The NGSMIPS Herald

The official news letter of the Nitte Gulabi Shetty Memorial Institute of Pharmaceutical Sciences, Mangalore

Volume - 2 Issue - 4 October - December 2011

Editor-in-Chief
Dr. C.S. Shastri
Principal

Executive Editor
Dr. Marina Koland
Professor

Staff Editors
Dr. Jane Jacob
Mr. Abhishek

Student Editors
Mr. Vivek Ghate M
Ms. Melanie D'Souza
Ms. Annfet Melissa D'Souza
Ms. Stephanie Amanna

Contents
Editorial, Guest Lectures 2
Campus Buzz 3
Department Activities 4
Targeted Delivery of Drugs to the Brain in Alzheimer's Disease 6
Faculty at Conferences Abroad 7
Student Council Inauguration 8

Drug Targeting to the Brain

VISION
To build a humane society through excellence in education and health care.

MISSION
To develop Nitte University as a centre of excellence, imparting quality education, generating competent, skilled manpower to face the scientific and social challenges with a high degree of credibility, integrity, ethical standards and social concern.

‘For Private Circulation Only’
From the Editor’s desk

Friends

The year 2011 has been very eventful. The world economy saw a downward swing, many countries facing severe recession. However, the pharmaceutical industry held its forte with decent growth rate during the year.

A fall out of the global recession is diminished employment opportunities. The pharmaceutical sector is also no exception. Despite the shortage of trained medical and paramedical personnel in the country, the industry has shied away from going for expansion and new recruitment. The situation is quite paradoxical.

The New Year holds much promise for the students. While the engineering courses continue to be the preferred choice of large number of students, there is a renewed interest in pharmaceutical sciences. Some of the initiatives that are to be taken up to make the pharmacy course attractive and more relevant are

1. Exposure to industry in an effective manner during the study
2. Up gradation of the syllabi keeping the requirement of the prospective employer in mind.
3. Exposing the students to the recent advancement made in the area – both at undergraduate and post graduate level.

That reminds me of the 33rd Annual conference of Indian Association of Biomedical Scientists to be held in the first week of November 2012 and will be organized by Nitte University. More than thousand delegates from India and abroad are expected to participate in the conference. With the theme “Recent trends and advances in biomedical research - an integrated approach”, the conference would provide a platform to all the researchers, scientists and academia to exchange their findings in the area of biomedical sciences.

With a new vigor, resolve and vision, let us greet the New Year.

Wishing you all a very happy, prosperous and successful new year.

C.S. Shastry, Editor in-Chief

Guest Lectures

Dr. G. Jagadeesh
Dr. Ravindranath Aithal
Dr. Harsha Halahalli
Inauguration of the NGSMIPS Student Council

The Institution celebrated the inauguration of its new Student Council for the academic year 2011-2012 in an impressive function held at the K.S. Hegde Auditorium on November 16, 2011. The new team is headed by Mr. Praveen Agarwal of the III Year B.Pharm. Captain Ganesh Karnik, MLC & Deputy Chairman, NRI Forum, Govt. of Karnataka was invited to be the Chief Guest and the formal ceremony was presided over by Dr. C.S. Shastry, Principal.

Members of the Student Council

President
Mr. Praveen Agarwal, III B.Pharm

Vice President
Mr. Ananth Vinayak Prabhu, III B.Pharm

General Secretary
Ms. Zunaira Mohammed Sharief, II B.Pharm

Cultural Committee
Mr. Subhash Nayak, III B.Pharm
Ms. Safa Hassan, II B.Pharm
Ms. Flancita D’Souza, II B.Pharm

Sports Committee
Mr. Zainul Azeem Sheikh, III B.Pharm
Ms. Murshida Banu, II B.Pharm

Lawyer Committee
Ms. Melanie Viola D’Souza, III B.Pharm
Mr. Lenson Paul D’Souza, III B.Pharm
Ms. Ritika Iris Mascarenhas, II B.Pharm

In the cultural programme that followed, there was enthusiastic participation from both UG and PG students. Not far behind were the freshers who also put up a wonderful show that culminated in a colorful and imaginative Fashion Show.

Guest Lectures

A series of guest lectures were conducted in the final quarter of 2011.

Dr. Ravindranath Aithal, renowned Herpatologist from Puttur delivered a lecture on, “Snakes, snake bite poisoning and its management” on October 10th, 2011. The discourse included description of various types of venomous snakes of South East Asia such as Cobras, King Cobra, Kraits, Coral snakes and the sea snakes; composition of snake venom, signs and symptoms of snake bite and treatment and first aid after snake bite.

Dr Harsha Halahalli MD, Associate Professor, Dept. of Physiology, KS Hegde Medical Academy, Nitte University lectured on the subject, “Searching and Citing Biomedical Literature” on December 2nd, 2011. The lecture attended by M.Pharm students, research scholars and faculty gave valuable insight on the right methods of literature search, reference citation and writing research protocols.

On 5th December, 2011, Dr. Jagadeesh, Expert Pharmacologist, Division of Cardiovascular and Renal Products, Center for Drug Evaluation and Research, US Food and Drug Administration (USFDA), Silver Spring, Maryland, USA delivered a lecture on, “Drugs and Drug targets and Getting started in research: The Basic Concepts of Scientific Research for PGs and Beyond”

Dr. G. Jagadeesh who is an Alumnus of Government College of Pharmacy, Bangalore is working at USFDA and is responsible for Drug Evaluation and Research. He touched upon on the various aspects of Drug Design and Development and recent Advance in the area of Pharmaceutical Sciences. The Lecture was attended by Post Graduate students, faculty members and Research Scholars of Nitte University.

Mr. Soumen Paul, Research Scholar, Netherlands and also an alumnus of NGSMIPS was invited to lecture on the topic, “Advances in Adenosine Receptors” on the 14th of December, 2011.

Staff Development Program for Senior Faculty at NGSMIPS

A one day work shop was organized by the Nitte University as a part of the Staff Development program on the subject, ‘Leadership for Senior Faculty of Pharmacy and Nursing Colleges’ on 1st December, 2011 by Mr. George Sebastian, Professor and Trainer, India and Canada. The workshop was attended by several senior staff of the Nitte Usha Institute of Nursing Sciences as well as from NGSMIPS.
DEPARTMENT OF PHARMACEUTICAL CHEMISTRY

Research Publications

DR. D. SATYANARAYANA, Professor


DR. K. ISHWAR BHAT, Professor


DR. JENNIFER FERNANDES, Professor and DR. RONALD FERNANDES, Professor

DR. JANE JACOB, Assoc. Professor

PAPERS PRESENTED AT CONFERENCES

Dr. K. Ishwar Bhat presented a paper as oral presentation on the research paper entitled, “Synthesis, Pharmacological and biological screening of novel isoxazoline derivatives derived from chalcones” held at the Department of Chemistry, Osmania University, Hyderabad from Dec 28th-30th, 2011 at the 30th Annual Conference, Indian Council of Chemists.

The following faculty presented their research papers at the International Conference on Synthetic and Structural Chemistry (ICSSC-2011) organized by the Department of Studies in Chemistry, Mangalore University, Mangalagangothri, Mangalore from Dec 8th -10th, 2011.

1. Dr. Jennifer Fernandes, presented a poster on the research paper entitled, “Evaluation of the protective potential of Averrhoa bilimbi leaf extract of acetaminophen-induced liver damage”

2. Dr. Jane Jacob presented a poster on the research paper entitled, “Analytical methods developed for the estimation of Rizatriptan in bulk and pharmaceutical formulation”

3. Mr. Abhishek Kumar, Lecturer. presented a paper as oral presentation on the research paper entitled, “Synthesis, antimicrobial, analgesic and anticancer Activity of some substituted pyrimidines”

4. Mr. Pankaj Kumar, Lecturer presented his research paper entitled, “Synthesis of 5-Quinolinamines as potent antimalarial agents” as an oral presentation.

5. Ms. Jainey P. James, Lecturer presented a poster on the research paper entitled, “Anticancer studies of some heterocycles derived from chalcones against DLA cell lines” at the 63rd Indian Pharmaceutical Congress (IPC) held at Bangalore from Dec 16th -18th 2011.

DEPARTMENT OF PHARMACEUTICS

Research Publications

DR. R. NARAYANA CHARYULU, Professor


DR. MARINA KOLAND, Professor

DR. PRABHAKARA PRABHU, Assoc. Professor

MR. AMIT B. PATIL, Lecturer

**MS. SNEH PRIYA**, Lecturer


**PAPERS PRESENTED AT CONFERENCES**

Dr. Marina Koland presented a paper entitled, “Bioadhesive polymeric matrix patches for buccal delivery of Tizanidine Hydrochloride and Diclofenac Potassium” at the 2011 AAPS Annual Meeting and Exposition, October 23-27, 2011 in Washington D.C., U.S.A

Mrs Nisha Girish Shetty, Senior Lecturer, also presented her research paper entitled, “Investigation of an in situ gel forming solution of imidazole drugs for ocular administration” at the 2011 AAPS Annual Meeting and Exposition, October 23-27, 2011 in Washington D.C., U.S.A

**Workshops/Seminars Attended**

Ms. Sneh Priya attended a three day, DST- India and Royal Society-UK sponsored seminar on “Biomaterials as Drug Delivery Matrices” on November 14th to 17th 2011, organised by Manipal College of Pharmaceutical Sciences, Manipal

**STUDENT ACHIEVEMENTS**

The following Second Year M.Pharm students from the Department of Pharmaceutics presented their research papers at the Indian Pharmaceutical Congress (IPC) held at Bangalore from Dec 16th-18th 2011.

1. **Ms. Anju Thomas** presented a poster on the research paper entitled “Formulation and characterization of modafinil liquid formulation by different solubility techniques” This paper was also co-authored by Dr. R. Narayana Charulu, Dr. Marina Koland, and Ms. Neogi Rishitha Hiranmoy.

2. **Mr. Bhavik B** presented a poster on the research paper entitled “Investigation of release profile of aceclofenac transdermal films using iontophoresis”. This paper was also co-authored by Dr. Marina Koland and Dr. R. Narayana Charulu.

3. **Mr. Darshan Sakhia** presented a poster on the research paper entitled “Investigation on release profile of chitosan based polyelectrolyte complexes using anti-hypertensive agents”. The paper was also co-authored by Dr. R. Narayana Charulu, Mrs. Nisha. G. Shetty and Ms. Akshaya Bhandarkar.

4. **Keyur Manavadaria** presented a poster on the research paper entitled “Formulation and in-vitro comparative evaluation of orodispensible tablets of granisetron hydrochloride” This paper was also co-authored by Dr. R. Narayana Charulu, Dr. Prabhakara Prabhu, and Mr. D. Srinivasa Sastry.

**DEPARTMENT OF PHARMACOLOGY**

**Research Publications**

**MR. HIMANSHU JOSHI**, Lecturer


**PAPERS PRESENTED AT CONFERENCES**

Dr. D.Prashanth Shetty, Professor presented a paper as poster at the Masterskill University of Health Sciences sponsored International Scientific Conference 2011, on 3rd November 2011 at the Selesa Beach Resort, Port Dickson, Malaysia. The research paper was entitled, ‘In vitro anti diabetic activity of averrhoa bilimbi fruit extract’

Mr. Himanshu Joshi has presented his research paper as oral presentation entitled, ‘Hepatoprotective potential of ervitamia coronoria’ at the Masterskill University of Health Sciences sponsored International Scientific Conference 2011, on 3rd November 2011 at the Selesa Beach Resort, Port Dickson, Malaysia.

**DEPARTMENT OF PHARMACOGNOSY**

**Research Publications**

**MR. SANTANU SAHA**, Lecturer


**GUEST LECTURES**

Mr. Santanu Saha was invited as resource person to deliver a lecture on “Pharmacognostical aspects of Botanicals” and to demonstrate experiments on “Quantitative microscopical study for evaluation of crude drugs” at the Department of Botany, St. Aloysius College, Mangalore, on 21st Dec, 2011.
Alzheimer’s disease, a neurodegenerative disorder of the elderly, is the most common form of dementia. The cognitive decline associated with drastically affects the social and behavioral skills of people living with this disease. This disease is also a source of great financial burdens on patients, families, and the community as a whole. The clinical symptoms of Alzheimer’s disease includes learning and memory impairment as the pathological result of gross cerebral atrophy, indicative of neuronal loss, with numerous extracellular neuritic amyloid plaques and intracellular neurofibrillary tangles found predominantly in the frontal and temporal lobes, including the hippocampus.

The mechanisms underlying Alzheimer’s disease are not completely clear yet, and there is still no cure. However, in recent years, several approaches aimed at inhibiting disease progression have advanced to clinical trials. Among these, strategies targeting the production and clearance of the amyloid-beta peptide are the most advanced. Drugs used to treat Alzheimer’s including cholinesterase inhibitors such as rivastigmine and others such as donepezil, memantine, galantamine and tacrine are administered orally. However, most of the ingested drugs do not reach the brain and are, instead metabolized totally or partially by the liver. This inefficient utilization of drug may require ingestions of higher drug doses that can produce toxicities in the heart, liver, or kidney. Moreover, many therapeutic agents are poorly soluble or insoluble in aqueous solutions. These problems can be minimized to a great extent by targeting the drugs directly to the brain. Thus targeting amyloid-beta 1-42 in all its aggregation forms has been suggested for therapeutic and diagnostic purposes.

Unfortunately, targeted drug delivery to the central nervous system (CNS), for the therapeutic advancement of neurodegenerative disorders such as Alzheimer’s, is complicated because of the presence of tight intercellular junctions at the endothelial cells. Various strategies have been developed to deliver drugs into the brain that would not otherwise be able to cross the BBB. Some of the more promising approaches include the use of polymeric nanoparticles and liposomes as carriers for targeting drugs to the brain in neurodegenerative disorders such as Alzheimer’s disease and Parkinsonism.

Nanoparticles are polymeric particles made of natural or artificial polymers ranging in size between 10 and 1000 nm. Compared with other colloidal carriers, polymeric nanoparticles are more stable in the presence of biological fluids. Nanoparticles can be synthesized from preformed polymers or from a monomer during its polymerization, as in the case of alkylcyanoacrylates. Several approaches may be used in their preparation such as emulsion polymerization, interfacial polymerization, denaturation and desolvation techniques. Polymeric nanoparticles are promising candidates in the investigation of Alzheimer’s disease because nanoparticles are capable of: opening the tight endothelial junctions and crossing the BBB. They also have high drug loading capacities, and capable of targeting the mutagenic proteins of Alzheimer’s. So far, the only successfully used nanoparticles for the in vivo administration of drugs targeted to the CNS, is the rapidly biodegradable polybutylcyanoacrylate (PBCA). According to Kreuter et al., the passage of PBCA nanoparticles through the BBB probably occurs by phagocytosis or endocytosis by the endothelial cells.

Liposomes are spherical vesicle structures composed of a unilamellar lipid bilayer surrounding internal aqueous compartments and a relatively impermeable outer lipophilic phospholipid bilayer. Liposomes have gained considerable attention as drug delivery carriers because they are biocompatible, nontoxic, can deliver both hydrophilic and lipophilic drug molecules, protect their contents from degradation by plasma enzymes, and transport their load across biological membranes and the BBB. To escape uptake by the reticuloendothelial system after parenteral administration, ‘Stealth liposomes’ have been developed by modifying the surface of the liposome membrane. They have long been used as drug delivery system to the brain, because the particles can entrap the compounds and prevent the rapid elimination or degradation as well as promote the penetration through the BBB which in turn decreases the effective dose. In addition, they do not elicit negative biological responses that generally occur when a foreign material is introduced in the system. With the pretreatment and adequate formulation in the brain or in places close to the brain, the liposomes are nontoxic, nonimmunogenic, noncarcinogenic, nonthrombogenic, and biodegradable. Based on the same concept the use of liposomes was proposed for the delivery of diagnostic agents across the BBB, a new method using PET imaging with positron emitter-labelled liposomes. This method allows accumulating liposomes in brain tumours and then detects small brain tumours with PET scanning. Based on liposome technology, rivastigmine liposomes were developed for delivery into the brain through intranasal route. This study showed that this particular administration with liposomes significantly increased the exposure and the concentration of the drug into the brain. Another example is the liposomal preparation of quercetin which is an agent known to improve learning and memory ability. The conventional oral administration of this drug is associated with poor absorption and difficulty in passing the BBB.

The development of novel therapeutic strategies for neurodegenerative and neurological diseases represents one of the biggest unmet medical needs today. One of the principal challenges facing research in this area is resolving the issue of binding of the drugs (loaded onto nanoparticles or liposomes) to amyloid plaques to effectively control Alzheimer’s disease.
Faculty at Conferences Abroad

Dr. Marina Koland at the 2011 AAPS Annual Meeting and Exposition, October 23-27, 2011 in Washington D.C., U.S.A. with alumni, Mr. John Mathew and Mrs. Jyothi Ann Mathew


Mr. Himanshu Joshi at the International Scientific Conference 2011, Port Dickson, Malaysia on 3rd November 2011.

Dr. D.Prashanth Shetty, at the International Scientific Conference 2011, Port Dickson, Malaysia on 3rd November 2011.

References:


Student Council Inauguration
16.11.2011