPSR/NS/14/100	Formulation and Evaluation of New Multiple Drug Delivery System of Clarithromycin and Omeprazole	100

BCPSR/NS/14/1

Organ on Chip- Futuristic Tool in Clinical Study

Pradeeptima Bhattacharjee*, Santanu Chakraborty, Pintu kumar De

Dr. B.C. Roy College of Pharmacy and A.H.S., Bidhannagar, Durgapur

*E. mail: btprad07@gmail.com

Today's pharmaceutical industries need better scientific models for testing drugs before they get into the proving ground of human clinical trials. Current lab dish models and animal testing models are time-consuming, expensive and chronically unable to predict which drugs are going to work in clinical trials. The industry is crying out for new modes of early testing that can shorten the timelines, reduce cost, and increase the odds of success in clinical trials. Futuristic models-organs on chip model are beginning to appear where cells are created from human skin or other tissues and "reprogram" them to become cells of almost any tissue. Each organ-on-a-chip sizes as a thumb drive, is an organoid, & is designed to mimic the properties of an actual human organ and is made up of multiple layers of cells on a membrane connected to each other by microfluidics, tiny micro channels that copy the function of blood vessels. This instrumented "human-on-a-chip" is useful to rapidly assess responses to new drug candidates, providing critical information on their safety and efficacy.

BCPSR/NS/14/2

Microsphere – A Designer Tool in Novel Drug Delivery System

Debaditya Saha
NSHM College of Pharmaceutical Technology, NSHM Knowledge Campus, Kolkata Group of Institutions, 124, B.L.Saha Road, Kolkata-700082
E. mail: debaditya.bpharm@gmail.com

The ever growing interest of the pharmaceutical companies seeks advancement in designing & delivering controlled therapeutic dosages at targeted tissue with absolute safety profile. Microspheres, being the first choice, are formulated as free flowing particles encapsulated with proteins or synthetic biocompatible polymers having particle size ranging from 1-1000µm. The manufacturing offers different techniques to control the aspects of drug targeting & extended delivery for a variety of application platforms including chemotherapy, cardiovascular disease, hormone therapy, embolization, therapeutic protein delivery, vaccine development as well as for imaging and targeting of anticancer drugs even DNA & RNA. Successful encapsulation of DNA with controlled release polymeric reservoir such as poly (lactic acid) (PLA), poly (lactic-co-glycolic acid) (PGLA) have been explored as strategies of delivering DNA. Microspheres of DNA vaccines have also been successfully tested on mice using molecularly engineered poly (ortho-ester). Hydrogel-based particles, also called microgels or nanogels, with high biocompatibility possess the potential for tuning the release rates of microspheres. Alginate microspheres loaded with calf thymus DNA were shown to be stable enough to survive passage through the entire GI tract. Various cells, cell lines, tissues and organs can be imaged via dynamic imaging with radio labeled microspheres. Magnetic microspheres have been found useful in tissue targeted magnetically enhanced gene therapy. In future smart microspheres will find the central place in novel drug delivery, particularly in disease cell sorting, diagnostics, gene and genetic materials, safe, targeted and effective in vivo delivery and supplements as miniature versions of diseased organ and tissues in the body, however many challenges need to be addressed with regard to the design and production of economically feasible and ecofriendly microspheres.

BCPSR/NS/14/3

Ileo Colonic Drug Delivery: Various Aspects

Iman Ehsan*, Sutapa Biswas Majee

NSHM College of Pharmaceutical Technology, NSHM Knowledge Campus,

Kolkata Group of Institutions, 124, B.L.Saha Road, Kolkata-700082

*E. mail: iman.ehsan@gmail.com

A pH gradient from 1.2 in the stomach to 7.5 in the distal small intestine exists. For the treatment of Crohn's disease or intestinal bowel syndrome, site-specific delivery to the ileo ceacal valve region of the GIT is the most effective approach. In recent years several pH-responsive polymers like Eudragits and bacterially-triggered polymers, for example starch derivatives have gained increasing popularity in the design of single and multiple-unit coated dosage forms. These polymers are refractile to dissolution in acidic pH of the stomach and fluids of upper GIT. Combination of polymers can lead to targeted and controlled release of drugs in the ileo colonic region for better control of localized pathological conditions. In vitro dissolution studies can be carried out as per the compendial methods for delayed release formulations. The study protocol should mimic three stages sequentially to which the tablets are exposed during its GI transit with varying pH profile. In addition, studies may also be conducted in pH 7.4 Krebs bicarbonate buffer. Accurate positioning of the dosage form in the desired site can be located by conducting gamma scintigraphy using technetium-99m-DTPA as tracer, in healthy human volunteers. Establishment of in-vitro in-vivo correlation (IVIVC) is the ultimate step in the design of ileo colonic targeted drug delivery systems.

BCPSR/NS/14/4

Current Issues in Pharmacovigilance of Herbal Products: An Appraisal

Narayan Nath*, Raja Chakraverty, Amitava Ghosh
Bengal College of Pharmaceutical Sciences and Research,B.R.B Sarani, Bidhannagar. Durgapur- 713212. West Bengal
*E. mail: narayannath666@gmail.com

Pharmacovigilance constitutes the science and practice related to the detection, assessment, understanding and prevention of adverse effects of drugs or any other possible drug-related problems. Recently, its scope has been broadened to include herbal, traditional, unani, siddha and other complementary systems of medicines, with the goal to comprehensively detect, assess, understand with the unanimous goal of preventing occurrence of adverse effects in those individuals undergoing therapy. This process of pharmacovigilance of herbal and herbal products in India has come a long way since its inception. The objective of the presentation is to provide a succinct review on the recent trends and challenges posed in the practice of pharmacovigilance of herbal products especially in the Indian context going by evidence from current scientific literature and bibliographic databases such as Pubmed, Ayush, Medline and others on this issue and to shed light on the importance of pharmacovigilance practice in establishing and maintenance of rational use of drugs within the ambit of pharmacotherapy. The methodology adopted in the undertaken work comprises extensive topic related search of contemporary scientific articles and complementary review of bibliographies from selected publications on the subject. The promotion of systematic and rational use of herbal drugs requires the coverage of adverse events possibly caused by herbal and traditional medicines also. Proper reporting of follow up action of suspected adverse drug reactions arising from herbal products has assumed a greater role today and requires proper and careful implementation from everyone in the healthcare sector. Thus, in summary this presentation attempts to stress that systematic pharmacovigilance is essential to build up reliable information network on the safety of herbal medicines to boost confidence about their safety.

BCPSR/NS/14/5

Effect of Psyllium Husk Concentration on Properties of Hydrodynamically Balanced HPMC Based Tablet

Dipna Karmakar

NSHM College of Pharmaceutical Technology, NSHM Knowledge Campus, Kolkata Group of Institutions, 124, B.L.Saha Road, Kolkata-700082

*E. mail: dipnakarmakar@gmail.com

The purpose of the study is to investigate the effect of psyllium husk concentration, a gel forming natural hydrocolloid on the gastric residence time and drug release of Hydrodynamically Balanced HPMC based matrix tablet of Carvedilol phosphate. Tablets (F1-F7) were prepared by direct compression method incorporating Psyllium husk (10%, 12%, 15%, 20% and 30%) alone or in combination with HPMC so as to attain total polymer concentration of 30% w/w, were subjected to drug content assay, swelling and buoyancy studies, dimensional stability and in vitro drug release determination in simulated gastric fluid (pH 2.2) and compared against reference batch. Formulation containing 20% psyllium (F6) showed Swelling (360%), minimum buoyancy lag time of 3 min but poor dimensional stability and not considered for further studies. The dimensional stability of F3(10% Psyllium husk and 20% HPMC K15M) was highest, exhibited maximum swelling (463% in 24 hrs),buoyancy lag time of 9 mins and buoyancy duration of 22.3 h which were better than those of F4 and F5 ((12%, 15% psyllium husk respectively). Sustained release of appreciable degree could be observed only for F3 with the highest $t_{50\%}$ value (5.5 hrs). Non-Fickian drug diffusion occurred from the optimised formulation following the Korsmeyer–Peppas model (n= 0.61). Polymer blend of natural hydrocolloid, psyllium husk and HPMC in optimum percentages can successfully induce buoyancy in the dosage form within a very short time and can simultaneously prolong the gastric residence time triggering extended drug release in simulated gastric fluid for 8 hrs, leading to hydrodynamically balanced system.

BCPSR/NS/14/6

Non-Topical Applications of Microsponge Drug Delivery System

Bivas Chandra Rana

NSHM College of Pharmaceutical Technology, NSHM Knowledge Campus,

Kolkata Group of Institutions, 124, B.L.Saha Road, Kolkata-700082

*E. mail: bivas.chandrarana@gmail.com

A Microsponge Delivery System (MDS) is Patented, highly cross-linked, microscopic, tiny sponge-like polymeric porous microspheres (10-25 microns) that can suspend or entrap a wide range of active ingredients such as emollients, fragrances, essential oils, anti-infective, anti-fungal and anti-inflammatory agents allowing the sustained flow of substances out of the sphere. Apart from the topical application, recently studies are also on for various non-topical applications with wide scope like oral administration, bone tissue engineering, cardiovascular engineering, reconstruction of vascular wall etc. Entrapment of poorly water-soluble drugs in the microsponges can increase their bioavailability after oral administration. In Bone tissue engineering, Poly (lactic-co-glycolic acid) (PLGA) sponge used as a mechanical skeleton facilitates formation of the PLGA–collagen–apatite hybrid, three-dimensional porous spongy scaffolds with uniform deposition of apatite particulates throughout the sponge. PLGA-collagen microsponge can form a vascular patch material for application in cardiovascular engineering to avoid infection risk, promoting in situ cellularization and the regeneration of autologous tissue in cardiovascular surgery. In reconstruction of vascular wall, the biodegradable polymeric scaffold composed of polyglycolic acid knitted mesh, reinforced on the outside with woven poly-lactic acid may be used as a novel surgical material for the regeneration of the damaged tissues of the cardiovascular system.

BCPSR/NS/14/7

Encephalitis – An Overview

Priyanka Banerjee*, Manik Baral

Gupta College of Technological Sciences, Ashram More, Asansol, West Bengal

*E. mail: priyankabanerjee9999@gmail.com

Encephalitis is inflammation of the brain tissue. Primary encephalitis is when a virus directly infects the brain and spinal cord. Secondary encephalitis is when an infection that starts elsewhere travels to our brain. Most cases are caused by viral infections. In rare cases it can also be caused by bacteria. Many different viruses can cause encephalitis. It is helpful to categorize the potential causes into three groups: common viruses, childhood viruses, and arboviruses. The groups most at risk of encephalitis are older individuals and children under 1 year of age and people with weakened immune systems The symptoms of encephalitis include fever, headache, neck stiffness, lethargy, vomiting, fever, drowsiness, hallucinations, Irritability etc. It can be diagnosed by brain imaging with CT scan /MRI, spinal tap or lumbar puncture, electroencephalograph, blood tests etc. Anti-viral medications are effective for treating herpes encephalitis. Other treatment focuses on relieving symptoms using pain killers, corticosteroids, ventilation, sponge baths, anticonvulsants, sedatives etc. Effective ways to reduce risk are making certain children receive all scheduled vaccinations, getting vaccinated for encephalitis where available, always using mosquito repellant when outside, wearing long sleeves and pants in areas with large tick and mosquito populations, keeping standing water away from our house.

BCPSR/NS/14/8

Recent Trends in Herbal Anticancer Drugs

Nilofer Jasmin*, Joyita Roy, Sankhadip Bose

Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal

*E. mail: sankha.bose@gmail.com

Cancer is a leading cause of mortality, and it strikes more than one-third of the world's population and it's the cause of more than 20% of all deaths. Among the causes for cancer are tobacco, viral infection, chemicals, radiation, environmental factors, and dietary factors. Surgery, chemotherapy and radiotherapy are the main conventional cancer treatment often supplemented by other complementary and alternative therapies in China. Plants have been used as an age old remedy of cancer history of use in the treatment of cancer. Extensive research at Sandoz laboratories in Switzerland in the 1960s and 1970s led to the development of etoposide and teniposide as clinically effective agents which are used in the treatment of lymphomas, bronchial and testicular cancer. These plants may promote host resistance against infection by re-stabilizing body equilibrium and conditioning the body tissues. Several reports describe that the anticancer activity of medicinal plants is due to the presence of antioxidants present in them. In fact, the medicinal plants are easily available, cheaper and pose no toxicity as compared to the modern (allopathic) drugs. The development of novel plant-derived natural products and their analogs for anticancer activity details efforts to synthesize new derivatives based on bioactivity and mechanism of action-directed isolation and characterization coupled with rational drug design – based modification. In our recent work all the herbal drugs which may be used to treat cancer have been listed with their mechanism of action and potency. Today, this information is highly important to get details about cancer therapy.

BCPSR/NS/14/9

Preparation and Evaluation of Herbal Formulation

Joyita Roy*, Nilofer Jasmin, Sankhadip Bose

Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal

*E. mail: sankha.bose@gmail.com

Throughout history, herbs have had an important place in the medicine of the people. We have found remains of medicinal herbs in stone-age burial sites (ca. 10,000 BC), and have written records of herbs and their preparations from the ancient Egyptian, At first, humans probably used herbs the same way we have observed African chimpanzees to--by eating them. After some experimentation, early people realized that herbs were more effective when picked at just the right season and preserved in a preparation. We know from the most extensive medical record of the Egyptians, the Ebers Papyrus (ca. 1550 BC), that many types of herbal preparations were popular. Salves, ointments, teas and alcoholic extracts were recommended for many ailments, from the wounds of war to a variety of menstrual difficulties.The preparations of the ancients were carried on and slowly evolved over the next 2,000 years. An excellent record of the variety of early 17th century herbal preparations can be found in the Pharmacopeia Londonensis (1618), the first official drug book from Great Britain. This influential work lists many different kinds of preparations, including tinctures, salves, ointments and elixirs. Today, many of the preparations available from manufacturers in the U.S. and Europe are directly descended from ancient sources. Recently, lots of herbal products are formulating to treat different diseases but the proper evaluation of those formulations is very important now. In our recent work, we tried to collect all the procedures to prepare different herbal formulations and also the procedures to evaluate them.

BCPSR/NS/14/10

An Overview on Mucoadhesive Polymer

Projit Samanta*, Tanusree Basu,Tamasree Majumder

NSHM College of Pharmaceutical Technology, NSHM Knowledge Campus, Kolkata Group of Institutions, 124, B.L.Saha Road, Kolkata-700082

*E. mail: projit.samanta@gmail.com

Bioadhesion is surface phenomenon in which a material may be of natural or synthetic origin, adheres or stick to biological surface, usually mucus membrane. The concept of bioadhesion is emerging as a useful application in drug delivery due to its applicability for bioavailability enhancement, prolongation of residence time for drug in GIT and better contact between drug and absorbing surface. It can be specifically termed as Mucoadhesion. Mucoadhesion is a complex phenomenon which involves wetting, adsorption and interpenetration of polymer chains. Conventional hydrophilic excipients used in controlled drug delivery release drugs mainly by diffusion and erosion. Therefore, perfect zero order release rate cannot be achieved. Carbopol polymers can be used to solve this problem. Two types of Carbopol polymers are available Benzene grade (eg, Carbopol 934 NF, Carbopol 940 NF etc.) and non-benzene grade (Carbopol 974 NF, Carbopol 980 NF, Carbopol 71 G NF etc.). Carbopols readily absorb water, get hydrated and swell. In addition to the hydrophilic nature, cross-linked structure, insolubility in water and mucoadhesive property of Carbopol makes it a potential candidate for use in mucoadhesive controlled release drug delivery system.Depending on the gel characteristics, zero order or anomalous release is obtained from Carbopol based formulation.

BCPSR/NS/14/11

Natural Polymers in Control Drug Delivery System

Tanusree Basu*,Tamasree Majumder, Projit Shamanta

NSHM College of Pharmaceutical Technology, NSHM Knowledge Campus,

Kolkata Group of Institutions, 124, B.L.Saha Road, Kolkata-700082

*E. mail: mailtotanusreebasu@gmail.com

Polymers alone or in combination are the backbone of controlled release drug delivery system. Natural polymers are preferred over synthetic material due to their nontoxicity, low cost, ease of availability and high affinity of water .One plant derived polymer, Psyllium obtained from seeds of the plant Plantago ovata, a muciloid widely used as a release controlling polymer in oral controlled drug delivery. Isapgol husk or psyllium husk is a biocompatible, environment friendly and non-absorbable inert material. It possesses good swelling and gelling properties and hence it can be used as a matrix former in the modified release formulation. It forms a swollen gel which controls drug release .It swells 60 times of its original volume and forms mucilineous layer. Psyllium is a promising polymer for gastro retentive floating drug delivery systems. Another plant derived gum, Xanthan gum is high molecular weight extracellular heteropolysaccharide, produced by fermentation of gram negative bacterium Xanthomonas campesteris. It is used as effective matrix former for controlled release formulation. Gum Karaya, sometimes known as Sterculia gum, is the dried exudation of the Sterculia Urens tree and other species of Sterculia. It absorbs water and swells around 100-200 times of its volume. Gum karaya has another advantage of offering mucoadhesive characteristics. Hence it can be employed as mucoadhesive, denti-adhesive material in controlled drug delivery.

BCPSR/NS/14/12

Cellulosic Polymers in Controlled Drug Delivery

Tamasree Majumder*, Tanusree Basu, Projit Samanta

NSHM College of Pharmaceutical Technology, NSHM Knowledge Campus, Kolkata Group of Institutions, 124, B.L.Saha Road, Kolkata-700082

*E. mail: tammemajumder1992@gmail.com

Among the various research works going on now-a-days, one of the most important is the designing of controlled release dosage form. For the development of suitable controlled release dosage form a proper matrix needs to be formed from which drug release should follow zero order kinetics. HPMC (Hydroxy Propyl Methyl cellulose) also known as Hydromellose is one of the best known cellulosic polymers used in the development of controlled drug delivery. It is available in various grades. Cellulosic polymers are ingredients that contain units linked together which helps in water retaining. Due to its high water absorptive capacity, it is an excellent hydrophilic gel-forming polymer. HPMC generally hydrates on the outer surface to form a gelatinous layer which is critical to prevent wetting and rapid drug release from the matrices. If the drug is sparingly soluble in the system, the release of drug from the system is slow and helps in formulation of controlled release dosage form. In the ophthalmic controlled release dosage form, HPMC is used as a matrix its swells and expand after absorbing water and expands the thickness of the tear-film. HPMC is similar to gelatin in formulation and hence it is widely used as a cellulosic matrix in controlled released dosage form.

BCPSR/NS/14/13

Pharmacovigilance in India: Problems and Prospects

Rima Mondal*, Rana Datta

Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal

*E. mail: rimamondal0@gmail.com

Pharmacovigilance may be defined as "The science and activity relating to detection assessment, understanding and prevention of adverse effect or any other drug related problems." Pharmacovigilance is related for the protection of public health and adverse drug reaction. In the world stage USA revised the law requiring, proving of safety and efficacy of food and drugs in the year 1962. Thereafter in 1963, British Committee on Safety of drug monitoring was established. Pharmacovigilance in India was initiated in 1986 with the proposal of setting 12 regional centers. Thereafter India joined WHO-ADR monitoring program in 1997. Finally pharmacovigilance program in India (PVPI) was initiated in 2010. The main challenges for an effective pharmacovigilance program in India are under reporting, existence of traditional medicines along with modern drug and the difficulties of translation of ADR information into safe clinical practice. ADR monitoring centre in West Bengal are at R.G. Kar Medical College, Kolkata and Department of Clinical and Experimental Pharmacology, School of Tropical Medicine, Kolkata. The roadmap of PVPI though tough, but realistic goals have been set for proper expansion and optimization, and achieving excellence at par with developing countries. India has fast emerged as a global Clinical trial hub, and with it has evolved job opportunities for pharmacists in the field of Pharmacovigilance. Pharmacovigilance is the discipline which takes care of aspects concerned with identifying, validating, quantifying and evaluating adverse reactions associated with the use of drugs thereby improving the safety of medicines in use.

BCPSR/NS/14/14

Present Scenario of Clinical Trials in India

Md Jawed Alam* and Subhamay Panda

Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal

*E. mail: jawedalam1993@gmail.com

Clinical research is a branch of healthcare science that determines the safety and effectiveness of medications, devices, diagnostic products and treatment regimens intended for human use. These may be used for prevention, treatment, diagnosis or for relieving symptoms of a disease. Clinical Research is different from clinical practice. In clinical practice one uses established treatments, while in clinical research evidence is collected to establish a treatment. Clinical trials often involve healthy subjects with no pre-existing medical conditions but sometimes pertain to patients with specific health conditions who seek otherwise unavailable treatments. In early phases, participants are healthy volunteers who receive financial incentives. During dosing periods, study subjects typically remain under supervision for one to 40 nights. Clinical trials involving new drugs are commonly classified into four phases. Each phase of the drug approval process is treated as a separate clinical trial. The drug-development process will normally proceed through all four phases over many years. If the drug successfully passes through Phases I, II, and III, it will usually be approved by the national regulatory authority for use in the general population. Phase IV are 'post-approval' studies.

BCPSR/NS/14/15

Potential of Natural Polymer as Drug Delivery Carrier to the Colon

Kanchan Kumar Dey*, Urbashi Barman, Sanjay Dey, Amitava Ghosh

Bengal College of Pharmaceutical Sciences and Research, B. R. B. Sarani, Bidhannagar, Durgapur-713212, West Bengal, India

*E. mail: kanchandey91@gmail.com

Last few decades, the delivery of drug to the specific site of colon has a promising challenge to the formulation scientist for the treatment of irritable bowel syndrome, colon cancer, and inflammatory bowel disease. The colon, as a site for drug delivery, offers distinct advantages on account of a near neutral pH, a much longer transit time, relatively low proteolytic enzyme activity, and a much greater responsiveness to absorption enhancers. Among the different approaches includes prodrug, pH sensitive polymers, time released drug delivery system, microbially degraded drug delivery system for colon drug delivery, the use of especially biodegradable natural polymers holds great promise as it is comprised of polymers with a large number of derivatizable groups, a wide range of molecular weights, varying chemical compositions, and for the most part, low toxicity and biodegradability yet high stability. The present review focus on the advantages of natural polymer as suitable carrier for colon targeted drug delivery as compare to other approaches has been taken. The development of colon targeted drug delivery system using natural polymer will hold a promising potential for effective therapy, dose reduction, reduce the side effect, increase the utilization of drug, and decrease the dosing in drug.

BCPSR/NS/14/16

A Steaming Cup of Medicine: Green Tea

Sayantan Chatterjee*, Ranu Biswas

Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal

*E. mail: sayantanchatterjee1995@gmail.com

Tea is the most consumed drink in the world after water. Green tea is one of the oldest beverages preferred by the people round the globe and it has been considered as one of the most utilitarian drink providing energy and removing traces of stress to refresh and rejuvenate the mind and soul. An ancient Chinese proverb goes thus – *"Better to be deprived of food for three days than tea for one"*. Green tea is tea made solely with the leaves of *Camellia sinensis* that have undergone minimal oxidation during processing. Green tea originates from China and used as a medicine for at least 4000 years. The difference between green tea and other teas is that green tea is not fermented, thus keeping the powerful antioxidants lost in the fermenting process. Green tea is not oxidized at all; the leaves are steamed, rolled and dried. Green tea acts as a major anti-oxidant, which in turn provides the body protection from the free radicals. Green tea contains flavonoids and polyphenols which improve health particularly epigallocatechin gallate (EGCG). Studies suggest that green tea can reduce the risk of cardiovascular disease and cancer as well as beneficially impact bone density, cognitive function, dental cavities and kidney stones. Green tea lowers total cholesterols. However, although all the evidence from research on green tea is very promising, future studies are necessary to fully understand its contributions to human health. Green tea can be found in the form of "tea bags", capsules and even powder.

BCPSR/NS/14/17

Mechanism and Kinetics of Drug Release from Ocular Inserts

Chinar Chandanlal Chakrabarthy*, Anindya Jana, Sulagna Kar Bhowmik

NSHM College of Pharmaceutical Technology, NSHM Knowledge Campus,

Kolkata Group of Institutions, 124, B.L.Saha Road, Kolkata-700082

*E. mail: chinarchakrabarty@gmail.com

Ocular inserts are defined as sterile, thin, polymeric, drug-impregnated, solid or semisolid dosage forms for insertion inside the eye for prolonged action for pathological conditions like glaucoma, dry eye disease. Drug release from these devices may occur via diffusion/osmosis of drug or erosion of the polymer matrix. When the insert is placed in the eye, tear fluid penetrates the matrix, leading to swelling and polymer chain relaxation and finally drug diffusion following Fick's law. In case of osmotic drug delivery systems, it consists of two compartments. After insertion in the aqueous environment of the eye, water influx occurs into the first compartment and stretches the elastic membrane. It expands the first compartment and causes contraction of the second compartment so that the drug is forced through the drug release aperture in the outer semi-permeable membrane. Drug release follows Higuchi kinetics. In erosion-based system, matrix composed of biodegradable polymer erodes slowly controlling drug release which obeys Korsmeyer-Peppas equation. Any of the above-mentioned mechanism of drug release results in increased ocular residence which is unaffected by lacrimal secretion, release of drugs at a slow, constant and pre-determined rate governed by the dosage-form parameters. This route of administration is more patient-friendly and is able to deliver precise dose of drugs. However, a major disadvantage of ocular inserts resides in their 'solidity', that is, they are felt by the patients as an extraneous body in the eye. With good patient compliance and predictable zero-order drug release, ocular inserts are a good invention for the mankind.

BCPSR/NS/14/18

Nanocapsule: Advanced Drug Delivery in Future Medicine

Anindya Jana*, Chakrabarthy Chinar Chandanlal, Sulagna Kar Bhowmik

NSHM College of Pharmaceutical Technology, NSHM Knowledge Campus, Kolkata Group of Institutions, 124, B.L.Saha Road, Kolkata-700082

*E. mail: cool.anindya.cool@gmail.com

Nanocapsule can be defined as vesicular system in which drug is confined in a cavity consisting of an inner liquid core surrounded by a polymeric membrane. They exist in minimal size ranges from 10 to 1000nm. Advances in development of drug delivery system help in achieving less administration frequency, lower toxicity, higher drug concentration at pathological sites and better bioavaibility. Nanocapsules have several advantages over other drug delivery like high drug loading, site-specific targeting, possibility of administration by different routes, dose reduction by 10000 folds etc. They can be tailor-made to release drug in controlled fashion or targeted to specific sites by tuning the polymer. Polymer must be biodegradable and biocompatible. Commonly used polymers are polylactides, polyglycolides, polyanhydrides, polyacetylcyanoacrylates etc. Nanocapsule can be prepared by nanoprecipitation, emulsion diffusion, emulsion coacervation, polymer coating and layer by layer method. Magnetic field can be used as stimulus for drug release from nanocapsules. A focused magnetic field selectively activates the magnetic particle present in the nanocapsules. The magnetic field energy is converted to heat by magnetic particles causing a rapid temperature rise resulting in drug release. Improved delivery of therapeutic moieties through the targeted delivery in the form of nanocapsules opens new opportunities for the research and development of better treatment modalities for different pathological conditions.

BCPSR/NS/14/19

Rationality of using FDC Products in HIV Treatment: A Review on Indian Perspective

Tapabrota Mahapatra*, Avik Das

Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal

*E. mail: mahapatratapabrota@gmail.com

Fixed-dose combination products (FDCs) are medicines which contain two or more drugs in fixed proportions in the same formulation. FDCs are now gaining importance in the treatment schedule of various diseases which include HIV also. The increasing numbers of registered HIV cases that have emerged over the past few years have drawn attention of the medical fraternity. So the Indian medical practitioners are on an exploring spree for including new FDCs in the treatment schedule of HIV. Generic fixed dose combinations comprising two nucleoside reverse transcriptase inhibitors (NRTIs) and non-NRTI (NNRTI) are widely used in the scaling-up of antiretroviral treatment (ART) in developing countries. India receives nevirapine (NVP)-based highly active anti-retroviral treatment (HAART), the common companion drugs being lamivudine (3TC) and stavudine (d4T) or zidovudine (AZT). FDC of antiretroviral drugs (NVP 200 mg /3TC 150 mg/ d4T 30/40 mg or AZT 300 mg twice daily) for a minimum period of 2 week is used. In India, about 50-60 per cent of patients, initiated on ART receive a stavudine-based regimen. Antiretroviral drugs available as other fixed dose combinations also suppress HIV-1 replication alongwith improvement of other parameters. Fixed-dose antiretroviral formulations can thus constitute an important step ahead in effective control of HIV in the Indian perspective and inclusion of the same in the latest treatment schedule of HIV by MCI can be regarded as a welcome move which is envisaged to revolutionize the scenario of Indian public health in near future.

BCPSR/NS/14/20

Co –Processed Excipients –A Class of Novel Excipients

Sulagna Kar Bhowmik*, Anindya Jana, Chakrabarthy Chinar Chandanlal

NSHM College of Pharmaceutical Technology, NSHM Knowledge Campus,

Kolkata Group of Institutions, 124, B.L.Saha Road, Kolkata-700082

*E. mail: sulagna.karbhowmik@gmail.com

Disintegrants are excipients added to the solid dosage forms that facilitate the breakup or disintegration of tablet or capsule into smaller particles for rapid dissolution. Superdisintegrants are more effective than disintegrants at lower concentrations and enable very fast disintegration and dissolution. For further improving the overall characteristics of compressed materials, combination of excipients is used, usually produced by co–processing resulting in Orodispersible tablets. Such class of excipients is known as multifunctional excipients which reduce the chances of incompatibility and finally cost of production. Co-processed superdisintegrants are prepared from Microcrystalline Cellulose and other excipients having binder, disintegrating characters by solvent evaporation, spray and dry granulation method The technique leads to betterment of physical properties of powder mixtures during granulaton and also to tablets post-compression such as better flow, low/no moisture sensitivity, superior compressibility, rapid disintegrating ability and have better binding properties. Some examples of novel excipients include Ludipress (lactose, Kollidon 30, Kollidone .Cl-Ludipress Pharma Ingredients and Services BASF) used in chewable tablets, lozenges for lowering the degree of hygroscopicity ; Cellactose (Lactose,25% Cellulose Cellactose 80,Meggle Pharma)used in herbal formulation for imparting mouth feel property at low cost. Hence, co-processed excipients play an important role in design of solid dosage forms with improved performance, bringing a change in the economical market of pharmaceutical industries.

BCPSR/NS/14/21

Development of Controlled Release Matrix Tablets of Glipizide Using Natural Matrix Forming Agent

Antesh Jha

Annand College of Pharmacy (a constituent college of Sharda Group of Institutions), Keetham, Agra-282007

*E. mail: jha_antesh@rediffmail.com

The objective of the study was to develop guar gum matrix tablets for oral controlled release of glipizide. Matrix tablets of glipizide, using various viscosity grades of guar gum in 2 proportions, were prepared by wet granulation method and subjected to in vitro drug release studies. Glipizide matrix tablets containing either 30% wt/wt low viscosity, 40% wt/wt medium-viscosity, or 50% wt/wt high-viscosity guar gum showed controlled release. The drug release from all guar gum matrix tablets followed first-order kinetics via Fickian-diffusion. Guar gum matrix tablets HM2 showed no change in physical appearance, drug content, or in dissolution pattern after storage at 40^0C/relative humidity 75% for 6 months. When subjected to in vivo pharmacokinetic evaluation, the GM2 tablets provided a slow and prolonged drug. Based on the results of in vitro and in vivo studies it was concluded that that guar gum matrix tablets provided oral controlled release of glipizide

BCPSR/NS/14/22

Recent Trends of Phytosomes for Enhancement of Bioavailability of Botanicals and Neutraceuticals

Subhajit Hazra

Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal

*E. mail: bitts.hazra13@gmail.com

In the recent days, most of the prevailing diseases and nutritional disorders are treated with natural medicines. The effectiveness of any herbal medication is dependent on the delivery of effective level of the therapeutically active compound. But a severe limitation exists in their bioavailability when administered orally or by topical applications. Phytosomes are recently introduced herbal formulations. They are better absorbed and as a result of which produce better bioavailability and actions than the conventional phyto molecules or botanical extracts. Phytosomes are produced by a process whereby the standardized plant extract or its constituents are bound to phospholipids, mainly phosphatidylcholine, producing a lipid compatible molecular complex. Thus, phytosome exhibit better pharmacokinetic and pharmacodynamic profile than conventional herbal extracts. The present review represents the recent advances and applications of various standardized herbal extract phytosomes as a tool of drug delivery.

BCPSR/NS/14/23

Fast Dissolving Tablets: An Innovative Technology for Suffering Mankind

Juhi Singh*, Sajal Kumar Jha, Chencho Wangmo Lama, Amitava Ghosh

Bengal College of Pharmaceutical Sciences and Research, B. R. B. Sarani, Bidhannagar, Durgapur-713212, West Bengal, India

*E. mail: juhi270392@gmail.com

Fast dissolving tablets are solid dosage form containing medical substances, which disintegrates rapidly usually within a matter of second when placed upon tongue. It dissolves rapidly in the saliva without the need for water. The demand for fast dissolving tablets has been growing over other oral dosage forms among pediatric, geriatric, dysphagic, psychotic and non-cooperative patients and travellers. It is designed to leave minimal or no residue in mouth after administration and also provides a pleasant mouth feel. It allows high drug loading. It is adaptable and amenable to existing processing and packaging machinery. Fast dissolving tablet offers dual advantage of solid dosages forms and liquid dosage forms. This dosage form allows accurate dosing, enhanced bioavailability, rapid action, patient compliance, enhanced palatability, simple packaging, decrease dose dumping and cost effective. Different techniques used to prepare fast dissolving tablets are freeze drying, tablet molding, direct compression ,taste masking, mass extrusion, cotton candy process, melt granulation, phase transition, nanonization, fast dissolving films, spray drying, sublimation. Several drugs can be administered through fast dissolving tablets such as analgesics, anticoagulant, antiinflammatory, anthelmintics, antidepressants, antiepileptics, antidiabetics, antibacterial, etc. This drug delivery system is currently the gold standard in the pharmaceutical industry as it's the safest, most convenient and has highest patient compliance. The present review focuses on significance of advancement in oral drug delivery and the techniques and technologies available for their manufacturing.

BCPSR/NS/14/24

UV- Spectrophotometric Method for Estimation of Paractamol in Solid Oral Dosage Form

Subham Das*, Subhajit Ghanty, Anirban Mondal

Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal

*E. mail: subhajitmpharm@gmail.com

A simple, sensitive, specific and accurate and precise UV-Spectrophotometric method has been developed and validate for the estimation of Paracetamol in solid oral dosage form. The absorption maxima of the drugs were found to be 243 nm, in methanol: water (15:85), using a Thermo Scientific UV–Visible spectrophotometer (model Evolution-201). Paracetamol obeyed Lambert Beer's law in the concentration range of 5-15 µg/ml and the correlation coefficient linearity was found to be 0.999. The method was validated for various parameters according to ICH (Q2 R1) guidelines. There was no interference due to blank and placebo with analyte. The maximum and minimum percentage recovery was found to be 98.02 % to 100.97%. The low relative standard deviation values for precision was found to be for inter day-0.093, intraday-0.99 and reproducibility- 0.172 respectively. Assay results were in good agreement with label claim. Thus, this analytical method was found more convenient, efficient, robust and economical method for the trace analysis of drug in raw material, tablets formulation and suitable for routine quality control analysis.

BCPSR/NS/14/25

Natural Products Used in the Treatment of Rheumatoid Arthritis

Niladri Bhattacharjee*, Nilanjan Ghosh, Avijit Chatterjee

Dr. B.C. Roy College of Pharmacy and A.H.S., Bidhannagar, Durgapur

*E. mail: neel.bcpsr@gmail.com

Rheumatoid arthritis is chronic, progressive, disabling autoimmune disease characterized by systemic inflammation of joints, damaging cartilage and bone around the joints. Due to the progressive nature of the disease, extra-articular complications will occur in multiple organ systems such as lungs, heart and eyes.The exact cause of RA is unknown. Suspected causes are bacterial infection, genetic marker, stress, viral infection. Over the past decade, the management of RA has evolved with disease-modifying antirheumatic agents with biologic activity targeting specific components of the immune system but they have adverse effect that can compromise the therapeutic treatment. Unfortunately, in modern conventional treatment this disease is treatable but not curable. Complementary and alternative medicines are a group of diverse medical and healthcare systems, practices and products that aren't presently considered to be part of conventional medicine is becoming popular with more and more people accepting its holistic approach to healing. Natural products play a significant role in human health in relation to the prevention and treatment of inflammatory conditions. Further studies are being conducted to investigate the mechanism of action, metabolism, safety and long term side effect of these natural products, as well as interactions between these natural products with food and drug components. There are many natural products that have shown anti rheumatoid arthritis properties which can relieve the pain and inflammation in the joints. An attempt has been made to discuss some natural products with anti-rheumatic activity.

BCPSR/NS/14/26

Polysaccharide Based Interpenetrating Network Particulate System for Controlled Drug Delivery Applications

Sougata Jana

Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal

*E. mail: janapharmacy@gmail.com

Natural polysaccharides are biodegradable and biocompatible polymers have been widely used over the past few decades for the development of drug delivery systems. Now a day's polysaccharide based interpenetrating polymer network (IPN) in designing of novel particulate systems for sustained drug release. IPNs are the polymeric systems composed of at least two polymers or more, which are obtained when at least one polymer network is synthesized and/or cross-linked independently in immediate presence of other(s). IPNs possess improved mechanical properties and capacity to control the drug release behavior. The fabricated polysaccharides of IPNs were characterized by the FTIR, SEM analyses. FTIR study revealed the no polymer and drug interaction. *In vitro* drug release and drug entrapment study was also evaluated. The release mechanism was evaluated in fittings of different kinetics model. The *in vivo* study drug loaded IPNs particulate systems were performed in the carrageenan-induced rat model. IPNs based polymeric matrix system for drug delivery as well as in tissue engineering for biomedical applications.

BCPSR/NS/14/27

Synthesis and Antimicrobial Activity of Some Benzoxazole, Benzimidazole and Benzothiazole Derivatives

Laliteshwar Pratap Singh*; Dhananjay Rai, Brijyog, R.B. Singh

Institute of Pharmacy, Harishchandra Post Graduate College, Bawan Beegha Campus, Azamgarh Road, Post-Cantt, Varanasi-221 002, Uttar Pradesh, India

*E. mail: ravimgs@gmail.com

The enhancement of bacterial resistance of pathogens to currently available antibiotics constitutes a serious public health threat. So, there is constant need of new antibacterial agent having novel mechanism to act against the harmful pathogens. The present study deals with antimicrobial evaluation of some substituted benzoxazole, benzimidazole and benzothiazole were synthesized by reacting substituted aniline with potassium thiocyanide it forms N-substitutedbenzothiazol- 2-yl) amines this upon reacting with DMF, CS_2 it forms N-Substituted dimethyl benzo[d]thiazol-2-yl) carbonodithioimidate finally on reacting with *o*- phenylenediamine it forms N-Substituted (benzo[d]thiazol-2-yl)-1H-benzo[d]imidazol-2-amine. All the synthesized compounds were screened for antibacterial activity against the representative panel of Gram-positive and Gram-negative bacteria strains. The biological screening identified that some compounds showed very good antibacterial activity whereas the other entire compound showed mild to moderate antibacterial activity as compared to standard drug.

BCPSR/NS/14/28

The *In Vitro* Antioxidant Activity and Total Phenolic Contents of *Achyranthus aspera Linn*

Brijyog*, Laliteshwar Pratap Singh, Dhananjay Rai

Institute of Pharmacy, Harishchandra Post Graduate College, Bawan Beegha Campus, Azamgarh Road, Post-Cantt, Varanasi-221 002, Uttar Pradesh, India

*E. mail: ravimgs@gmail.com

In this study, antioxidant activity, total phenolic content and phytochemical screening of achyranthus aspera was evaluated. The antioxidant property was evaluated for all extract by D.P.P.H. method, in our experimental result revealed, Hydroalcoholic extract IC50 value was about 56.47% and aques extract IC50 value was about 50.60%. All the extracts show positive reactions for Alkaloids, Glycosides, Flavonoids, Carbohydrets, Tannins and Phenolic compounds. More over total phenolic concentration equivalents to gallic acid was found in 89.26 mg/g of hydroalcoholic extract and 74.38mg/g of aqueous extract, which correlated with antioxidant activity. Finally conclusion was drawn that the hydroalcoholic extract of *Achyranthus aspera* showed novel inbuilt promising total phenolic contents and antioxidant activity.

BCPSR/NS/14/29

Seasonal and Geographical Variations in Chemical Constituents of *Bauhinia purpurea* Linn and *Centipeda minima*

Ashish Sarkar*, V.D.Tripathi

Institute of Pharmacy, Harishchandra Post Graduate College, Bawan Beegha Campus, Azamgarh Road, Post-Cantt, Varanasi-221 002, Uttar Pradesh, India

*E. mail: a.sarkar55@gmail.com

Bauhinia purpurea Linn. and *Centipeda minima* has been used in several Ayurvedic preparations as well as a number of formulations. The plant being a vital component in these formulations, its quality and consistency is of prime importance. The present study deals with the study of the presence of any major variation in the plant due to change in season or region. The Hydroalcoholic extracts which is known to be most effective have been compared for the plant collected during three different seasons, as well as from three different regions. This study involves investigation of total phenolic content; concentration of flavonoids and antioxidant. The concentration of total phenolic content was determined using the Folin-Ciocalteu´s reagent and obtained values were compared no significant changes observed. Flavonoids concentration shows significant changes. The antioxidant activity was determined in vitro using DPPH reagent significant change in antioxidant activity was observed. Based on the obtained results it can be concluded that the concentrations of secondary metabolites depend on the change in season or region of the plant therefore there collection is an important factor for quality of formulation.

BCPSR/NS/14/30

Cosmetic Technique Its Role in Pharmacy

Jugal Sutradhar*, Supriyo Das, Adesh A Bawane

Institute of Pharmacy, Harishchandra Post Graduate College, Bawan Beegha Campus, Azamgarh Road, Post-Cantt, Varanasi-221 002, Uttar Pradesh, India

*E. mail: jugalsutradhar@gmail.com

The word cosmetics is originated from the Greek word "Kosmetics" it can also be define as the external preparation meant for applying on the external part of the body i.e. Nails- Nail Lacquers, Nail polish, Lacquer remover etc., Skin-Powder, Lipsticks, Cream, Lotion etc., Hairs-Shampoos, Conditioner, Cream, Bleaches, Coloring Preparation etc., Eye - Eyeliner, Mascaras, Eye shadows, and Eye Pencil, Teeth-Dentifrices, Tooth paste, powder, gels etc. In 1974 cosmetic excipient is define as "any more or less inert substances added to a prescription in order to interpretation". Pharmaceutical excipients like white bees wax, paraffin wax, cetyl ester wax, white wax, talc, bentonite, titanium dioxide, isopropyl myristate, cetyl alcohol, sorbitan monooleate, glycerin, stearic acid, propylparabin, methyl parabin, isopropyl pamitate, plyoxyethylene sterates which is used for tablet, capsule, polishing of sugar coated tablet, parenteral, ophthalmic, suppositories, preparation of controlled release formulation, modified release solid dosage forms, emulsion, lotion, Creams and ointment, penetration enhancer for transdermal formulation and it is also used in the dermocosmetic products. Moving forward in the 21st century the more & more cosmetic companies are increasing the development and marketing of the product that provide therapeutic effect along with their cosmetic efficiency.

BCPSR/NS/14/31

Impact of New WTO Agreement in Patent Act on Indian Pharmaceutical Industry

Pradeep Kumar*, Manish Kumar Gupta

Institute of Pharmacy, Harishchandra Post Graduate College, Bawan Beegha Campus, Azamgarh Road, Post-Cantt, Varanasi-221 002, Uttar Pradesh, India

*E. mail: rabimgs@gmail.com

The pharmaceutical production in India began indigenously in 1910, by Bengal Chemical and Pharmaceutical Works in Calcutta and Alembic Chemicals in Baroda. Thus it started an era of pharmaceuticals production in India. The Indian Pharmaceutical Industry had little technological capabilities to manufacture modern drugs locally till 1950, has emerged as successful high technology based industry with latest drugs in various drug delivery forms. The Indian Pharmaceutical Industry is estimated to be $ 6.50 billion of $650.00 billion global pharmaceutical industry. It is growing at about 10 percent annually. It ranks 3rd largest in terms of volume and 14th in terms of value. India has carried out three amendments in March 1999, June 2002, and April 2005 on the Patent Act 1970 to bring Indian Patent Regime in harmony with WTO agreement on Trade Related Intellectual Property Rights (TRIPS). The term of patenting has been increased to a 20 years period. It has opened a new door of free imports, foreign direct investment (FDI) and technology transfer in pharma sector. Indian Pharmaceutical Industry is looking this as both challenges and opportunities. The future of pharmaceutical industry in India is quite positive. India is an attracting global outsourcing destination for drugs and pharmaceuticals. The low-cost, high-quality medicines with US FDA approved plants Indian Pharmaceutical Industries may become global players. But it also has to face very tough competition with the MNCs.

BCPSR/NS/14/32

Parthinium a Potential Weed for Preparing Alfa Cellulose and Its Cellulose Sulfate Derivative

Neetu Pandey

Sardar Bhagwan Singh Post Graduate Institute, Balawala, Dehradun
Uttarakhand, India

*E. mail: neetu_bhtt@yahoo.co.in

Parthenium hysterophorus, family Verbenaceae, is a noxious weed which has imposed a great threat to land productivity. Since it is rich in lignocellulosic material, so an attempt has been made to isolate alpha cellulose from *Parthenium hysterophorus* and to prepare cellulose derivative of commercial utility. So, process has been optimized for preparing alpha cellulose by chemical means from this weed and then derivatizing it to prepare cellulose sulfate. Cellulose molecule contains three reactive hydroxyl groups in each anhydro D-glucopyranose unit. It is, possible to substitute three hydroxyl groups at position 2, 3 and 6 with other substituent which play an influential role in the preparation of cellulose derivatives. Cellulose sulfate is a important cellulose derivative, which varies with degree of substitution (DS). At high DS above >2.0 it shows anticoagulating or antithrombinic activity which can be increased by addition of more sulfate group to the cellulose molecules. Anti-HIV activity of cellulose sulfate is also reported in literature. DS above >0.3 cellulose sulfate products are applicable in oil well drilling, in secondary oil recovery, in cosmetics, in food products, in wax emulsions, paints and photographic emulsions, etc. Sodium cellulose sulfate possess excellent water solubility at DS level as low as 0.25. A water-soluble cellulose sulfate ester with a degree of substitution of 0.312 was prepared and reaction conditions for all the variables were optimized *viz.* aqueous sulfuric acid content 30 ml per g of alpha cellulose, reaction time 60 min's, temperature 0^{o}C and concentration of aqueous sulfuric acid 34.2 N. The optimized product exhibited cold-water solubility and a clear solution in aqueous medium suggesting interesting rheological properties.

BCPSR/NS/14/33

Designing of Prototype from Potential Anti-Dengue Phytoconstituents

Alok Maithani*, Anchal Kasyap, Versha Parcha

Sardar Bhagwan Singh Post Graduate Institute, Balawala, Dehradun

Uttarakhand, India

*E. mail: alok_maithani@rediffmail.com

Dengue fever causes mortality and morbidity around the world, specifically in the Tropics and subtropic regions, which has been of major concern to medical science. As a consequence, the search for new anti-dengue agents from medicinal plants has assumed more urgency than in the past. In our present study we studied chemical structure and behaviour of various phytoconstituents present in five antidengue plants viz., *Carica papaya, Traditional medicine, Boesenbergia rotunda, Andrographis paniculata, and Alternanthera philoxeroides.* It was observed that a series of flavonoids present in these plants were found to be effective against DFV-1. A common prototype structure was drawn from the comparision of groups and an SAR was proposed. The prototype structure contains minimum possible groups responsible for anti-dengue effect. Also the possible mode of action of flavonoides is anticipated due to its antagonistic potential at ATP binding site and the cytosolic nucleotide binding domain at p-glycoprotein transporters.

BCPSR/NS/14/34

Captopril Loaded Bovine Serum Albumin Microparticles for Novel Drug Delivery System

Manish Kumar Gupta*, Pradeep Kumar, Adesh A Bawane
Institute of Pharmacy, Harishchandra Post Graduate College, Bawan Beegha Campus, Azamgarh Road, Post-Cantt, Varanasi-221 002, Uttar Pradesh, India
*E. mail: manishg3010@gmail.com

The quest never ends. From the very beginning of the human race; the quest is going on for newer and better alternatives, and in case of drugs delivery it will continue; continue till we find a drug deliver with maximum efficacy and no side effects. Biodegradable microparticles have proven to be useful in a wide range of controlled drug delivery applications. Albumin microparticles have found many applications in diagnosis and treatment in recent years and more than 100 diagnostic agents and drugs have been incorporated into albumin microparticles. Microparticles can be prepared by well-established manufacturing processes. The drug can be distributed homogeneously throughout the polymer matrix (microparticles), or it can be encapsulated into a polymer surrounding to form a drug reservoir (microcapsules). It is also possible to adsorb drug onto the particle surface by ionic or chemical interactions depending on the application. In this study, bovine serum albumin (BSA) based microparticles bearing captopril were prepared by an emulsification–heat stabilization technique. The prepared microparticles were studied for drug loading, particle size distribution, *in vitro* release characteristics, *in vivo* tissue distribution study and stability studies. The microparticles had mean diameter between 1.5 and 12µm of which more than 74% were below 5µm and incorporation efficiency of 43–65%was obtained. *In vitro* release profile for formulations containing captopril-loaded albumin microparticles with heat stabilizing technique shows slow controlled release up to 24 h by using metabolic shaker. The *in vivo* result of drug-loaded microparticles showed preferential drug targeting to liver followed by lungs, kidneys and spleen. Stability studies showed that maximum drug content and closest *in vitro* release to initial data were found in the formulation stored at 4 °C.

BCPSR/NS/14/35

Fabrication of Metronidazole loaded Tamarind Seed Polysaccharide Patch for Buccal Drug Delivery

Bibek Laha*, Sougata Jana

Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal

*E. mail: bibek_gcts@rediffmail.com

The objective of the study was the buccal drug delivery of metronidazole using tamarind seed polysaccharide (TSP). Tamarind seed polysaccharide polymer (D-galactose, D-xylose and D-glucose) obtained from endosperm of kernels of seeds. The formulated gel was characterized by the measurement of mucoadhesive strength, Folding Endurance, *Ex Vivo* Residence Time. The drug and polymer interaction was studied by the FT-IR spectroscopy. The *Ex-vivo* permeability of metronidazole from the gel was evaluated using Franz diffusion cells mounted with buccal membrane of goat. After this study we observed that the plasticizer and cross linking agent changes the release pattern of the drug from the buccal patch. The release kinetics of drug of different formulation follows zero order and Higuchi equation. The tamarind seed polysaccharide appears to be a promising candidate as a vehicle for the buccal drug delivery and local mucoadhesive delivery system.

BCPSR/NS/14/36

Human Placenta-A Detailed Study

Mehulee Acharya*, Sipra Sarkar

Bengal College of Pharmaceutical Sciences and Research, B. R. B. Sarani, Bidhannagar, Durgapur-713212, West Bengal, India

*E. mail: mehuleeacharya@gmail.com

The placenta is a one-of-a-kind organ: made cooperatively by a mother and her baby, the symbol and product of their relationship. Development of the placenta begins as soon as the blastocyst implants in the maternal endometrium (6–7days after fertilization). For the duration of pregnancy, it works to nourish and support the baby by facilitating transport of nutrients and oxygen, as well as producing progesterone, the hormone that tells her body to stay pregnant. In addition to playing an essential role in fetal development, nutrition and maintenance of fetal tolerance, and acting as a source of hematopoietic stem cells, placental tissue also draws great interest as a source of other types of progenitor/stem cells, including mesenchymal stem cells. After the birth, this primary purpose is complete, but the placenta is still useful. As evidenced by Traditional Chinese Medicine as well as modern pharmaceutical & beauty product companies, the placenta contains components that are beneficial to the human body. More recently, this tissue has also been investigated as a potential source of stem cells for application in regenerative medicine. There's a sweet completeness to taking the placenta and returning it to your body, where it will help you recover from pregnancy and birth, and if you are breastfeeding, it will continue to feed her baby as well.

BCPSR/NS/14/37

A Literature Review on "Gestational Diabetes"

Debapriya Bera*, Debayan Chakraborty,Tapabrota Mahapatra, Rana Datta
Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal
*E. mail: beradebapriya.pharmaceutical@gmail.com

Gestational Diabetes is a condition in which women without previously diagnosed diabetes exhibit high blood glucose level during pregnancy. Gestational Diabetes is caused when insulin receptors do not function properly. This disease effects between 2-5 % of pregnant of women. During pregnancy, usually around the 24th week many women develop Gestational diabetes. This is likely due to pregnancy related factors such as the presence of human placental lactogen that interferes with susceptible insulin receptors. The symptoms of this disease are irregular period, ovulation problems, weight gain, excessive hair growth, small cysts on women's ovaries, infection of vagina, increase thirst etc. The classical risk factors for developing gestational diabetes are polycystic ovary syndrome, prediabetes, impaired glucose tolerance, being overweight, obese etc. Prevention of Gestational Diabetes are smoking cessation, choose foods high in fiber and low in fat and calories, exercise before and during pregnancy, etc. Diagnostic tests detect high level of glucose in blood sample. In the United States most obstetricians prefer universal screening with a screening glucose challenging test. As with diabetes mellitus in pregnancy in general, babies born to mother with gestational diabetes are typically at increase risk problems such as low blood sugar and jaundice. Women treated for this disease generally have smaller birth babies, leading to other problems, such as survival rate of premature and early births, particularly male babies. There is no consensus as to when to initiate insulin therapy, but more conservative guidelines are in place to help minimize macrosomia and its associated risks to the infant. It is generally recommended that pregnancies complicated by GDM do not go beyond term.

BCPSR/NS/14/38

Japanese Encephalitis

Shilpa Majumder*, Sipra Sarkar

Bengal College of Pharmaceutical Sciences and Research, B. R. B. Sarani, Bidhannagar, Durgapur-713212, West Bengal, India

*E. mail: shilusana@gmail.com

Japanese encephalitis is a mosquito–borne viral disease that affects horses, donkeys, pigs and humans. In countries where it is endemic, this virus causes reproductive losses in swine and encephalitis in horses. Birds, which are infected asymptomatically, serve as important reservoir hosts. In humans, Japanese encephalitis can be a very serious disease: although most infections are asymptomatic, clinical cases tend to manifest as severe, often fatal encephalitis. Epidemics, which occur periodically in endemic regions, can cause significant morbidity and mortality in unvaccinated humans and animals. Japanese encephalitis vaccines can prevent disease in horses and pigs. Vaccines are protective for all genotypes. Vaccinating pigs can also decrease the amplification of the virus, and help protect horses and humans. However, Japanese encephalitis virus is also amplified in birds, and some infections will still occur. Stabling animals in screened barns can be partially protective, particularly during outbreaks. Peak mosquito biting activity is usually from dusk to dawn. Barn fans are helpful, as mosquitoes do not fly well in strong winds. The walls may also be sprayed with insecticides. Insect repellents can help protect individual animals. In some climates, horses may be rugged and hooded in lightweight permethrin-treated material. Environmental control of mosquitoes can reduce the number of vectors, but in many areas it is impractical. Whenever possible, pigs should be raised away from horses

BCPSR/NS/14/39

Encephalitis: Origin, Diagnosis and Treatment

Debayan Chakraborty*, Rana Datta

Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal

*E. mail: debayan.pharmaceutical@gmail.com

Encephalitis is a vector borne disease caused by a group B arbovirus (Flavivirus) transmitted by culicine mosquitoes, notably *C.tritaeniorhynchus*, *C.vishnui*, *C.gelidus* and along with some anophelines. It is a zoonoyic disease infecting mainly animals and incidentally man. Pathogenetically encephalitis is an acute inflammation of the brain. The symptoms include headache, fever, confusion, drowsiness, fatigue, seizures or convulsions, tremors, hallucinations, and memory problems. Diagnostic tests are done by Brain imaging (MRI, CT), Spinal tap (lumbar puncture), Brain biopsy. The most common causes of acute viral encephalitis are rabies virus, herpes simplex, poliovirus, measles virus, varicella zoster virus, JC virus, Japanese encephalitis virus, VEE virus, variola minor virus and variola major virus. Treatment includes vaccination as well as drug therapy. The vaccine has been jointly developed by scientists at the ICMR, NIV and Bharat Biotech International ltd. Corticosteroids (e.g. methylprednisolone) are used to reduce brain swelling and inflammation. For *Mycoplasma* infection, parenteral tetracycline is given. Anti-inflammatory drugs (acetaminophen, pyrimethamine, sulphadimidine, ibuprofen, naproxen sodium) and antiviral drugs (Acyclovir, Ganciclovir, Foscarnet) are commonly used to treat encephalitis. As more antibody assays are developed, the spectrum of immunotherapy-responsive phenotypes will continue to expand.

BCPSR/NS/14/40

Current Scenario and Future Prospective of Polymeric Nanotechnology in Prolong Drug Delivery

Sarthak Adhikari*, Sougata Jana

Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal

*E. mail: sarthakadhikari30@gmail.com

Now a day's nanocarriers are gaining increasing attention for their ability to co-encapsulate multiple therapeutic agents and to synchronize their delivery to the diseased cells. Polymeric nanoparticles for prolong drug delivery have been focused, because biodegradable and biocompatible nature and smaller size, can easily penetrate in the endothelium in inflammatory sites, epithelium (e.g., intestinal tract and liver), tumors. The advantages of the use of these kinds of colloidal nano-carriers are protection of unstable drugs from degradation and control of drug release rate. Nanoparticles are solid particles ranging in size, 1–1000 nm. nanoparticles. In general, the nanosize of these particles allows for efficient uptake by a variety of cell types and selective drug accumulation at target site. These systems in general can be used to provide targeted (cellular or tissue) delivery of drugs, improve bioavailability, sustain release of drugs or solubilize drugs for systemic delivery. This process can be adapted to protect therapeutic agents against enzymatic degradation (i.e., nucleases and proteases). Various nanotechnology such as polymeric micelles and liposomes, hydrogels, dendrimers, nanotubes and quantum dots have been used to delivery drugs. In this article we give an overview of development of nanotechnology and application in prolong drug release and tissue engineering scaffolds.

BCPSR/NS/14/41

MicroRNA: Novel Therapeutic Approach in Rheumatoid Arthritis

Sayan Chatterjee*, Nilanjan Ghosh, Goutam Kumar Bagchi

Dr. B.C. Roy College of Pharmacy and A.H.S., Bidhannagar, Durgapur

*E. mail: eros.engage@gmail.com

MicroRNAs (miRNA) are small, non coding molecules that modulate gene expression at the post-transcriptional level by predominantly hybridizing to complementary in the 3'-untranslated region of their corresponding mRNAs. Currently, there are 939 mature human miRNA sequences listed in the Sanger updated miRNA registry. There are approximately 1500 predicted miRNAs in the human genome that may regulate the expression of one third of our genes. Rheumatoid arthritis (RA), is a systemic, inflammatory autoimmune disease with irreversible joint destruction. Recently, the expression of some miRNAs, such as miR-146a, is up regulated in different cell types and tissues in RA patients. Today, the most challenging issue in RA is the identification of biomarkers for early disease diagnosis and for prediction of drug response. Among molecules that can fulfill this expectation, miRNAs certainly represent an option. The potential value of miRNAs as a novel class of biomarkers is well documented in cancer. Moreover, the presence and stability of miRNAs in body fluids provide fingerprints that can serve as molecular biomarkers for disease diagnosis and therapeutic outcome. As a growing body of evidences reveals abnormal expression of specific miRNAs in RA tissues, the use of a blood-based miRNA signature for optimal diagnosis and treatment becomes a realistic option. Here we try to give a brief approach of miRNA in RA for treatment concern.

BCPSR/NS/14/42

Conservation of Biodiversity

Vikas Sharma[1*], Manoj Sharma[2]

[1]*Shri Rawatpura Sarkar Institute of Pharmacy, Datia, Madhya Pradesh*

[2]*SOS in Pharmaceutical Sciences, Jiwaji University, Gwalior*

*E-mail: vikassharma15@gmail.com

Wildlife includes any animal, insects, aquatic, or land vegetation that forms part of any habitat. This includes all varieties of flora and fauna, what is popularly known as biological diversity. India is a unique subcontinent with vast variation in geographic area, topography and climate. It has a great diversity of natural ecosystems from cold and high Himalayan ranges to seacoasts, from the wet north-eastern green forests to the dry north-western arid deserts, different types of forests, wetlands, islands, estuaries and oceans. Every ecosystem has own unique representation of species. Biodiversity, as measured by the numbers of plant and vertebrate species is greatest in the Western Ghats and the Northeast. This is because of the presence of tropical rainforests that are typically the richest habitats for species diversity. Both these areas are included in the world's list hotspots of biodiversity: small geographic areas with high species diversity.

BCPSR/NS/14/43

Overview of *Chlorella* as a Potent Nutraceuticals Product

Abhilash Mittal*, Anil Gupta, Bankim Chandra Nandy

Jayoti Vidyapeeth Women's University, Jaipur, Rajasthan, India

*E. mail: abhilashamittal24@gmail.com

Chlorella is a type of algae that grows in fresh water. The whole plant is used to make nutritional supplements and medicine. The name *Chlorella* is taken from the Greek *chloros*, meaning green, and the Latin diminutive suffix ella, meaning small. German biochemist and cell physiologist Otto Heinrich Warburg, awarded with the Nobel Prize in Physiology or Medicine in 1931 for his research on cell respiration, also studied photosynthesis in *Chlorella*. Microalgae have been used by man for thousands of years. Indigenous populations used mainly edible blue-green algae like Spirulina (Arthrospira), Nostoc and Aphanizomenon species, among other things, to survive during famine. The first investigation on antibiotic activity of algae was carried out by Pratt et al. in 1944. Because of their chemical composition, microalgae have the potential to enhance the nutritional value of conventional food. In human nutrition, microalgae are marketed in different ways. They can be added to noodles, chewing gum, beer, tea, bread or soft drinks or serve as a natural stain. Currently, *Chlorella* is produced by more than 70 companies and contains several novel properties. A special polysaccharide is considered as the most important substance and serves as active immunostimulator, free-radical scavenger and reducer of blood lipids. Cultivation and downstream processing are other key factors to high-quality products. Algae are considered as the only alternative to current bio-fuel crops such as corn and soybean, as they do not require arable land. microalgae not only due to their high growth rate and high photosynthetic efficiency, but particularly due to the possibility of controlling their metabolism to produce relatively high contents of energy-rich compounds, either starch and/or lipids.

BCPSR/NS/14/44

Optimization and *In Vitro-In Vivo* Evaluations of Delayed Release Multi-Particulates System of Celecoxib

Bankim Chandra Nandy[1,2]*, Bhaskar Mazumder[2], Anil Gupta[1], Abhilash Mittal[1]
[1]*Department of Pharmaceutical Sciences, Jayoti Vidyapeeth Women's University, Jaipur, Rajasthan, India*
[1,2] *Department of Pharmaceutical Sciences, Dibrugarh University, Dibrugarh-786004, Assam, India*
*E. mail: talktobankim@gmail.com

Celecoxib is a widely used non-steroidal anti-inflammatory drug (NSAID) and extensively employed for treatment of arthritis. The objective of the present study was to design, and develop of micro particulates system, for colon specific delivery of celecoxib for both local (in prophylaxis of colorectal adreno-carcinoma) and systemic (in chrono-therapeutic treatment of arthritis) therapy. Central composite technique was employed and it was optimized by RSM. *In vivo* studies were carried out in animal model and *in vitro* released and *in vivo* absorption data of the drug was correlated with each other. The optimized microspheres showed particle size of 76.85±0.24 µm and drug released of 0.45±0.04 %, 33.80±2.46 % and 79.90±2.25 % at 2 h in simulated gastric fluids (pH 1.2), at 5 h in simulated intestinal fluids (pH 6.8), and at 9 h in simulated colonic fluids (pH 7.4), respectively. Drug release from the formulations decreased with increasing the amount of polymer in the microspheres and it was increased with increase the concentration of surfactant and stirring speed. $t_{50\%}$ of SCF7 formulations was showed at 357 min. Conventional marketed product of celecoxib showed the maximum plasma concentration (C_{max}) 868.26 ± 212.23 ng mL^{-1} and the time to reach this maximum concentration (T_{max}) was 2.802 ± 1.47 hrs., while they were 1060.44 ± 324.62 ng mL^{-1} and 6.67 ± 2.43 h, respectively, for the optimized formulation (SCF7). The prolonged T_{max} of optimized microspheres indicated that drug absorption took place after a lag time. A linear and significant correlation (R^2 = 0.963, $p<0.01$) represented point-to-point relationship between *in vitro* released and *in vivo* absorption data of optimized formulation. Therefore this approach suggested that the combination of eudragit S100 and ethyl cellulose may be useful as a promising carrier for the delivery of maximum amount of celecoxib in intact form to the colon.

BCPSR/NS/14/45

A Study of CNS Effects of Ebastine, a Newer Antihistamine Compared to Pheniramine Maleate, a First Generation Agent in Suitable Animal Models

Ekta Singh[1]*, Santanu K Tripathi[2], Avik Das[3], Sukanta Sen[2]
[1]*Department of Veterinary Pharamacology and Toxicology, West Bengal University of Animal and Fishery Sciences, Mohanpur, Kolkata, India*
[2]*Calcutta School of Tropical Medicine, 108, Chittaranjan Avenue, Kolkata-700073, India*
[3]*Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal*
*E. mail: singhekta2012@gmail.com

Urticaria and allergic rhinitis are two of the most prevalent hypersensitivity disorders encountered in clinical practice. Antihistamines still form the cornerstone of the therapy for both of these diseases. But the first generation H_1 receptor antagonists are associated with side effects like sedation and anticholinergic manifestations. The second generation antihistamines though more competent with regard to the side effect profile may result in cardiotoxicity by precipitating torsades de pointes. With the recommendation from the CONGA committee, efforts are on to develop few members of the second generation into third generation molecule with some structural modification. In our project, the most competent second generation drug ebastine has been chosen as a future third generation molecule and its CNS effects have been evaluated so as a part of a larger project which aims to identify the properties of the drug which needs to be modified. For evaluation the animals were divided into four groups designated as control, standard (PM 25) and two test doses (ET 10 and ET 20).A set of neurobehavioural assays were employed for the evaluation of CNS effects which includes a modified functional observational battery, locomotor activity, vestibulosensory coordination assessment test, muscle relaxant test and test for sedation. In the modified test FOB test we didn't find any significant depressive effect associated with repeated administration of the test drug. In the other test of the paradigm like actophotometer, hole board, fire place test, traction test, rota rod test, righting reflex test there was no significant difference in between the test and the control groups. Thus we concluded that ebastine had no appreciable CNS side effects and thus can be developed into a third generation molecule. Thus is fit in this regard for its development into third generation molecule.

BCPSR/NS/14/46

Epigenetic Mechanisms Underlying the Pathology of Post-Traumatic Stress Disorders

Tuhina Sarkar*, Avik Dutta

Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal

*E. mail: Tuhina.Sarkar180@gmail.com

Last two decades have witnessed the advent of molecular psychiatry in its full valour. Now it is clear that a behavioral change triggered by experience is underpinned by regulation of certain gene expression. The concept of an epigenetic basis behind the behavioral modifications induced by experience has its origin in the so called "Two Hit Hypothesis". The epigenetic mechanisms playing a role in experience induced behavioral modifications generally involve regulation of chromatin structure and DNA methylation. They result in transcriptional changes necessary for some experience to trigger long term change in behavior. Epigenetic process helps to induced plasticity in the neural networks that support memory formation and information storage in central nervous system In this review, we describe data supporting the hypothesis that epigenetic molecular mechanisms, especially DNA methylation and demethylation, drive long-term behavioral change through active regulation of gene transcription in the CNS. These epigenetic mechanisms most often forms and stabilizes context triggered fear conditioning based in the hippocampus and amygdale. Context triggered fear conditioning is an important feature of Post-Traumatic Stress Disorder (PTSD). In this review we have presented an overview of molecular basis of learned fear in the context of post-traumatic stress disorder. Our research is also envisaged to lay the foundation of epigenetic pharmacotherapy that can open up a new avenue of drug treatment for PTSD.

BCPSR/NS/14/47

Analytical Method Validation of Quantitative Analysis of Aciclovir Tablet I.P.

Ayantika Sil

Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal

*E. mail: ayantikasil@gmail.com

The process of analytical method validation should demonstrate that the method is fit for its purpose. The validation should follow a plan that includes the scope of the method, the method performance characteristics and acceptance limits. Parameters usually examined in the validation process are limits of detection and quantitation, accuracy, precision, specificity, linearity, range and ruggedness. A validation report should be generated with all experimental conditions and the complete statistics. If standard methods are used, it should be verified that the scope of the method and validation data, for example, sample matrix, linearity, range and detection limits comply with the laboratory's analyses requirements, otherwise the validation of the standard method should be repeated using the laboratory's own criteria. The present article gives a brief review on analytical method validation. This study establishes that UV Spectrophotometric method is validated for the quantitation of Aciclovir in bulk and pharmaceutical dosage form. The validation of the proposed method was carried out as per ICH Guidelines. It was found that the drug was shown the linearity between the range 0.012 – 0.018 mg/ml. The regression of the curve was y = 0.001x + 0.003. The validated method was found to be with %RSD 0.076393 for Aciclovir. The ruggedness of the method was studied by taking in account of varying different parameters. Based on the performance characteristic the proposed UV method was found to suitable for the estimation of Aciclovir in bulk and pharmaceutical dosage form.

BCPSR/NS/14/48

Evaluation of the Antiulcer and Hepatoprotective Activity of the Aqueous Extract of Aerial Parts of *Ocimum canum*

Raja Chakraborty[1],Mohammed Rashid[1*], Prashanta Kumar Deb[2], Sipra Sarkar[1], Amitava Ghosh[1],
Anuradha De[3]

[1]*Bengal College of pharmaceutical Sciences and Research, B.R.B Sarani, Bidhannagar, Durgapur-713212. West Bengal, India*

[2]*Department of Pharmacy, Tripura University (A Central University), Suryamaninagar-799 022, Agartala, Tripura (W), India*

[3]*Department of Pathology, Calcutta School of Tropical Medicine, Kolkata-700073, India*

*E. mail: rchakraborty20@yahoo.com

The present study evaluates the hepatoprotective and antiulcer potential of the aqueous extract of aerial parts of Ocimum canum (AEOC). For the hepatoprotective study a total of 30 Swiss albino mice (n=6) weighing between 30-40 gm were used. They were divided into five groups. CCl_4 served as the inducing hepatotoxicant. AEOC was treated in the dose of 100 and 200 mg/ kg body weight in the treated groups respectively and administered through intraperitoneal route. Silymarin (70 mg/kg b.w p.o) served as the standard drug. For assessing the antiulcer activity of AEOC a total of 24 Wistar albino rats (n=6) were employed and divided into four groups. AEOC in a dose (400mg/kg b.w) per oral were given to the animals in the treatment group. Ranitidine (100mg/kg) was used as the standard drug. A 15-day treatment with AEOC significantly arrested ulceration in these animals as evidenced from ulcer index, free and total acidity comparable to ranitidine ($p < 0.05$). AEOC in the hepatoprotectivity study significantly reversed the deleterious effects of CCl_4 induced hepatotoxicity and the result was comparable to silymarin ($p < 0.05$). Routine biochemical parameters, body weight and vital organ histological studies indicated no significant changes between different groups. Histological study observations did not reveal any significant untoward effect of AEOC on liver or kidney. These preliminary findings lead us to hypothesize that AEOC may have an innate potential for a putative role in ulcer disorders and hepatotoxicity without any major untoward effects of its own.

BCPSR/NS/14/49

Plant Product Use for Treatment of Hypertension

Vivek Kumar Mishra

NSHM College of Pharmaceutical Technology, NSHM Knowledge Campus,

Kolkata Group of Institutions, 124, B.L.Saha Road, Kolkata-700082

*E. mail: vivek27.golu@gmail.com

Hypertension (HTN) is the medical term for high blood pressure. It is dangerous because it makes the heart work too hard and contributes to atherosclerosis (hardening of arteries), besides increasing the risk of heart disease and stroke. HTN can also lead to other conditions such as congestive heart failure, kidney disease, and blindness. Conventional antihypertensives are usually associated with many side effects. About 75 to 80% of the world population use herbal medicines, mainly in developing countries, for primary health care because of their better acceptability with human body and lesser side effects. In the last three decades, a lot of concerted efforts have been channeled into researching the local plants with hypotensive and antihypertensive therapeutic values. The hypotensive and antihypertensive effects of some of these medicinal plants have been validated and others disproved. However, ayurvedic knowledge needs to effectiveness, and elucidate the safety profile of such herbal remedies for their antihypertensive potential.plant use for the treatment of hypertension allium sativum ,annona muricata,avena be coupled with modern medicine and more scientific research needs to be done to verify the sativa,cuscuta reflexia.The renewed interest in the search for new drugs from natural sources, especially from plant sources, has gained global attention during the last two decades.

BCPSR/NS/14/50

Natural Binders in Formulation of Tablets

Anurag Priyo Majumder

NSHM College of Pharmaceutical Technology, NSHM Knowledge Campus,

Kolkata Group of Institutions, 124, B.L.Saha Road, Kolkata-700082

*E. mail: arg.maj@gmail.com

Binders confer structural strength and impart the cohesive properties to the powdered material during the production of tablets. This cohesive property of the binder can ensure that the tablets were remains intact after compression. The choice of suitable binder is depends on the binding force required to form granules and its compatibility with the other ingredients particularly. The purpose of this study is to search for and natural binder that can be used in formulation of pharmaceutical dosage form. Natural binders like different starches (rice, potato, maize, corn, wheat, tapioca starch), gums (Guar gum Xanthan gum, Gum Karaya, Aegle Marmelod gum, Gum cordial, Okra gum and cassia roxburghii seeds gum), mucilages dried fruits, are widely used in the pharmaceutical and food industry as excipients due to their several advantages such as low toxicity, biodegradable, availability and low cost also possess the binding capacity. Natural binders also have some as some other properties like disintegrant, filler, sustain release, and these natural polymers are much safer and economical than polymers like PVP. Newer binder provide the means for simplifying formulation development, and improving overall operational costs while preserving the quality that is expected by the industry. The present review focus on such newer Excipients which have proved their potential in developing efficient solid dosage forms.

BCPSR/NS/14/51

A Novel Nano Particle Vector for Tumor Directed Drug Delivery

Rupchand Pandit

NSHM College of Pharmaceutical Technology, NSHM Knowledge Campus,

Kolkata Group of Institutions, 124, B.L.Saha Road, Kolkata-700082

*E. mail: ruppandit91@gmail.com

Colloidal gold, a sol comprised of nanoparticles of Au0, has been used as a therapeutic for the treatment of cancer as well as an indicator for immunodiagnostics. However, the use of these goldnanoparticles for in vivo drug delivery has never been described.This communication outlines the development of a colloidal gold(cAu) nanoparticle vector that targets the delivery of tumor necrosis factor (TNF) to a solid tumor growing in mice.The optimal vector, designated PT-cAu-TNF, consists of molecules of thiol-derivatized PEG (PT) and recombinant humanTNF that are directly bound onto the surface of the gold nanoparticles. Following intravenous administration, PT-cAu-TNF rapidly accumulates in MC-38 colon carcinoma tumors and shows little to no accumulation in the livers, spleens (i.e., the RES) or otherhealthy organs of theanimals. The tumor accumulation was evidenced by a marked change in the color of the tumor as it acquirethe bright red/purple color of the colloidal gold sol and was coincident with the active and tumor-specific sequestration of TNF. Finally, PT-cAu-TNF was less toxic and more effective in reducing tumor burden than native TNF since maximal antitumor responses were achieved at lower doses of drug.

BCPSR/NS/14/52

Apoptogenic Activity of Secretion Extract of *Bellamya bengalensis* f. Annandalei against Hepatocellular Carcinoma

Nilanjana Deb[1]*, Sangeeta Kumari[2], Moumita Ray[1], Shila Elizabeth Besra[1]
[1]*Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal*
[2]*Drug Development /Diagnostic & Biotechnology Division, Indian Institute of Chemical Biology (CSIR), 4 Raja S.C. Mullick Road, Kolkata -700032, West Bengal, India*
*E. mail: nilanjanadeb24@gmail.com

Drug discovery against cancer has ventured throughout the world from the natural products. Various active anticancer agents are derived from plants and terrestrial microorganisms. Hepatocellular carcinoma (HCC) is one of the most common malignant tumours worldwide. The purpose of the present study was to investigate the cytotoxic and apoptogenic activities of the secretion extract of *Bellamya bengalensis* f. annandalei (SEBB) against hepatocellular carcinoma (HepG-2) cell lines. The collected molluscs were taken for experiment and the extrapallial secretion (fluid) was collected (SEBB). Hep-G2 cell lines were studied for Cytotoxicity by MTT assay. Morphological study was done by light and fluorescence microscopy. DNA ladder was studied by Agarose gel electrophoresis. Protein estimation of the SEBB was also studied by the Lowry assay method. SEBB inhibited the growth and the metabolic activities of Hep G2 cell line in a concentration & time dependent manner. Light and Fluorescence microscopic images showed nuclear disintegration of SEBB treated Hep-G2 cells compared with that of the untreated control cells when stained with Acridine orange and Ethidium bromide. Further evidence in support of the apoptogenic activity of SEBB was obtained from the gel patterns of Agarose gel electrophoresis. SEBB treated cells (HepG2) showed degraded DNA bands in the form of ladders, a typical indication of apoptosis, whereas the untreated control cells showed intact DNA bands. From the above performed experiments it can be confirmed that SEBB possesses anti- Hepatocellular carcinoma activity in HepG2 human liver carcinoma cell lines.

BCPSR/NS/14/53

Phytochemical Screening and Investigation of Antimicrobial Activity of Ethanolic Leaf Extract of *Paederia foetida*

Smriti Rekha Chanda Das*, Hemen Boro

Girijananda Chowdhury Institute of Pharmaceutical Science, Azara, Guwahati-781017, Assam, India.

*E. mail: das_smritirekha@rediffmail.com

Presence of phyto-constituents in plant, produce exciting opportunity for the expansion of modern chemotherapies against vast range of micro-organism in the world. In the present study, preliminary phytochemical screening and anti-microbial activity of leaves of *Paederia foetida* was investigated. The powdered leaf material of the plant was extracted by using ethanol and it was subjected to phytochemical analysis and tested against gram +ve and gram –ve bacteria. The result revealed the presence of different groups of phytochemicals and promising antimicrobial activity due to active phyto-constituents present in the plant leaf.

BCPSR/NS/14/54

Development and Validation of UV-Spectroscopic Method for Estimation of Niacin in Bulk and Pharmaceutical Dosage Form

Indranil Chanda*, Ripunjoy Bordoloi

Girijananda Chowdhury Institute of Pharmaceutical Science, Azara, Guwahati-781017, Assam, India.

*E. mail: i.chanda@rediffmail.com

A new, simple, precise and accurate method for the estimation of Niacin in bulk and pharmaceutical dosage forms has been developed. Ethanol was chosen as the solvent system. The λmax was found to be 262 nm. The responses were linear in the range of 02-20µg/ml. The regression equation of the calibration graph and correlation coefficient were found to be y = 0.020x-0.016 and 0.999 respectively. Validation of the method was done in order to demonstrate accuracy, precision, interday and intraday assay, robustness, and ruggedness, of the proposed method. The %RSD values for both intraday and interday precision were less than 1%. Commercial tablets containing 500 mg of Niacin (Nialip) were analyzed by the proposed method and the results were found to be within the claimed limits.

BCPSR/NS/14/55

Date Rape Drugs

Debarati Roy

BCDA College of Pharmacy and Technology, 78 Jessore Road (South), Hridaypur, Barasat-700127, West Bengal, India

*E. mail: debaratibcda@gmail.com

The *date rape drug* which is colloquially called as '*predator drug*' threatens the safety of women in the 21st century. Technically it is a drug that assists in the execution of drug facilitated sexual assault (DFSA). Statistically, about 55% of the victims claim that they did not realize that they were drugged and by the time they regain consciousness, past events are an utter blur. The aforesaid drug came to prominence in the early 20th century through the western press. The three most commonly used ones are alcohol, GHB (gamma-hydroxybutyric acid), benzodiazepines (*Rohypnol* or "roofies") and ketamine (ketamine hydrochloride). These drugs have many adverse effects, since they function like sedatives and hypnotic agents. They produce anterograde amnesia (loss of ability to create new memories) besides many other ailments like respiratory depression, coma with lethal outcome especially when co-administered with alcohol. These drugs can be instantaneously detected by chemical tests, for instance; Commercial testing kits such as 'temazepam' are used for detection of ketamine and benzodiazepines. A promising development in this field is a straw invented by Fernando Patolsky that can detect date rape drugs. In today's world where access to such drugs is just a click away it is important that they be kept under stringent supervision. A collective and collaborative effort is required from the scientific community and the society to tackle this sinister drug. Education and vigilance alone can help people to stay aware and away of date rape drugs.

BCPSR/NS/14/56

Drug Discovery in India Present Scenario and Future Prospective

Sanjib Das*, Sourav Bera, Soumya Ghosh, Subhadeep Dey, Sukanta Chatterjee

Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal

*E. mail: sanjibip@gmail.com

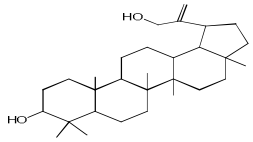
Only one in 10,000 potential compounds investigated gets regulatory approval, which in turn takes efforts of about 15 years and involved R&D expenditure of $1 billion. From here we can assume the current scenario of developing country like India in drug discovery. In the period of post independency (up to 1970) several investments had taken place in R&D by private and public sector which had been demoralized by the application of "the patent act of 1970".Till 1995 due to lack of product patent regiment even in Indian majors like Ranbaxy, Dr. Reddy's spend only 2.35% sale in 1992-93, where 15-30% by western. The year when TRIPS come into effect there was a moderate increase in R&D. The analysis of R&D expenditure of pharmaceutical firms' shows that there had been a growth in the R&D intensity since 2000-01, but this begin decline or stagnate after 2005-06. Although Govt. Research institute like CDRI, CSIR, IICT, NIPERs established to aid the drug development and research individually or in collaboration with private Pharmaceutical Company, still India has stayed away from drug discovery or out licensed the molecule to large global companies in the early phase of development due to late entry into the New Chemical Entities (NCEs) research and lack of expertise essential for modern day drug development and financial resources. Foreign investment and technology collaborations, tax obligations, exemptions from drug price regulation and product patent rights to pharmaceutical innovations are needed to reform new drug discovery process in India.

BCPSR/NS/14/57

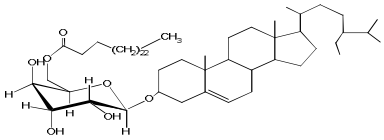
Phytochemical Investigation of Leaf of *Toona ciliata* (Roem.)

Pankaj Agrawal*, T. Narender
Medicinal and Process Chemistry Division, Central Drug Research Institute, Lucknow-226 001, U.P., India
*E. mail: pankajkearth@gmail.com

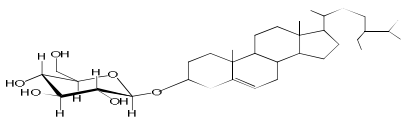
Natural products isolated from plants, animals and microorganisms have made an important impact on curing the dreadful human diseases for example taxol, vinca alkaloids (vincristine and vinblastine), podophyllotoxin derivatives (etoposide, teniposide), camptothecin derivatives (topotecan and irinotecan) for cancer treatment; quinine and artemisinin for malaria treatment, captopril for hypertension treatment, premarin for induction of ovulation, pencillins, streptomycins, tetracyclines for the treatment of bacterial infections, In continuation of our drug discovery program we explored the plant *Toona ciliate* (Roem) in our general screening program. The plant *Toona ciliate* (Roem.) belongs to family Meliaceae. It is high altitude tropical forest tree native to Nepal, India, Pakistan, Bangladesh, China and Myanmar known for its high value red timber. The plant is commonly known as Toon or Indian Mahogany. The different parts of plant are traditionally useful as medicine in chronic dysentery, fever, leprosy, parasitic worms, rheumatism, scabies, ulcers etc. The chemical investigation work at our laboratory led to isolation of lup-20(30)-ene-3α, 29 diol, β-sitosterol, β-sitosterol-3-O-D-glucopyranoside ester derivative, β-sitosterol 3-O-D-glucopyranoside, D- glucopyranose, kaemferol, quercetin, kaemferol-3-O-arabinofuranoside, quercetin-3-O-arabinofuranoside. The flavonoids isolated from the ethylacetate fraction showed strong antioxidant activity.



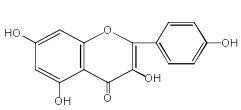
lup-20(30)-ene-3α,29 diol



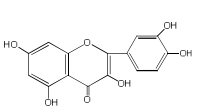
β-sitosterol-3-O-D-glucopyranoside ester



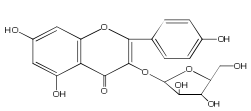
β-sitosterol 3-O-D-glucopyranoside



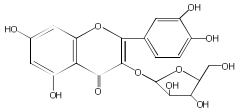
kaemferol



quercetin



kaemferol-3-O-arabinofuranoside



quercetin-3-O-arabinofuranoside

BCPSR/NS/14/58

Herbal and Natural Medicines: Pros and Cons

Sipra Sarkar*, Amitava Ghosh

Bengal College of pharmaceutical Sciences and Research, B.R.B Sarani, Bidhannagar, Durgapur-713212. West Bengal, India

*E. mail: sipra.2000@gmail.com

In this present day herbal medicines are popularly used throughout the world. Herbs are used as *alternative medicine* and people are using as *dietary supplements*. People are using this with the *disappointment of conventional current allopathic therapies*, fear of long term safety and side effects and overall lack of proper therapies or cures. There is strong belief that herbs are very safe because they are derived from nature. But there are *adverse effects* also because Forty to 70% of patients do not inform physicians about use of alternative therapies. Different *Adverse reactions* are due to one or more chemical component of the plant, inappropriate or incorrect manufacturing process, FDA does not require reporting of adverse reactions from alternative therapies, example- L-tryptophan, ephedra (ma haung).Safety consideration are due to Standardization, Nomenclature and chemical constituents vary, Mixtures are *not standardized*, Lack of Good Manufacturing Practices (gmps)Examples: ginseng, ephedra ,difficult to identify ingredients, Lack of active ingredient ,Contamination. So we can conclude that herbs are not always safe because of *lack of efficacy and toxicity* information, patients and clinicians should be aware that advice about herbal therapies is not absolute and is a matter of judgment. Base advice on available knowledge that is congruent with your needs and the clinician's best judgment. Majority of recommendations are not evidence-based.

BCPSR/NS/14/59

Alzheimer Disease and its Treatment

Suparna Halder*, Sipra Sarkar

Bengal College of pharmaceutical Sciences and Research, B.R.B Sarani, Bidhannagar, Durgapur-713212. West Bengal, India

*E. mail: mousuparna09@gmail.com

Alzheimer's disease (AD), also known as Senile Dementia of the Alzheimer Type (SDAT) or simply Alzheimer's is the most common form of dementia. This incurable, degenerative, terminal disease was first described by a German psychiatrist and neuropathologist Alois Alzheimer in 1906 and was named after him. Alzheimer's disease (AD) is a slowly progressive disease of the brain that is characterized by impairment of memory and eventually by disturbances in reasoning, planning, language, and perception. Many scientists believe that Alzheimer's disease results from an increase in the production or accumulation of a specific protein (beta-amyloid protein) in the brain that leads to nerve cell death. Advanced medical imaging with computed tomography (CT) or magnetic resonance imaging (MRI), and with single photon emission computer tomography (SPECT) or positron emission tomography (PET) can be used to help exclude other cerebral pathology or subtypes of dementia. Alzheimer's disease is usually diagnosed clinically from the patient history, collateral history from relatives, and clinical observations. The diagnosis can be confirmed with very high accuracy post-mortem when brain material is available and can be examined histologically. Different drugs like namenda, razadyne, Zoloft, trileptal, tegretol, remeron are used for treatment. Newer medicine called a beta-secretase inhibitor, NIC5-15, might be a safe and effective treatment to stabilize cognitive performance in patients with mild to moderate Alzheimer's disease.

BCPSR/NS/14/60

Reverse Pharmacology: A Tool in Herbal Drug Discovery

Silajit Dutta*, Raja Chakraverty, Amitava Ghosh
Bengal College of pharmaceutical Sciences and Research, B.R.B Sarani, Bidhannagar, Durgapur-713212. West Bengal, India
*E. mail: mousuparna09@gmail.com

The current presentation is an attempt made to study about the principles of reverse pharmacology in conjugation with ayurvedic system to develop newer strategies for the drug discovery and development which will offer newer chemical entities with potential biological activities. Reverse pharmacology is the science of integrating documented clinical experiences and experimental observations into leads by interdisciplinary exploratory studies and further developing these into drug candidate or formulations through robust preclinical and clinical research. Scientifically validated and standardized botanical products may be explored on a fast pace basis using innovative approaches like reverse pharmacology which is based on traditional and indigenous medicine knowledge. The system mainly relates to reversing the routine laboratory to clinic sequence of discovery pipeline to that of clinic to laboratories. Reverse Pharmacology is a multidisciplinary area that comprises three stages namely, experiential hits, documentation in observational therapeutics and epidemiology. The scope of reverse pharmacology includes natural product discovery and development and utilizes other complementary and alternative systems of medicine under AYUSH (ayurveda, unani, siddha systems of medicine). The reverse pharmacology approach, although not free from drawbacks facilitates the reduction of the major hindrances- cost, time and toxicity. In ayurvedic medicine research, clinical experiences, observations or available data becomes a starting point of drug development process whereas in conventional drug research, it comes in at the end. Thus the drug discovery process based on ayurvedic system of medicine follows a reverse path and is found to be useful in herbal drug discovery subsequently utilised in clinical therapeutics.

BCPSR/NS/14/61

Future Prospects of Raman Spectroscopy as a Non-Invasive Tool for Diagnosis of Skin Cancer

Prakash Kumar Palai[1]*, Subhash Chandra Mishra[2], Subhashree Sahoo[3], Chandra Kanti Chakraborti[3]

[1]*Department of Chemistry, National Institute of Technology, Rourkela-769008, Odisha, India*

[2]*Metallurgical and Materials Engineering Department, National Institute of Technology, Rourkela- 769008, Orissa, India*

[3]*Department of Pharmaceutics, Kanak Manjari Institute of Pharmaceutical Sciences, Rourkela-769015, Odisha, India*

*E. mail: prakash75s@yahoo.in

Current diagnostic methods to detect skin cancers rely on physical examination with dermatoscope and skin biopsy. The first examination method is subjective and differs from dermatologist to dermatologist, whereas biopsy is very efficient, but is expensive, invasive, and time consuming. Moreover, biopsy becomes impractical if the patient has several suspicious lesions. Due to the above-mentioned limitations of the current diagnostic methods, there is a great interest in developing a non-invasive diagnostic tool that could reliably detect skin cancer in real time. Raman imaging of skin tissue has been coupled with multivariant image analysis as a first step toward non-invasive detection and classification of skin cancers. Raman spectrum may be obtained from each spot within the tissue where the laser is focused and concentration profiles may be generated for various molecular species by combining Raman spectroscopy with confocal microscopy. The technique has been identified as an alternative clinical tool to improve diagnostic specificity because of its ability to detect molecular changes associated with tissue pathology. Using Raman spectrometer, cancerous lesions could be differentiated from benign deformities with a sensitivity of 90% and specificity of 75%. Raman spectroscopy could potentially provide a clinical tool which would limit the variance related to the diagnosis of skin neoplasms by providing a more rapid, objective diagnosis based on molecular composition of suspicious skin lesions. Considering easy access to skin and high rate of skin cancer related mortality, non-invasive Raman spectroscopic analysis is considered to be a promising candidate for the diagnosis of skin cancer.

BCPSR/NS/14/62

Binding Mode Analysis of Few Polysubstituted Triazoles as Lanosterol-14α-demethylase Inhibitor

Paloma Patra*, Subhasis Banerjee
Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal
*E. mail: sweetsinger.patra66@gmail.com

With the advent of high-performance and low-cost computing systems, exemplified by enterprise grid-based networks and large Linux farms, the past decade has been witness to a major change in the practice of molecular modeling in the pharmaceuticals, particularly in the resources available to the computational chemist. As a result, computational methods are being increasingly used in various stages of the drug-discovery process. Coupled with a rapidly rising number of protein structures, structure based drug design, driven by molecular docking and binding prediction has been undergoing somewhat of a renaissance. In this study, computational ligand docking methodology, AutoDock4.0 based on Lamarckian genetic algorithm was employed for virtual screens of a compound library with 15 entries (polysubstituted 1,2,4-triazoles) for novel and selective inhibitors of the enzyme lanosterol-14*α*-demethylase, a potential antifungal drug target. Considering free energy of binding and inhibition constant (KI) as a criteria of evaluation, most of the compounds were predicted to be potential inhibitors of lanosterol-14*α*-demethylase and few of them displayed greater binding affinities than fluconazole, a well-known antifungal. Compound 5 and 7 were the most potent in inhibiting the lanosterol-14α-demethylase enzyme, *in silico*, thus suggesting the effectiveness of Autodock as an effective desktop molecular modeling tool. Putative interactions between lanosterol-14*α*-demethylase and inhibitors were identified by inspection of docking-predicted poses. The binding energy, KI values, and binding interactions revealed from docking poses provide the clues for the design of new molecules thus giving insight on structural requirement for designing more potent analogs.

BCPSR/NS/14/63

One-pot Synthesis-An Overview

Narendra Kishore Guin*, Subhasis Banerjee

Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal

*E. mail: narendrakishore96141@gmail.com

One-pot synthesis or telescoping synthesis is a strategy to improve the efficiency of a chemical reaction whereby a reactant is subjected to successive chemical reactions in just one reactor. This is much desired by chemists because avoiding a lengthy separation process and purification of the intermediates would save time and resources while increasing chemical yield. One-pot reactions are carried out continuously within the living cells by the involvement of well-organised enzymes. These enzymes catalyse numerous reactions in a multi-step sequence to synthesize complex molecules from simple starting materials, without the need to isolate intermediates. Synthetic chemistry has long endeavoured to mimic the efficiency of biological systems and research into the development of one-pot catalytic processes has increased significantly over the past few decades. Chemists have grouped "multistep one-pot reactions" into three categories. The first is "cascade or domino" reactions in which both or all reactions take place without the need for additional reagents or a change in reaction conditions. The second class, "consecutive" reactions, where the intermediate formed in the first reaction with necessary functionality, but additional energy must be added to overcome an activation barrier. Finally "sequential," where the functionality for the second reaction has been created but additional reagents must be added for the second reaction to occur. Many useful heterocycles such as pyridazinones, dihydropyrimidinones, and dihydropyrimidinthiones was developed following this novel method and many more to appear in due course.

BCPSR/NS/14/64

Green Chemistry: *Preventing Pollution Sustaining the Earth*

Adwiti Banerjee*, Subhasis Banerjee

Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal

*E. mail: adwitibanerjee9563@gmail.com

In the year 1991, Paul T. Anastas defined Green Chemistry as the design of chemical products and processes that reduce or eliminate the use and/or generation of hazardous substances. Green Chemistry is all about REDUCTIONS. These reductions lead to what is known as "Triple Bottom Line Benefits", a combination of Environmental, Economic and Social improvements. Green chemistry works toward sustainability by designing more efficient processes that minimize the production of waste materials as well as preventing pollution before it happens rather than cleaning up the mess later. It represents a major paradigm shift that focuses on environmental protection at the design stage of product and manufacturing processes. It is an innovative way to deal with chemicals before they become hazards, with the goal of making chemicals and products "benign by design." Green chemistry is an opportunity to spur the next industrial revolution through human ingenuity and creativity. It is based on the 12 principles of Prevention, Atom Economy, Minimize Hazardous Conditions, Design Safer Products, Use Safer Solvents/Auxiliaries, Design for Energy Efficiency, Use of Renewable Raw Materials, Minimize Derivatization, Catalysis, Design for Degradation, Real Time Analysis, Process Economics. It is all about waste minimization at source, use of catalyst by replacing reagents, using non-toxic reagents, use of renewable resources, improved atom efficiency, use of solvent free or recyclable environmentally benign solvent systems. Green chemistry may be the next social movement that will set aside all the world's differences and allow for the creation of an environmentally commendable civilization.

BCPSR/NS/14/65

Formulation and Evaluation of Orodispersible Tablets of Amlodipine Besilate

Piyush Tomar, Dhruba Sankar Goswami*, Sanjiv Mittal
S. D. College of Pharmacy, Barnala, Punjab-148101, India
*E. mail: dhrubasv@gmail.com

The demand for orodispersible tablet (ODT) has been growing during the last decade especially for elderly and children who have swallowing difficulties. Amlodipine Besilate is 3-Ethyl 5-methyl 2-(2-aminomethoxymethyl)-4-(2-chlorophenyl)-1, 4-dihydro-6-methylpyridine-3,5-dicarboxylatemonobenzene sulphonate. Calcium channel blocker used in treatment of hypertension and angina. Oral bioavailability of Amlodipine basilate is around 60% . In present work an attempt ha s been made to prepare orodispersible tablets ofAmlodipine besilate with increased rate of dissolution may leads to increase bioavailability. Various polymers have been selected such as avicel 101, avicel 102, gallan gum, fenugreek seed. The percentage drug content of formulations F1 to F16 was found to be in the range of 94.857 % to 96.857 %. Wetting time of batches F1 toF16 was found to be in the range of 22 secs to 64 secs. Water absorption ratio of batches F1 to F16 was found to be in range of 64.29% to 71.14%. Disintegration time of formulations was in range of 24 secs to 69 secs. In-vitro drug release of the formulations F1 to F16 was found to be in range of 2.658% to 100.81%. In-vitro drug release of the fast dissolving tablet was found in the range of Formulation F9 (1% fenugreek seed) showing fastest release i.e. 99.366% in 20 mins among all the formulations. Fast dispersion of the formulation is due to polymer properties i.e. fenugreek. Fast dispersion of the formulation is due to polymer properties i.e. fenugreek. The study conducted so for reveals a promising result suggesting scope for pharmacokinetic and pharmacodynamic papameters.

BCPSR/NS/14/66

Formulation and Evaluation of Chewable Tablets of Paracetamol and Metoclopramide Hydrochloride

Deepak Kumar, Dhruba Sankar Goswami*

S. D. College of Pharmacy, Barnala, Punjab-148101, India

*E. mail: dhrubasv@gmail.com

The present study was aimed to formulate and evaluate chewable tablets of Paracetamol and Metoclopramide hydrochloride. Paracetamol and Metoclopramide hydrochloride is an oral fixed dose combination for the preparation of chewable tablets used to treat the symptoms of migraine as it comply with physicochemical properties require to improve the effectiveness of therapeutic agent, better bioavailability, improved patient acceptance (especially paediatrics) through pleasant taste, patient convenience; need no water for swallowing, fasten the absorption of drug and for rapid onset of action. The investigation was carried out to study the effect of different proportion of aerosil, cros carmellose sodium, cros povidone and neem gum. maize starch was used as binding agent. Tartrazine was used as coloring agent. Aspartame and vanilla flavour were used as sweetening agent and flavouring agent respectively. several physicochemical parameters like thickness, diameter, hardness, %weight variation, %loss in weight, drug content, disintegration time, *in vitro* dissolution studies, kinetics of drug release and stability studies for all the formulations were studied and were found within the acceptance limits. Formulations F10 (containing neem gum 1%) showed the best cumulative drug release and disintegration time of 40 secs.

BCPSR/NS/14/67

Current Concepts of Types and Causes of Alzheimer's Disease

Pragati Khare[1]*, Shashi Verma[1], Ghanshyam Yadav[2]

[1]*SRMS, CET (Pharmacy), Bareilly, U.P., India*

[2]*Aishwarya Pharmaceuticals Pvt, Lmt., Baddi, H.P., India*

*E. mail: pragatikhare10@gmail.com

Alzheimer's disease is a progressive neurodegenerative disorder associated with loss of neurons in distinct brain areas. In Alzheimer's disease there is the formation of senile plaques and neurofibrillary tangles. Plaques are insoluble extracellular deposits composed of amyloid proteins and tangles are intracellular deposits of the microtubule associated protein tau found in dystrophic neurons. There may be two types of Alzheimer's disease: Early- onset familial disease and Late- onset sporadic disease. The causes of Alzheimer's disease are oxidative stress, muscarinic agents like scopolamine. One of the most well-known flavonoids is quercetin which shows a remarkable cytoprotective effect. It has been demonstrated that free radicals are involved in the pathogenesis of neurodegenerative disorders. Some of the chemical mediators involved in learning and memory are glutamate, acetylcholine, serotonin, dopamine, neurosteroids. Alzheimer's disease may be treated by targeting various mediators responsible for learning and memory. Stress reduction, avoidance of toxins and mental and physical exercise are important aspects of prevention of Alzheimer's disease.

BCPSR/NS/14/68

Natural Treatment of Neurodegenerative Disorders

Shashi Verma[1*], Pragati Khare[1], Ghanshyam Yadav[2]

[1]*SRMS, CET (Pharmacy), Bareilly, U.P., India*

[2]*Aishwarya Pharmaceuticals Pvt, Lmt., Baddi, H.P., India*

*E. mail: pragatikhare10@gmail.com

Normal ageing is associated with a slow decline in brain functions such as sensory and motor performance, and at times this decline is accompanied by progressive memory loss, dementia and cognitive dysfunctions, ultimately resulting in limited functionality. Oxidative stress due to increase in free radical generation or impaired endogenous antioxidant mechanism is an important factor that has been implicated in Alzheimer's disease and cognitive deficits seen in elderly. Thus the efforts have been directed to find therapeutic agents both synthetic compounds and natural products that could reduce the oxidative stress and improve the memory. Various herbal drugs whose nootropic activity has already been reported are Cissampelos *pareiera*, Indian Hypericum *perforatum*, Lotus seedpod, Abana, Ocimum *sanctum*, Rutin, Saffron, Chronic coffee and caffeine ingestion, Glycyrrhiza *glabra*. Free radical formation is basically responsible for degeneration of neurons. So, the use of antioxidants nootropic agents may help to prevent the formation of free radicals, thereby minimizing the degeneration of neurons.

BCPSR/NS/14/69

A Literature Review on *Abelmoschus esculentus* in Pharmaceutical Science

Sushruta Chakraborty, Simli Sarkar*, Amitava Ghosh

Bengal College of pharmaceutical Sciences and Research, B.R.B Sarani, Bidhannagar, Durgapur-713212. West Bengal, India

*E. mail: simli.sarkar@rediffmail.com

Okra or bhendi which is known as ladies finger is an important vegetable in tropical counties. It is very popular and familiar near to us. The scientific name of okra is *Abelmoschus esculentus*. The name *abelmosch* is derived from the musky odor of the seed. In Spanish it is known as *gombo*, *bamia*.The okra plant spread in many parts of the world during the Atlantic slave trade. Its medicinal usage has been reported in the traditional systems of medicine such as Ayurveda, Siddha and Unani. On the based on nutritional value, it contains vitamin A and C with great source of Fe and Ca. It also contains starch, fat, ash, thiamine and riboflavin etc. Beside these, okra has lots of effect on human health like it stabilizes the blood sugar level, reduce the blood cholesterol, improve the constipation etc. Okra is also good for asthma and atherosclerosis. There are lots of evident which provides brief literature review on the current study and topics relevant to the nutritional properties of *Abelmoschus esculentus* as a remedy and manage different diseases. Beside this, it is also used as pharmaceutical excipient like binder.

BCPSR/NS/14/70

Immunisation Schedule Throughout the World

Nilanjan Chowdhury*, Sipra Sarkar, Amitava Ghosh

Bengal College of pharmaceutical Sciences and Research, B.R.B Sarani, Bidhannagar, Durgapur-713212. West Bengal, India

*E. mail: sipra.2000@gmail.com

Immunization is so important for the children from the ancient times because children are so susceptible to disease attack because from the birth their immunity system is not strong. The immunity which is derived from mother at pregnancy and through breast milk is not enough sufficient for their immunity and disease protection. So they need to be immunized passively. Different vaccine like BCG, DPT, Hib, Hepatitis B, MMR, IPV, OPV, Typhoid, TT,PCV, Rotavirus, Meningococcal, pneumonia are given to the child from 0day of birth to 18 years. Not only children; pregnant women are given the TT for their safety of life. At the earlier time not only earlier in recent days in many third world country, rural areas the parents are not properly aware of the immunization. So lots of diseases are threatening their life and taking their life at a very early stage. Due to lack of immunization many children become abnormal, physically handicapped and headache to parents and burden to nation. So our objective is to go through detail study of immunization and make people aware of immunization so that our children & our future generation would be free from vulnerable disease and we will get a healthy, strong nation to take ahead our country.

BCPSR/NS/14/71

Fast Dissolving Tablets: A New Era in Novel Drug Delivery System

Chencho Wangmo Lama*, Sajal Kumar Jha, Juhi Singh, Amitava Ghosh

Bengal College of pharmaceutical Sciences and Research, B.R.B Sarani, Bidhannagar, Durgapur-713212. West Bengal, India

*E. mail: lamachencho@gmail.com

Tablet is the most popular among all dosage forms existing today because of its convenience of self-administration, compactness and easy manufacturing; however hand tremors, dysphasia in case of geriatric patients, the underdeveloped muscular and nervous systems in young individuals and in case of uncooperative patients, the problem of swallowing is common phenomenon which leads to poor patient compliance. To overcome these drawbacks, mouth dissolving tablets (MDT) or orally disintegrating tablets, (ODT) has emerged as alternative oral dosage forms.A fast disintegrating tablet can be defined as a solid unit dosage form that can disintegrate or dissolve within 30 seconds, in the oral cavity resulting in a solution or suspension without administration of water. Mouth dissolving tablets can offer several biopharmaceutical advantages such as improved efficiency over conventional dosage forms. For example, they require smaller amounts of active ingredient to be effective, improve absorption profiles, and offer better drug bioavailability than regular tablets and capsules. In addition, MDTs may be suitable for the oral delivery of drugs such as protein and peptide based therapeutics that have limited bioavailability when administered by conventional tablets. Wet granulation is the most widely used as a manufacturing process for formulating MDTs in the pharmaceutical industry. It involves addition of a liquid solution (with or without binder) to powders, to form a wet mass or it forms granules by adding the powder together with an adhesive, instead of by compaction. The wet mass is dried and then sized to obtained granules. The liquid added binds the moist powder particles by a combination of capillary and viscous forces in the wet state.

BCPSR/NS/14/72

Phthalimides as Novel Antibacterial

Sohom Kumar Mitra*[1], Rini Roy[1], H.S. Maji[2]

[1]*Department of Pharmaceutical Analysis, Bengal School of Technology, Chuchura, Hooghly-712102, West Bengal, India*

[2]*Bengal School of Technology, Chuchura, Hooghly-712102, West Bengal, India*

*E. mail: sohommitra.90@gmail.com

Phthalimide(1,3 isoindolinedione) is an imide, which is a chemical compound with two carbonyl group bound to an amine functional moiety. It is a white solid at room temperature. Phthalimide derivatives are reported to have important biological activities, such as anti-inflammatory, anti-convulsant, analgesic, immunomodulatory activities and hypolipidemic ones. Phthalimides have a general formula $Ar(CO)_2NR'$ and the pharmacological activity is shown by the presence of pharmacophore CONH group. Synthesis of some novel phthalimides have been done using phthalic anhydride as the main starting material. Amines such as ammonia, cyclohexyl amine and para nitroaniline were used respectively in combination with phthalic anhydride; heating the reaction mixture to about 130-160º celsius with occasional stirring and use of 10% NaOH and methanol as catalyst. The newly synthesised compounds were recrystalized and their antibacterial effect was studied using Gram Negative bacteria by Spot Innoculation (Agar Dilution) Method. The newly synthesised compounds were completely insoluble in both ethanol and water solubilises in ethanol-water (7:3). Ethanol itself has inhibitory property but in this case it forms an azeotrope with water and serves as an effective control showing remarkable growth of bacteria. Inhibitory effect was found for all compounds at minimum 5mg concentration showing that the compounds serve as promising antibacterials.

BCPSR/NS/14/73

Synthesis and *In Vitro* Antimicrobial Evaluation of Some Novel 2,4,6-Trisubstituted 1,3,5-Triazine Derivatives

Ravi Bhushan Singh[1], Anupam G. Banerjee[2], Md. Kamaruz Zaman[1]

[1]*Department of Pharmaceutical Sciences, Dibrugarh University, Dibrugarh, Assam-786004*

[2]*Department of Pharmaceutics, IIT(BHU), Varanasi, U.P- 221005*

*E. mail: ravimgs@gmail.com

A series of novel 2,4,6-trisubstituted 1,3,5-triazine derivatives were synthesized and evaluated as potential antimicrobial agents. Chemical structures of derivatives were confirmed by FT-IR, ^{1}H-NMR, ^{13}C-NMR, and elemental analysis. The minimum inhibitory concentration (MIC) of the compounds that displayed favorable zone of inhibition was determined by broth microdilution method. The compounds 4c and 4d exhibited a considerable *in vitro* antibacterial efficacy with reference to the standard drug ciprofloxacin. Compound 4d displayed equipotent antibacterial efficacy against *B. aureus* (MIC 6.25 µgmL-^{1}) and was found to be most active amongst the synthesized derivatives. Compound 4c demonstrated most significant antifungal activity against *C. albicans* and *C.tropicalis* with comparable effect to the reference standard drug fluconazole.

BCPSR/NS/14/74

Solid Lipid Nanoparticles: A Boon in Nanoparticle Technology

Vashisth Anita*, Thakur Deepika, Chauhan Bhupendra, Arora Pankaj

Jaipur College of Pharmacy, Sitapura, Jaipur, Rajasthan-302022, India

*E. mail: anita.vashisth@ymail.com

Solid lipid nanoparticles were developed in early 1990s as an alternative to other traditional colloidal carriers like liposomes, polymeric nanoparticles and emulsions as they have advantages like controlled drug release, targeted drug delivery with increased stability and increase drug bioavailability. Proteins and antigens intended for therapeutic purposes may be incorporated or adsorbed onto SLN's and further administered by parenteral routes or be alternative routes such as oral, nasal and pulmonary. Analytical techniques for characterization of SLNs like photon correlation spectroscopy, scanning electron. In addition, lipid nanoparticles may also protect the loaded drugs from chemical and enzymatic degradation and gradually release drug molecules from the lipid matrix into blood, resulting in improved therapeutic profiles compared to free drug. Therefore, due to their physiological and biodegradable properties, lipid molecules may decrease adverse side effects and chronic toxicity of the drug-delivery systems when compared to other of polymeric nature. In this review we discussed the methods of manufacturing and evaluation of solid lipid nanoparticles. Utility of SLN is in terms of their characterization and also the properties of site specific and controlled drug delivery with reduced side effects. In addition to that the review covers the applications of SLNs in transdermal, topical, gene vector carrier, targeting cancer cells in breast cancer and lymph node metastasis.

BCPSR/NS/14/75

Recent Technologies in Ocular Drug Delivery System

K. Praveen*, Chatterjee Arindam, Chauhan Bhupendra Singh, Arora Pankaj

Jaipur College of Pharmacy, Sitapura, Jaipur, Rajasthan-302022, India

*E. mail: praveeny600@gmail.com

Eye is the most complicated and sophisticated organ of the body, so it is very necessary to understand that special attention should be taken towards the eye diseases. Eye diseases are very common, which are prevented through the conventional dosage forms like eye drops, ointments. Eye drop is mostly used in the treatment of eye diseases. Ophthalmic drugs are limited by rapid precorneal drug elimination due to solution drainage and systemic absorption from the conjunctiva. Nanoparticles have been designed to overcome the barriers, increases the drug penetration at the target site and prolong the drug levels of drug administered in lower doses without any toxicity compared to the conventional eye drops. Nanoparticles could target at cornea, retina and choroid by superficial applications and intravitreal injection. Drug delivery systems are made from a variety of organic and inorganic compounds such as polymers, lipids (liposomes, nanoemulsions, and solid–lipid nanoparticles), self-assembling amphiphilic molecules, dendrimers, and inorganic nanocrystals. In addition, hydrogels are novel delivery systems that have attracted much attention in current pharmaceutical research. In-situ gelling techniques have demonstrated efficient delivery of doses to the ocular site. This review is concerned with recent findings and applications of Nanoparticles through the ocular route of administration.

BCPSR/NS/14/76

Colon Targeting Drug Delivery System

Yadav Prakash*, Chatterjee Arindam, Jaimini Manish, Arora Pankaj

Jaipur College of Pharmacy, Sitapura, Jaipur, Rajasthan-302022, India

*E. mail: yprakash809@gmail.com

Targeted drug delivery also known by synonym 'smart drug delivery' is a method of delivery medication to a patient in a manner that increases the concentration of the medication in some part of body relative to other. The colon is a site where both local and systemic delivery of drug can take place local delivery of treatment of inflammatory bowel disease. However treatment can be made effective if the drug can be targeted directly in to the colon there by reducing the systemic side effect. This mainly compares the primary approaches for CDDS (colon specific drug delivery system) namely produrg pH and time dependent system and microbially triggered system which achieved limited success and had limitation as compared with newer CDDS namely pressure controlled colonic delivery capsules, CODESTM and osmotic controlled drug delivery which are unique in termed of achieving *in-vivo* site specificity and feasibility of manufacturing process. To target the colon for treating colon medication delivery by mouth must surmount several barriess including stomach acidity, binding to mucus layers, rapid clearance from the gut and premature uptake by cells higher up the gastrointestinal tract.

BCPSR/NS/14/77

Novel Concepts in Vaginal Drug Delivery

Keshwani Bhawana*, Chatterjee Arindam, Jaimini Manish, Arora Pankaj

Jaipur College of Pharmacy, Sitapura, Jaipur, Rajasthan-302022, India

*E. mail: bhawna.keshwani2706@gmail.com

The traditional vaginal drug delivery systems have limitations like poor bio adhesive properties; produce leakages, short residence time in the genitourinary tract and self-cleansing action of the vaginal tract. There is a need for the development of innovative vaginal formulation technology that fulfils certain criteria such as desirable product dispersion throughout the vagina, retention for intended intervals, and adequate release of drug and improvement of human reproductive health. With the advancement in pharmaceutical technology, the new vaginal drug delivery systems are taking the place of the traditional delivery systems such as pessaries, tablets, creams, foams, irrigations etc. Approaches used for the development of recent Vaginal Drug Delivery Systems include novel drug loaded inserts, hydro gel systems containing phase change polymers such as poloxamer exhibit sol–gel transition in response to body temperature, pH and specific ions, mucoadhesive drug delivery systems, liposome's, micro emulsion based vaginal gel, vaginal rings, cubic gels, formulations based on polystyrene and formulations based on silicone elastomers. The recent trend of research work is on nanoparticles drug delivery systems in vaginal route. Novel approaches use applications other than contraception and vaginal infections to use these delivery systems to treat cancer and to deliver various protein and peptide drugs. The potential exists for a much wider use of vaginal delivery systems than currently existing systems.

BCPSR/NS/14/78

Formulation and *In-Vitro* Evaluation of Bilayered Tablets of Oral Hypoglycemic Drugs for Type II Diabetes

Shailender Mohan*, Sanjay K. Sharma, Arindam Chatterjee, Manish Jaimini, Bhupendra S. Chauhan

Jaipur College of Pharmacy, Sitapura, Jaipur, Rajasthan-302022, India

*E. mail: shailender19@outlook.com

Several different approaches are been investigated to deliver the FDC products to the patients such as multilayer tablets, bilayer floating tablet, compression coating, active coating and buccal/mucoadhesive delivery systems. Among these approaches, the multilayer tablets drug delivery is gaining popularity and particularly the bilayer technology has attracted formulator's attention for the development of products for life cycle management (LCM). In the present investigation, efforts were made to develop a bilayer tablet formulation of pioglitazone hydrochloride and gliclazide for management of type II diabetes. The intended formulation is a matrix bilayered tablet of Pioglitazone Hydrochloride as immediate release and Gliclazide as extended release, which will provide better control over hyperglycemic condition. Initially, 9 batches of immediate release layers and 14 batches of extended release layer were formed. All the individual formulation batch layers containing Pioglitazone HCl and Gliclazide were subjected to in-vitro dissolution study and the data was generated and various release kinetic models were implicated. From the individual layer in-vitro release profile, it was concluded that the release of Formulation FP1, FP3 and FP8 was found to be satisfactory in case of Pioglitazone HCl. Similarly for Gliclazide, the release from formulations FG1, FG3 and FG9 was found to be satisfactory. Therefore, these formulations were selected for the further study of bilayer formulations. The Bilayer tablets were prepared and subjected to various physicochemical and in-vitro dissolution studies and the data(s) were generated and various release kinetic models were implicated. Form the investigation; formulation CF3 was found to show best result.

BCPSR/NS/14/79

Transdermal Drug Delivery Systems: An Overview

Thakur Deepika*, Vashisth Anita, Sharma Sanjay, Arora Pankaj

Jaipur College of Pharmacy, Sitapura, Jaipur, Rajasthan-302022, India

*E. mail: deepithakur451@gmail.com

Transdermal drug delivery systems (TDDS), also known as "patches," are dosage forms designed to deliver a therapeutically effective amount of drug across a patient's skin. In order to deliver therapeutic agents through the human skin for systemic effects, the comprehensive morphological, biophysical and physicochemical properties of the skin are to be considered. Transdermal drug delivery system can improve the therapeutic efficacy and safety of the drugs. Characterization of transdermal patch is use to check its quality, size, time of onset and duration, adhesive property, thickness, weight of patch, moisture content, uniformity and cutaneous toxicological studies. Transdermal delivery provides controlled, constant administration of the drug and allows continuous input of drugs with short biological half-lives. Several important advantages of transdermal drug delivery are limitation of hepatic first pass metabolism and maintenance of steady plasma level of drugs and increase bioavailability. The delivery of drugs of differing lipophilicity and molecular weight including proteins, peptides, and oligonucletides has been shown to be improved by active methods such as iontophoresis, electroporation, mechanical perturbation, and other energy-related techniques such as ultrasound and needless injection. This write-up covers advantages of TDDS and types of transdermal patches, methods of preparation and its physicochemical method of evaluation. Transdermal patches can be evaluated by interaction studies, folding endurance, thickness of the patch, weight uniformity, drug content and in vitro penetration enhancers, and evaluation of transdermal system and its applications.

BCPSR/NS/14/80

Excelency of Natural Colour: A Review

Kiranmoy Karmakar*, Jyotirmoy Deb, Amitava Ghosh, Supriya Datta

Bengal College of pharmaceutical Sciences and Research, B.R.B Sarani, Bidhannagar, Durgapur-713212. West Bengal, India

*E. mail: kiranmoy2@gmail.com

The mother earth has compensated us with natural energetic the colorants called natural dyes. Natural dyes are the colorants collected from the naturally occurring resources such as plants, animals or from some insects. They are recyclable and can be decomposed by the environment, leading to less harmful effect and less contaminant produced to the environment. Though earth is bestow with plants containing a wide range of attractive and eco friendly pigments only 0.5 % has been exhaustively used and the remaining is left untapped. Natural dyes have gained importance due to the growing environmental care and execution of stringent regulations in design and use of synthetic dyes. The contemporary environmental concerns have stimulated the public interest in natural dyeing that produces less toxic contamination. Though natural dyes are extracted from the natural resources, and some of the sources and dyeing practices may not be completely 'green' with respect to health and environmental issues such as presence of pesticides in plant materials, salts of heavy metals (mordant) used in dyeing, etc. Use of forbidden heavy metals as mordant should be restricted as per permissible limit value. Since testing and certification system as per eco-standards will certainly control the use of harmful substances at each stage of production process.

BCPSR/NS/14/81

MORE Chemistry: Synthesizing Chemicals in Eco Friendly Environment

Moumita Banerjee*, Debarupa D Chakraborty

Bengal College of pharmaceutical Sciences and Research, B.R.B Sarani, Bidhannagar, Durgapur-713212. West Bengal, India

*E. mail: moumita.pharma@yahoo.in

Since ages fire was used as a heat source which was later replaced by Bunsen burner, Oil bath, Hotplate as a source of applying heat to chemical reaction. With the technological advancements and in the race of being more and more effective, eco-friendly and economic Microwave Assisted Organic Reaction Synthesis has proved to be very fruitful. Controlling the amount and positioning of heat in the reaction vessel was a major issue. But, with the Microwave Assisted Organic Reaction Synthesis it has become really possible with ease. Very Short Reaction Time with minimum exposure to hazardous chemicals, a very wide range of Reactions can be performed with minimum utilization of resources. In recent years, Microwave Assisted Organic Reaction Synthesis has emerged as a new tool in the organic synthesis. The objective of this present work is an attempt to highlight on its working principle, its applicability, pros and cons along with its probable future outcome.

BCPSR/NS/14/82

An Insight of Oral Thin Films

Manisha Khandelwal*, Alimpan Sarkar, Prithviraj Chakraborty

Bengal College of pharmaceutical Sciences and Research, B.R.B Sarani, Bidhannagar, Durgapur-713212. West Bengal, India

*E. mail: mkhandelwal182@gmail.com

Recently, fast dissolving oral thin films are gaining interest as an alternative of fast dissolving tablets. The films are designed to dissolve upon contact with wet surface, such as tongue, within a few minutes. Patients can take this product without need of any additional water or liquid. This convenience provides both a marketing advantage and increase patients compliance. This type of medication most popular and acceptable among paediatric andgeriatric patients. This oral thin films prepared by using solvent casting method. Solvent casting method being most preferred offers great uniformity of thickness and films have fine gloss and better physical properties. Oral thin films are evaluated for various attributes such as in-vitro dissolution, swelling index, bio-adhesive strength, disintegration time, thickness. In this review, recent advancements regarding fast dissolving oral thin film formulations and their evaluation parameters are compiled.

BCPSR/NS/14/83

Water Soluble Derivatives of Cyclodextrins as Drug Carrier

Nita Yadav*, Rajesh yadav, Shailendra Kumar Verma
SRMS, CET (Pharmacy), Bareilly, U.P., India
*E. mail: raj_ishu78@rediffmail.com

Water soluble derivatives of cyclodextrins comprises pharmaceutical preparations consisting generally of a drug with a substantially low water solubility and an amorphous, water-soluble cyclodextrin-based mixtures. In these preparations a stable amorphous state can be achieved. This improves the dissolution properties of the drug and hence its absorption by the body. The required cyclodextrin-based mixtures were prepared by condensation of α-, β-, or γ-cyclodextrin which were rendered amorphous through non-selective alkylation. The alkylation agents suitable for that purposes are exemplified by methyl, ethyl, 2-hydroxy propyl, glycidol, iodoacetamide, chloroacetate, or 2-diethylaminoethylchloride and epoxides like propylene oxide, isobutylene oxide, epichlorohydrin, 1,4-butanediol diglycidyl ether. The condensation products effectively solubilized estradiol, progesterone, or testosterone in water; these solutions, upon freeze-drying, yielded solids which could be directly compressed to tablets which dissolve completely within minutes. Condensation products of cyclodextrins did not have any untoward or toxic effects. Substitution of any of the hydrogen bond forming hydroxyl groups in glucopyranose unit, even by hydrophobic moieties such as methoxy and ethoxy functions, will result in a dramatic increase in water solubility. For example, the aqueous solubility of β-cyclodextrin is only 1.85% (w/v) at room temperature but increases with increasing degree of methylation. The highest solubility is obtained when two-thirds of the hydroxyl groups (i.e., 14 of 21) are methylated, but then falls upon more complete alkylation. Other common cyclodextrin derivatives are formed by other types of alkylation or hydroxy-alkylation of the hydroxyl groups.The main reason for the solubility enhancement in these derivatives is that chemical manipulation frequently transforms the crystalline cyclodex-trins into amorphous mixtures of isomeric derivatives.

BCPSR/NS/14/84

Steroid Hormones and Their Importance: A Review

Rajesh Yadav*, Nita Yadav and Jagannath Sahoo

SRMS, CET (Pharmacy), Bareilly, U.P., India

*E. mail: raj_ishu78@rediffmail.com

A steroid hormone (abbreviated as sterone) is a steroid that acts as a hormone. Steroid hormones can be grouped into five groups by the receptors to which they bind: glucocorticoids, mineralocorticoids, androgens, estrogens, and progestogens. The important class of lipids called steroids are actually metabolic terpenoid derivatives of terpenes, but they are customarily treated as a separate group. Steroids may be recognized by their tetracyclic skeleton, consisting of three fused six-membered and one five-membered ring. Steroids are solid alcohols that are widely distributed in animal and plant kingdoms. The basic skeleton consists of 17 carbon atoms arranged in the form of perhydrocyclopentenophenanthrene. Vitamin D derivatives are a sixth closely related hormone system with homologous receptors. They have some of the characteristics of true steroids as receptor ligands, but lack the planar fused four ring system of true steroids. Steroid hormones help control metabolism, inflammation, immune functions, salt and water balance, development of sexual characteristics, and the ability to withstand illness and injury. The term steroid describes both hormones produced by the body and artificially produced medications that duplicate the action for the naturally occurring steroids.

BCPSR/NS/14/85

Role of BMN-111 as a Prospective Treatment Option for Achondroplasia: Revelations from Clinical Trails

Henna Patel*, Amitava Ghosh, Raja Chakraborty

Bengal College of pharmaceutical Sciences and Research, B.R.B Sarani, Bidhannagar, Durgapur-713212. West Bengal, India

*E. mail: parekh.henna93@gmail.com

Achondroplasia is a rare genetic disorder caused as a result of autosomal dominant mutation in the fibroblast growth factor receptor3 gene (FGFR3), which causes an abnormality of cartilage and bone formation. It is rare and happens in about 1:50,000 births and its homozygous form can be fatal. A single abnormal gene is enough to cause achondroplasia. It leads to abnormalities in the body but brain growth is normal. It can be diagnosed by radiological investigations, ultrasonography, amniocentesis methods etc. Future strategies may be focused targeting the signals emanating from FGFR3. Biomarin, a pharmaceutical MNC has developed a version of this natural human peptide, C-type natriuretic peptic (CNP) that is more stable than its original form. Its analog version is currently called BMN-111. It seems to be replete with the potential for improving some of the long bones related complications and increases bone growth. BMN-111 binds to its own receptor which initiates intracellular signaling that ultimately inhibit the overactive FGFR3 pathway. The daily subcutaneous injections of BMN-111 are being tested in the recent versions of clinical trials phase -II in human population to alter the dwarf phenotypic expressions in such individuals and possesses much utility in clinical therapeutics and related applications in times to come.

BCPSR/NS/14/86

Novel Drug Targets for Diabetes Mellitus Type II

Shalmoli Seth*, Aniruddha Mukherjee

Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal

*E. mail: shalmoli.seth23@gmail.com

One of the reasons for the growing public health concern over the rapidly increasing prevalence of obesity in western and developing countries as well. A number of therapeutic agents exist for the treatment of type 2 diabetes mellitus including metformin, sulfonylureas, DPP-4 inhibitors, PPARg agonists, a-glucosidase inhibitors, insulin, and GLP-1 analogs. However, in addition to inadequate efficacy and durability, some of these agents suffer from liabilities, including hypoglycemia, weight gain, edema, fractures, lactic acidosis, and gastrointestinal intolerance. AMP-activated protein kinase is a potential target for novel agents that may meet this challenge. G-protein-coupled receptor 119 (GPR119) has recently attracted attention because of its modulation may produce favourable effects on glucose homoeostasis, food intake/body weight gain and possibly also β-cell preservation. Inhibiting sodium-glucose co-transporters (SGLT1/SGLT2), which have a key role in the absorption of glucose in the kidney and/or GI tract has been proposed as a novel therapeutic strategy for diabetes. Thus, screening and patenting of chemical compounds for SGLT1/SGLT2 gets more importance in the development of new drugs in diabetes. Keeping a close eye onto the recent advancement and trial report in the field of antidiabetic drug discovery; AMPK, GPR119 and SGLT are the latest and prime target that can assure the innovative drug target strategy.

BCPSR/NS/14/87

Novel Drug Target for Hyperlidemia

Swarnadeep Banerjee*, Aniruddha Mukherjee

Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal

*E. mail: swarna.baner@gmail.com

Many clinical and preclinical evidences suggest that hyperlipidemia is one of the prime causative factors of different metabolic disorder. Among all the excepted therapies like statin and fibrates are most favorable drug of choices in clinician's prescription. But keeping eye into their failure in therapies due to huge number drug interaction and organ failure, it pledging towards the new scope of drug research. Cholesteryl ester transfer protein inhibitors (CTPTs) were being the primary attention in search of newer antihyperlipidemic choice. Stearoyl-CoA desaturase-1 (SCD1) the rate-limiting enzyme in monounsaturated fatty acid synthesis, has recently been shown to be the critical control point regulating hepatic lipogenesis and lipid oxidation. The rapid development of SCD1 inhibitors is evidenced by the increasing number of patent applications published in past 10 years. On the other hand, energy homeostasis is maintained through a feedback loop that is formed by histamine-containing neurons and leptin, creating another pocket for hypothalamic H1 receptor analogue in drug research. AMP-activated protein kinase (AMPK), is another heterotrimetric energy sensing protein, plays a major role in regulating glucose and lipid metabolism by effect on energy metabolism. Keeping close eye on proteomics experiments and patents, numbers are increasing on the field of adeponectin therapy too, revealing the scope of pharmakcokinetists in the field drug discovery. More ever, CTPTs, SCD1, hypothalamic H_1 receptor analogue, AMPK subsrate analogues and adeponectin are major class of target that acquires the maximum attention in field of antihyperlipidemic drug discovery.

BCPSR/NS/14/88

Suitability of Modified Starch as a Drug Delivery Carrier for Controlled Release of Drug

Urbashi Barman*, Kanchan Kumar Dey, Sanjay Dey, Amitava Ghosh

Bengal College of Pharmaceutical Sciences and Research, B. R. B. Sarani, Bidhannagar, Durgapur-713212, West Bengal, India

*E. mail: urbashibarman5@gmail.com

In recent years among polysaccharides, starch is receiving utmost attention due to its usefulness in different industrial products in modified form.Starch is one of the most important reserve polysaccharides of higher plants. In all the natural biopolymers, starch has received the most attention because of its low cost, ready availability, and total degradation. Native starches are readily available from different botanical origins like maize, rice, potato, cassava etc. and India is abundant source starch from plant source. Native starches are utilized in different forms in various commercial purposes like food, pharmaceutical, textile, paper and packaging industry. However, starch has disadvantages of being hydrophilic, having poor mechanical properties, and having poor dimensional stability, especially in aqueous environments. Modified of starch with a degree of substitution (DS) of 2-3 has been of research interest because of their solubility into acetone and chloroform and for their thermo plasticity. The demand for modified starches in developing countries like China, India is growing annually with a growth rate of 8-9%. So, there is a huge market demand to fulfil this. The recent report on modified starches predicted that total consumption will grow to almost 75 million tons and the demand for starch by food and non-food industries in Asia is likely to grow by 4 - 6 percent per year. In this review article an attempt has been taken to explore the modified starch as drug delivery carrier for controlled release of drug. The use of modified starch as carrier for controlled release system has been the object of research over the past few decades due to their advantages over other carrier.

BCPSR/NS/14/89

Herb-Drug Interactions and Some Strategies to Minimize Their Adverse Effects

Gopal Gupta*, Amitava Ghosh, Sagar Naskar

Bengal College of Pharmaceutical Sciences and Research, B. R. B. Sarani, Bidhannagar, Durgapur-713212, West Bengal, India

*E. mail: sagar_n2007@yahoo.co.in

The application of medicinal plants in therapeutic management of different diseases has increased enormously over the last two decades. About 80% of the world population still relies on the traditional medicine system largely of botanical origin. Plant derived material or preparations with therapeutic health benefits, which contain either raw or processed ingredients from one or more plants is known as herbal medicine (WHO 2005). Low toxicity, easy availability of herbal products, constitutes the back bone of natural remedies. Patients are increasingly seeking herbal remedies to self-treat medical conditions. All medicinal agents have potentially unexpected effects including toxicity and interactions, and herbs are no different. Drug-herb interactions are based on the same pharmacokinetic and pharmacodynamic principles as drug-drug interactions. Herbal medicines do not need to be avoided, the only fundamental issue is that they should be considered as medicine and the adverse effects and potential interactions are to be considered. Thus pharmacists and doctors should be better informed to minimise patient harm. The present review deals with the interactions of natural products/herbs with the drugs and some strategies to minimize their adverse effects.

BCPSR/NS/14/90

Metronomics Chemotherapy- A Newer Approach for the Treatment of Cancer

Ratnamala Dutta*, Amitava Ghosh, Sagar Naskar

Bengal College of Pharmaceutical Sciences and Research, B. R. B. Sarani, Bidhannagar, Durgapur-713212, West Bengal, India

*E. mail: sagar_n2007@yahoo.co.in

A targeted chemotherapy does have a general target: rapidly dividing cells. This description applies well to cancer cells but, unfortunately, also describes some healthy cells, such as those in the bone marrow, gut etc. Concerns about the toxic effects of conventional cancer treatments on pediatric patients have prompted pediatric oncology researchers to investigate metronomic-like approaches to treatment. Metronomic chemotherapy is generally refers to repetitive, low doses of chemotherapy drugs designed to minimize toxicity and target the endothelium or tumor stroma as opposed to targeting the tumor. It is definitely an interesting approach that opens up the possibility of using chemotherapy differently than we have traditionally considered. Studies conducted in cell lines and animal models have also suggested that combining metronomic chemotherapy with targeted anti-angiogenesis agents is more effective than metronomic chemotherapy alone. It is a scientific grounded strategy, rather than an empirical practice at the bed side. The present study covers the latest approaches investigating on metronomics chemotherapy especially for the treatment of cancer.

BCPSR/NS/14/91

G-Protein Coupled Receptor - An Overview

Roopsha Das[1]*, Sagar Naskar[2]

[1]*Dr. B.C. Roy College of Pharmacy and A.H.S., Bidhannagar, Durgapur*

[2]*Bengal College of Pharmaceutical Sciences and Research, B. R. B. Sarani, Bidhannagar, Durgapur-713212, West Bengal, India*

*E. mail: sagar_n2007@yahoo.co.in

Every human cell is surrounded by a plasma membrane that makes it possible for the cell to maintain a specific mix of biochemically active species, while preventing unwanted entry of other substances from the outside environment. For proper function, the biochemical machinery inside a cell needs to be able to receive instructions from the outside. The history of ligand-activated receptors started more than a century ago, when it was noted that reactive cells have a 'receptive substance' on their surface. During the following half century (about 1920–1970), classical receptor theory was developed, based on the law of mass action and dose-response data. There are four major types of receptors namely G-Protein Coupled Receptor (GPCR), Enzyme linked receptor, Ion channel and Nuclear receptor. The present study is to understand the molecular mechanism of the GPCR receptor as majority of the drugs acting on this and there is a recent advancement as shown by Brian K. Kobilka and Robert J. Lefkowitz *(The Nobel Prize in Chemistry in 2012)*. The name GPCR refers to a common mode of receptor signalling via GTP-binding proteins on the inside of the cell. They mediate a wide range of physiological signals from the outside of the cell to the inside of the cell and elicit a series of reactions involving other proteins, nucleotides and metal ions, which eventually deliver a message and an appropriate cellular and physiological response.

BCPSR/NS/14/92

Treatment of Rheumatoid Arthritis with Therapeutically New Biological Agents

Sonia Auddy*, Amitava Ghosh, Sagar Naskar

Bengal College of Pharmaceutical Sciences and Research, B. R. B. Sarani, Bidhannagar, Durgapur-713212, West Bengal, India

*E. mail: sagar_n2007@yahoo.co.in

Rheumatoid arthritis (RA) is a chronic autoimmune disease in which there is joint inflammation, synovial proliferation, and destruction of articular cartilage. Immune system composed of IgM gets activated and release cytokines mainly TNFα and IL-1 which are chemotactic for neutrophils. These inflammatory cells secrete lysosomal enzymes which damage cartilage and erode bone while PGs produced in this process cause vasodilation which leads to pain. In most patients the disease results in severe disability. Current therapies significantly improve disease symptoms, although this benefit is attended by risk of toxicity. However, antirheumatic drugs are unable to stop joint destruction. The objective of the present study is to highlight the different therapeutic approaches with biological agents that are either being utilized or are under development. Some of these products reflect the evolving capacity of the biotechnology industry to synthesize and humanize therapeutic agents such as anti-tumor necrosis factor (TNF), monoclonal antibody (MoAb) and recombinant TNF-receptor construct appear to be validated tools. These treatments alone, or in combination with methotrexate are very effective in rheumatoid patients. Data from clinical trials and issues related to mechanisms of action, potential toxicity, and future perspectives for these novel therapeutic options are considered in this review.

BCPSR/NS/14/93

Transungual Drug Delivery System for the Treatment of Nail Disorders - An Overview

Sudipta Biswas*, Amitava Ghosh, Sagar Naskar

Bengal College of Pharmaceutical Sciences and Research, B. R. B. Sarani, Bidhannagar, Durgapur-713212, West Bengal, India

*E. mail: sagar_n2007@yahoo.co.in

The body normally hosts a variety of microorganisms, including bacteria and fungi. Some of these are commensals and others may cause infections. Fungi can live on the dead tissues of the hairs, nails. Continuous exposal of foot and hand nails to warm, moist environments usually develops infections by fungi and this is a very common circumstance in millions of people. They nail infections may be difficult to treat, and currently prescribed oral antifungal medications may cause adverse effects ranging from skin rashes to liver damage. Topical therapy is highly desirable in treating nail disorders due to its localized effects, which results in minimal adverse systemic events and possibly improved adherence. The existing clinical evidence suggests that a key to successful treatment of fungal diseases by topical antifungal product lies in inefficiently overcoming the nail barrier. Topical trans-nail delivery or transungual therapy of antifungal drugs is limited by several physicochemical and physiological factors. Newer approach such as iontophoresis and ultrasound-mediated drug delivery to the nail bed has been developed for treatment of a nail fungal disorder (onychomycosis). The present study focuses on the anatomy of human nail, diseases related to nail, altering the nail plate barrier by means of chemical treatments, penetration enhancers as well as physical and mechanical methods used to enhance the topical bioavailability of the drugs and latest trends in drug delivery across the nail.

BCPSR/NS/14/94

Musa paradisiaca: A prospective overview as pharmaceutical excipient

Dibya Sinha*, Simli Sarkar, Amitava Ghosh

Bengal College of Pharmaceutical Sciences and Research, B. R. B. Sarani, Bidhannagar, Durgapur-713212, West Bengal, India

*E. mail: simli.sarkar@rediffmail.com

A *banana* is one of the most famous, economical and edible fruit among the other fruits in world. There is hundreds of variety of banana plants found in different parts of the world. The fruit is available in various sizes, color and firmness. Banana fruit is a natural, commonly used as nutritional supplement. It contains many essential nutrients with minerals and vitamins, and has a high energetic value in the range of 90–100 kcal per 100g of banana fruit. Fully ripe banana pulp contained 33.6% reducing sugars, 53.2% sucrose, 5.52% protein, 0.68% fat, 0.30% fiber, 2.58% starch and 4.09% ash. The biological activities of the different parts of *Musa paradisiaca* like the leaves, roots, fruits, stem and seed are reported in various reputed journals. The different parts of *Musa paradisiaca* such as fruit, pulp, leaves have been used for treatment of peptic ulcers, analgesic and anti-asthmatic. A natural product (Acitan) obtained from *Musa paradisiaca* stem and leaves shown antioxidant activity *as well as* the management of sexual dysfunctions**.** Nowadays novel drug delivery system and technology focused on the natural materials as excipients which increase the safety and efficacy of drug molecule by formulating a convenient dosage form for ease of administration and to achieve better patient compliance. No dosage form can be made using just the drug, without any excipients. Excipients play a key role in design and development of conventional as well as novel dosage form .There are many advantages of natural materials over synthetic materials because they are nontoxic, less expensive, freely available, and biodegradable and maximum are obtained from edible sources. So aim of our research is to establish the potential of *Musa paradisiaca* fruit powder as tablet excipient.

BCPSR/NS/14/95

An Overview on Schizophrenia

Sourav Chakraborty*, Subhashis Banerjee

Gupta College of Technological Sciences, Ashram More, G.T.Road, Asansol-713301, West Bengal

*E. mail: sourav.glp07@rediffmail.com

This overview focuses on the neurobiological abnormalities found in "*Schizophrenia*", a *mental disorder* often characterized by abnormal social behavior, hallucinations, disordered thinking and deficiencies in cognition occurring generally with the reduction in the function of cortical and perhaps hippocampal GABAergic interneuron's fits with reduced expression of glutamic acid decarboxylase and defect in the dopamine neurotransmission at D 2 –type dopamine receptors is proposed based on the ability of D 2 antagonists activity on the EEG, in subject with its schizotypal disorders, a highlight on the most common factors causing it, such as genetic inheritance, chemical defects occurring in brain and other neuro-physical abnormalities in brain. The overview comprises a description to understand the various signs and symptoms such as the physical change, mood swings, behavioral change and the modern clinical tests used for the proper diagnosis. A study on the various conventional and modern treatment paths including the social and mental support (common in most psychiatric disorders) and a proper review on modern antipsychotic medication such as chlorpromazine, fluphenazine, iloperidone, olanzapine etc and other psychotherapies are considered as modus operandi. With its rapid onset and adverse effect on the society modern therapies needs to be developed for its cure.

BCPSR/NS/14/96

Evolving Soft Computation in Pharmaceutical Research and Data Management

Sankha Subhra Ta*, Abdhini Biswas, Prithviraj Chakraborty

Bengal College of Pharmaceutical Sciences and Research, B. R. B. Sarani, Bidhannagar, Durgapur-713212, West Bengal, India

*E. mail: conchwhite1@gmail.com

Soft computing (SC) is not a mysterious term; we've got accustomed reading and hearing concerning it daily. Nowadays, the term is employed typically in applied science and information technology. It's attainable to outline SC in numerous ways in which, nevertheless, SC may be a pool of methodologies that works synergistically and provides, in one type or another, versatile information processing capability for handling real world ambiguous situations. Its aim is to take advantage of the tolerance for imprecision, uncertainty, approximate reasoning and partial truth so as to realize flexibility, robustness and inexpensive solutions. This review examines the role of soft computing strategies like artificial neural networks (ANNs), genetic algorithms (GAs), fuzzy logic (FL), and their hybrids within the field of drug design and delivery. They have been found to be helpful in a very wide range of areas including drug delivery, analytical data analysis, drug modeling, protein structure and function, dosage optimization and manufacturing, pharmacokinetics and pharmacodynamics modeling and in vitro in vivo correlations, quantitative structure-activity relationship (QSAR), quantitative structure-property relationship (QSPR), variable selection, conformation searching, receptor docking, pharmacophore development, molecular design, combinatorial libraries, surface phenomena and complicated system studies. Primarily based upon the studies examined, the utilization of soft computing techniques is probably going to grow considerably in the future and will replace hit and trial phenomenon in Pharmaceutical research.

BCPSR/NS/14/97

Anti Snake Venom Property of Herbal Medicine-A Challenge to Anti Snake Venom Serum

Swarnadeep Dutta*, Sipra Sarkar, Amitava Ghosh

Bengal College of Pharmaceutical Sciences and Research, B. R. B. Sarani, Bidhannagar, Durgapur-713212, West Bengal, India

*E. mail: dutta.swarna201@gmail.com

Snakebite is a global medical problem especially in the rural areas of the tropics with about 40,000 deaths each year. Antiserum is the only therapeutic agent available throughout the world. Antiserum sometimes does not provide enough protection against venom-induced haemorrhage, necrosis and produces hypersensitive reactions. Antiserum development in animal is time consuming, expensive and requires ideal storage condition. The availability of anti snake venom serum (ASVS) in Govt. & Non Govt. hospital, Nursing home, rural clinics, health center is problematic maximum time. So our objective is to search herbal snake anti venom which overcomes above problems. For this study different traditional plant having proven mythological fact that it cures snake bite problem are chosen. Extract of different species (ethanolic/methanolic, aqueous extracts of plant) belonging to diverse plant resources (mostly used as folk medicine) is being found to neutralize snake venoms. Antivenom acts by neutralization of Lethality, Hemorrhagic activity, Necrotizing activity, Edema forming activity. It has been found that herbal drugs cure the entire above problems effectively associated with snake bites. So we may conclude that overcoming the ASVS problem,herbal drugs used in snake bite management and it may be formulated in large quantities to reduce the shortfall in getting ASVS.

BCPSR/NS/14/98

Therapeutic Potential of Russell's Viper Snake Venom in Coagulant Treatment

Ananya Pal*, Simli Sarkar

Bengal College of Pharmaceutical Sciences and Research, B. R. B. Sarani, Bidhannagar, Durgapur-713212, West Bengal, India

*E. mail: ananyapal004@gmail.com

Snake venom toxin contributed in the treatment of many diseases. We described here different sub-species of Russell's viper in Asia and properties of their venom. We also describe here different symptoms of lupus anti-coagulant inside the body. Patients who are suffering from ulcerative colitis and other infections can also get this anti-coagulant. Dilute Russell's viper venom time (dRVVT) is a procedure to detect those kind of anti-coagulant which is which is more effective than (Activated partial thromboplastine time) aPPT test. In the dRVVT assay, low rate –limiting concentrations of both Russell's viper venom and phospholipids are use to give a standard clotting time of 23 to 27 seconds. The clotting time of both the initial dRVVT assay and confirmatory test are normalized and then used to determine a ratio of time without phospholipid excess to time with phospholipid excess. The drvvt test has a high specificity than aPPT test for the detection of lupus anticoagulant, because it is not influenced by deficiencies or inhibitions of clotting factor VIII, IX or X.

BCPSR/NS/14/99

Formulation, Preparation and *In-Vitro* Evaluation of Silymarin Tablets Using Isabgul Powder as Tablet Excipient

Simli Sarkar*, Amitava Ghosh

Bengal College of Pharmaceutical Sciences and Research, B. R. B. Sarani, Bidhannagar, Durgapur-713212, West Bengal, India

*E. mail: simli.sarkar@rediffmail.com

There are uncountable natural agents available in nature as such or are obtained by extraction of naturally occurring materials or from microbial cultures. In the present research work, one of the naturally occurring agents such as isabgul was used as tablet excipient to formulate the silymarin tablets. Silymarin is a hepatoprotective drug. It is also obtained from naturally. It is a mixture of flavonoids extracted from seeds of the milk of thistle, Silybum marianum. So aim of the present work was to formulate and evaluate silymarin tablets using isabgul as natural agent. Silymarin tablets were prepared by wet granulation method at different drug: natural agent ratio (1:1, 1:1.5, and 1:2). The granules was evaluated for angle of repose, bulk density, tape density, carr's index, Hausner's ratio etc. then granules was compressed and prepared tablets were evaluated for general appearance, hardness, friability, weight variation, disintegration and in-vitro dissolution study. The interaction between drug and natural agent were determined by using FTIR study. FTIR study reveals that there was no interaction between drug and natural agent. Then this data was compared with the data which was obtained from marketed product.

BCPSR/NS/14/100

Formulation and Evaluation of New Multiple Drug Delivery System of Clarithromycin and Omeprazole

Dhananjay Rai*; Laliteshwar Pratap Singh, Brijyog

Institute of Pharmacy, Harishchandra Post Graduate College, Bawan Beegha Campus, Azamgarh Road, Post-Cantt, Varanasi-221 002, Uttar Pradesh, India

*E. mail: ravimgs@gmail.com

A new multiple formulation was developed to optimize the therapy of *H. pylori* infection. The formulation concerned with gastro retentive floating pellets of clarythromycin for incresed gastric residence; incresed local and systemetic action in combination with delayed relese formulation of acid unstable proton pump inhibitor omeprazole for intestinal delivery better. The approach involved for preparation of multiple drug delivery of clarithromycin and omeprazole by using hydrocollids to form hydrogels increased gastric residence. Further, enteric coated pellets of omeprazole were prepared by extrusion technique followed by coating with enteric polymer Eudragit RL 100, various evaluation including DSC, FT-IR, *in -vitro* release studies, stability studies, swelling index of floating pellets of clarithromycin & SEM of omeprazole pellets were carried out. Optimized formulation of clarithromycin was found to have increased gastric residence prolong the release of drug upto 96% of drug delivery in 6 hrs by diffusion process. In case of omeprazole pellets no drug was release in stimulated gastric fluid for 2.5 hrs followed by immediate release in stimulated intestinal fluid.

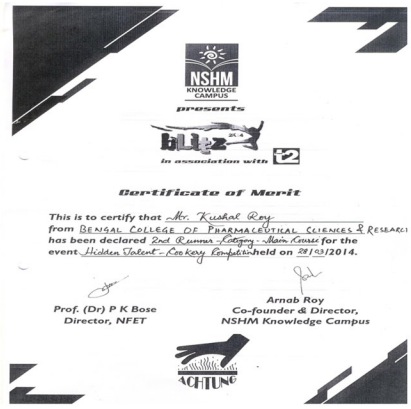
College Publication

Indexed in

CITE FACTOR, DIRECTORY OF RESEARCH JOURNAL INDEXING (DRJI), GLOBAL IMPACT FACTOR VALUE-0.310 FOR THE YEAR 2013, INTERNATIONAL SCIENTIFIC IMPACT FACTOR SERVICES, OPEN ACADEMIC JOURNAL INDEX, UNIVERSAL IMPACT FACTOR (UNDER EVALUATION), DOAJ (UNDER EVALUATION), OPEN J-GATE (UNDER EVALUATION), EBSCO HOST (UNDER EVALUATION), BASE (UNDER EVALUATION), INDIAN CITATION INDEX (UNDER EVALUATION)

রাজ্যস্তর প্রতিযোগিতার শংসাপত্র

All Bengal State Debate Champion- Swami Vivekananda Chetna Utsav 2014



NSHM KNOWLEDGE CAMPUS presents

blitz 2k14

In association with

Certificate of Merit

This is to certify that Mr. Kushal Roy from BENGAL COLLEGE OF PHARMACEUTICAL SCIENCES & RESEARCH has been declared 2nd Runner - Lottery - Main Course for the event Hidden Talent - Cookery Competition held on 28/03/2014.

Prof. (Dr) P K Bose
Director, NFET

Arnab Roy
Co-founder & Director,
NSHM Knowledge Campus

Mr. Kushal Roy bagged Runner up Trophy (Main course) in Hidden talent Cookery Competition

Certificate of Merit

BENGAL SCHOOL OF TECHNOLOGY
Sugandha, Delhi Road, Chinsurah - 712102
Phone: 033-2686 2027 / 6064 / 2668, Fax: 033-2686 4281
Email: md.bstpharmacy@gmail.com, Website: www.sedcoindia.com/pharmacy

This Certificate is presented to: Moumita Banerjee

For securing 3rd position in poster session in the

National Seminar on:

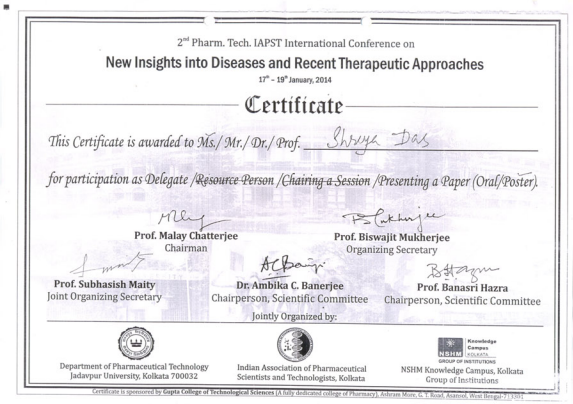
PHARMACOVIGILANCE & CLINICAL RESEARCH

Dr. Himangshu Sekhar Maji
Organizing Secretary

15/03/2014

Dr. Pranabesh Chakraborty
Chairman, Organizing Committee

Miss Moumita Banerjee bagged 3rd position in National Seminar



2nd Pharm. Tech. IAPST International Conference on

New Insights into Diseases and Recent Therapeutic Approaches

17th - 19th January, 2014

Certificate

This Certificate is awarded to Ms./Mr./Dr./Prof. Shreya Das

for participation as Delegate /Resource Person /Chairing a Session /Presenting a Paper (Oral/Poster).

Prof. Malay Chatterjee
Chairman

Prof. Biswajit Mukherjee
Organizing Secretary

Prof. Subhasish Maity
Joint Organizing Secretary

Dr. Ambika C. Banerjee
Chairperson, Scientific Committee

Prof. Banasri Hazra
Chairperson, Scientific Committee

Jointly Organized by:

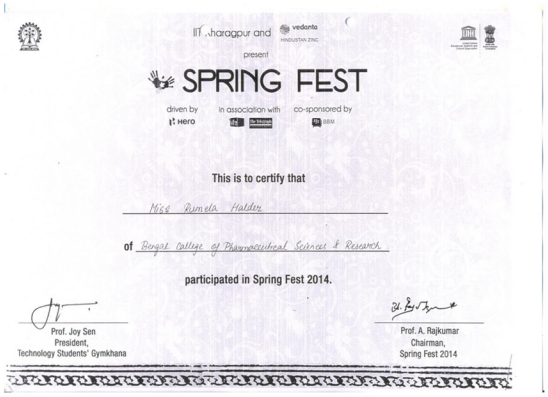
Department of Pharmaceutical Technology
Jadavpur University, Kolkata 700032

Indian Association of Pharmaceutical Scientists and Technologists, Kolkata

NSHM Knowledge Campus, Kolkata
Group of Institutions

Miss Shreya Das presented poster in 2nd Pharm. Tech IAPST Inter-national Conference

Pragna Paramita Das of 1st yr scored 9.24 SGPA, 2nd highest among all the Pharmacy colleges under WBUT.



IIT Kharagpur and vedanta present

SPRING FEST

driven by Hero | in association with | co-sponsored by

This is to certify that

Miss Rumela Halder

of Bengal College of Pharmaceutical Sciences & Research

participated in Spring Fest 2014.

Prof. Joy Sen
President,
Technology Students' Gymkhana

Prof. A. Rajkumar
Chairman,
Spring Fest 2014

Ms Rumela Halder participated in Spring Fest 2014 organized at IIT Kharagpur

Our college boys football team brought us Runners up trophy in DURGAPUR based Inter College Night Football tournament organised at BCET

WADHWANI FOUNDATION | NEN NATIONAL ENTREPRENEURSHIP NETWORK

ENTREPRENEURSHIP WEEK - INDIA 2014

PREMIER AWARDS

CERTIFICATE OF ACHIEVEMENT

AWARDED TO

BENGAL COLLEGE OF PHARMACEUTICAL SCIENCES AND RESEARCH, DURGAPUR

SUNITA SINGH

K SRIKRISHNA

NEN E Week India 2014 Premiere Award

08 03 2014

CHAMPION AT DEBUT

BCPSR E WEEK CHAMPION- PREMIUM AWARD 2014

12 03 2014

Well Acclaimed Teaching and Non teaching Staff of BCPSR

Pharmacist Oath

I swear by the Code of Ethics of Pharmacy Council of India in relation to the community and shall act as an integral part of the health care team.

I shall uphold the laws and standards governing my profession.

I shall strive to perfect and enlarge my knowledge to contribute to the advancement of pharmacy and public health.

I shall follow the system, which I consider best for pharmaceutical care and counseling of patients. I shall endeavour to discover and manufacture drugs of quality to alleviate sufferings of humanity.

I shall hold in confidence the knowledge gained about the patients in connection with professional practice and never divulge unless compelled to do so by law.

I shall associate with organizations having their objectives for betterment of the profession of Pharmacy and make contribution to carry out the work of those organizations.

While I continue to keep this Oath inviolated, may it be granted to me to enjoy life and the practice of pharmacy respected by all, at all times!

Should I trespass and violate this oath, may the reverse be my lot!

Pharmacy Council of India