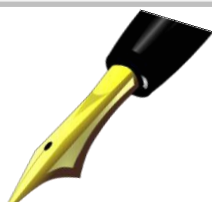




**GURUNANAK COLLEGE OF PHARMACY
&
GURUNANAK TECHNICAL INSTITUTE
Nagpur**

INDOCTRINATE



NEWSLETTER

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Technical Article

MICROCHIP - AN INTELLIGENT DRUG DELIVERY SYSTEM

Ms. Pournima Adhaoo

Every human being to lead a long and a healthy life has always been the driving force behind various advancements in the biomedical field. The wireless communication field owing to rapid expansion has slowly started to make its presence being felt in various biomedical applications like remote healthcare monitoring, wireless drug delivery systems. In this era of increase in the aging population of the world, the wireless sensor nodes are gaining a lot of importance mainly because of the ease they offer in drug delivery and remote monitoring of patients. Patients suffering from chronic diseases need continuous monitoring and appropriate drug dosage delivery. Doing all these remotely reduces the burden on the already afflicted fellow humans. Moreover, the utilization of wireless sensor networks in these applications helps in controlling the spread of contagious infections (as the physical interaction with the affected patient is reduced).

Microchip for drug delivery system is a potential system that allows the storage and dependable, controlled release of multiple drugs. The microchip can be created by general micro-fabrication techniques and can also be self-contained, which eliminates the need for patient or doctor intervention. A microchip system has the ability to store a large number of drugs or chemicals, control the time at which release begins, and control the rate at which the chemicals are released. The microchip could be integrated with a tiny power supply and controlled by a microprocessor, remote control, or biosensors. It is simple to use. It is multi wellled so that drugs and other molecules can be delivered for weeks or years at a time. It can hold many different drugs or other molecules of varying dosages and can release these substances in a controlled dependable manner.

Applications:

- This technology could be used in medical diagnostics or chemical detection and micro-fluidic devices for combinatorial chemistry or microbiology.
- It is used in drug delivery. This microchip may someday be used in the development of an autonomous, controlled release implant or a highly controllable tablet for oral drug delivery.
- The technology could be particularly useful for psychiatric and elderly patients who rely on a complicated regime of drugs and are at risk if they miss a dose or take it at a wrong time.
- An Ingestible microchip that will monitors your medication is interesting area of research with application of remote technology where the sand-particle sized sensor consists of a minute silicon chip containing trace amounts of magnesium and copper. When swallowed, it generates a slight voltage in response to digestive juices, which conveys a signal to the surface of a person's skin where a patch then relays the information to a mobile phone belonging to a healthcare-provider.

ACADEMIC ACHIEVEMENTS**RTM Nagpur University Results****M. Pharm Result:**

Branch	% Result	Topper (% Score)
M. Pharm - I		
Pharmaceutics	100	Ms. Nikita Saluja (74.00)
Quality assurance	100	Ms. Sneha Surkar (69.23)
Pharmaceutical Chemistry	100	Mr. Nitin Jadhav (70.77)
M. Pharm - II		
Pharmaceutics	100	Mr. Imtiaz Khan
Quality assurance	100	Ms. Preeti Sahani
Pharmaceutical Chemistry	100	Mr. Sagar Bhojar

B. Pharm Result:

Year	% Result	Topper
B. Pharm. IV	72.72	Mr. Zain Hudani (70.53)
B. Pharm. III	75.60	Ms. Konika Gurjar (69.33)
B. Pharm. II	73.17	Ms. Pooja Hemane (75.33)
B. Pharm. I	81.03	Ms. Rashi Gupta (78.08)

D. Pharm Result

Year	Academic Topper
D. Pharm-I	Mr. Atul Dewani (74.72 %)
D. Pharm-II	Ms. Julee Dongre (72.9 %)

ACCOLADES

- **Mrs M. M. Bodhankar** awarded with Ph.D. on 'Development and evaluation of polyherbal formulation for dermatological use and its comparison with marketed formulation' from R.T.M. Nagpur University, Nagpur. She has completed her work under the guidance of Dr. A. T. Patil, UDPS, RTM Nagpur University, Nagpur.
- **Mr. Roshan Tawale and Mr. Rahul Pandey (B. Pharm final year)** won First prize in Quiz competition held at IES Management college and Research Center, Bandra, Mumbai.
- **Sangam Bawankar**, D.Pharm I won two gold medals in the 2nd level open Karate Championship 2013 at Olympian Krida Sankul, Karad held on 23rd & 24th Nov 2013, organised by Maharashtra Pacific Karate Do Association, Ministry of Youth Affairs & Sports, Govt. Of India, Indian Olympic Association & International Olympic Committee.

PLACEMENT ACTIVITY

Following students of B. Pharm and M. Pharm are placed in Pharma industry, Academics and marketing.

No. of Students	Organization placed	Department Placed
B. Pharm		
03	Apollo Pharmacy, Mumbai	Drug Store Manager
03	Med Plus Pharmacy, Nagpur	Drug Store Manager
01	Bharat Serum and Vaccine, Mumbai	Quality Assurance
M. Pharm		
01	Wockhardt Pharma Ltd, Aurangabad	Research and Development
01	Plethico Pharma Ltd, Indore	Quality Assurance
01	Johnson and Johnson Pharma Ltd, Aurangabad	Quality Assurance
01	Enbee Pharma, Nagpur	Formulation and Development
01	Indian Drugs Ltd, Nagpur	Formulation and Development
01	Flemingo Pharma, Nanded	Production
01	Naticon Life Sciences, Nagpur	Product Management
01	Rural Hospital, Balaghat, MP	National Rural Health Management, Govt. of India
01	MGIRI, Labs, Wardha	Quality Assurance/ Quality Control Lab.
01	Agnihotri College of Pharmacy, Wardha	Academics
01	Accent Pharma Solutions Ltd, Nagpur	Medical Transcription

**Independence Day:**

GNCP and GNTI celebrated 66th Independence Day. The flag hoisting was carried out by Sardar Parshan Singhji Kalsi, Ex MLC and General Secretary of the Sikh Education Society. The function was followed by cultural programme and refreshment for staff and students.

- **Ms. S. S. Yadav** with two students **Ms. Roshani Sarode** and **Ms. Vinita Manwatkar** participated in JCI sponsored singing competition 'Voice of Pharma'.
- **Rahul Pandey, Roshan Tawale, Radhika Ratti, Monika Khubnani, Anjali Singh, Nikita Kapgate** participated in Quiz competition held at IES Management college and Research Center, Bandra, Mumbai.



Tree Plantation

Tree plantation program was organized on 14, Dec 2013. Chief Guest on this occasion was Mr. Sandeep Hate. He emphasized the need of tree plantation. On this occasion Dr. A. M. Itadwar, Principal GNCP Nagpur briefed the students about role of plants in maintaining the environment and biodiversity. The program was organized under the guidance of Dr. S. K. Tilloo. Mrs M. M. Bodhankar, Mr. V. B. Pande, Mr. T. M. Rasala, Mr. S. R. Yende, Mr. K. S. Moharir and large no. of students attended the program.

Parent's Meet



Gurunanak Technical Institute organised its 1st parent's meet on 29/09/2013 under the chairmanship of Dr. S. K Tilloo. The meet was presided over as per the predefined agenda & concluded with an interactive session with parents. 51 parents were present for the meet. The meet concluded with Vote of thanks & High tea.

Teachers Day

Teachers Day was celebrated on 05/09/2013 by the students of GNTI and GNCP. The programme started with lighting the traditional lamp, Saraswati Poojan & paying tribute to Dr. Sarwapalli Radhakrishnan. Dr. A. M Itadwar emphasizes the importance of teacher in current education system. The programme concluded with vote of thanks followed by refreshments.

Blood Donation Camp



The Government Medical College and Hospital's Blood Bank was invited for the seventh time in Gurunanak College of Pharmacy on 21st December 2013, to conduct a voluntary blood donation camp. Informed consent form the students was taken prior to the activity when it was noticed that many of them were going to participate in the activity for the first time. The enthusiasm amongst students was prominent and many who couldn't make it to donate blood, were encouraging and motivating their friends to participate. In all 34 students participated for which the blood bank authorities expressed their satisfaction. Principal Dr. A. M. Itadwar, HOD of undergraduate studies Dr. S. K. Tilloo, programme coordinator Mr. A. H. Deshpande and other faculty member were present at the activity.

Fresher's Day

To the new entrants of GNCP and GNTI, Fresher's day party was given by seniors of M. Pharm, B. Pharm and D. Pharm on 14/09/2013 and 24/08/2013 respectively.

Participation in Mega Health Camp

Students and faculty member of GNTI were participated in A mega health camp organised by Dr. Nitin Raut on 10/11/13. Students enthusiastically participated and distributed medicines to the needy people.



Mono-act on Swami Vivekananda

In the view of all round development of students & 150th anniversary of Swami Vivekananda a mono-act was organised & presided over by Mrs. Deepali M. Ghonge on 28/09/2013.



Educational tour

An educational tour was organised by GNTI to Konkan from 02/12/13 to 09/12/13. Eleven students & faculty member participated in the tour. The tour included visit to various prominent spots; Kolhapur, Vijaydurg Fort, Tarkarli, Sindhudurg Fort, Amboli, Sawantwadi & Mumbai. The tour also gave an opportunity to students to enjoy various adventure sports with local sightseeing.



Pharmacist Day Celebrations



GNCP and GNTI celebrated World Pharmacist Day on 25/10/2013. On this occasion college alumniees working as entrepreneur as well as in various social organizations were felicitated. Dr. A. M. Itadwar, faculty members and students of D. Pharm, B. Pharm and M. Pharm were present for this program.

Quizoppia 2013

Quizoppia- an Open Quiz competition was organized by Gurunanak College of Pharmacy, on 12/10/2013, in college auditorium. It was hosted by professional quizmaster Mr. Anup Manchalwar. 55 teams have participated in this event. The event was coordinated by Mr. D. P. Dharkar.

Winners were awarded with cash prize as follows:

- ✓ 1st prize (Rs. 4000/-): Mr. Devendra Prabhune and Mr. Jaydeep Das
- ✓ 2nd Prize (Rs. 3000/-): Mr. Akheel Singh and Mr. Padmanathan Pillai
- ✓ 3rd Prize (Rs. 1000/-): Mr. Aniruddha Morarkar and Mr. Vijay Bake
- ✓ 4th Prize (Rs. 1000/- for GNCP Students): Mr. Akshay Jha and Mr. Nitin Shende

Two days workshop on cGMP in Pharmaceutical Manufacturing: (Records and Reports –Subpart J)

Today pharmaceutical industry demands workforce who is already trained with various aspects of regulatory guidelines as industry has to cope up with constantly upgrading global regulatory guidelines. With this view Gurunanak College of Pharmacy organized two days workshop for B. Pharm students on 25th and 26th November 2013. During these two days, lectures were delivered by the faculty from college and industry on Designing of manufacturing formula, Importance of preparation of Specifications for raw material as well as finished products, preparation of Batch Manufacturing Record and In Process Quality Control. Participants were given training for the reparation of qualitative quantitative formula during practical sessions. Hands on training sessions were conducted during this and students were also given practice sheets to get train on these topics. By actually preparing tablet batches participants were taught to prepare batch manufacturing record.

The workshop was organized by Dr. V. A. Kilor and Dr. N. P Sapkal, students of B. Pharm III and B. Pharm IV year attended the workshop. Principal Dr. A.M. Ittadwar addressed the participants during valedictory function. Workshop was concluded after the distribution of certificates to the participants.

Workshop on Practical Training of Tablet Manufacturing (Module I):

Workshop on Practical training of tablet manufacturing was carried out for B. Pharm III Yr. Students on 30/11/2013. In this information with practical training over various precompression processes was given to students. Workshop was conducted by Mr. A. H Deshpande and 20 students attended the same.

GUEST LECTURES

- Mr. Sharad Wakode, Associate Professor, DIPSAR delivered lecture on the topic '**Animal House Management**' on 31/8/13.
- Dr. K.W Deoghare, Senior Lecturer, Adv. V.R. Manohar Institute of DMLT, Nagpur delivered a guest lecture on '**Impact of media on adolescents**' on date 28/09/2013.
- Dr. Ajay Omprakash Mehta, oncologist & Director Central India Cancer Research Institute, Nagpur delivered guest lecture on the topic '**Cancer Awareness**' on 7/10/13. The lecture was organized by alumni association, GNCP.
- Mr. Rahul Harde and Mr. Nitin Kurhekar, Morpheus Human Consulting Pvt. Ltd. delivered guest lecture on the topic '**Employability Enhancement Skills Required for Pharma Students**' on 10/12/13. The lecture was organized by training and placement cell, GNCP.

RESEARCH & DEVELOPMENT ACTIVITIES

Publications

Book:

- **Dr. S. K. Tilloo** – chapter entitled, ‘Histological and Histochemical Staining Techniques’ in book ‘**Indian Herbal Drug Microscopy**’ Springer, New York. ISBN – 978-I-4614-9514-7; 978-I-4614-9515-4 (e-book).

Research Article:

- **Vinita Kale, Chetan Tapre and Abhay Ittadwar.** Gustatory System and Masking the Taste of Bitter Herbs. IJPSR, 4 (11), 2013, 4118-4124.
- **Vinita Kale, Alok Ubgade.** Vaginal Mucosa – A Promising Site for Drug Therapy. British Journal of Pharmaceutical Research. 3 (4), 2013, 983-1000.
- **Amit Khandagade, Vinita Kale, Ravi Sinha.** Critical Quality Risk Analysis of Process Parameters of Fluid Bed Coating Technology. International Journal of Industrial Engineering & Technology, 3 (4), Oct 2013, 15-24.
- **Vinita Kale, Abhay Ittadwar, Ravi Samant.** Engineering Aspect of Low-Medium Pressure Pressed Agglomeration Process. Int. J. Pharm. Sci. Rev. Res., 23 (1), Nov – Dec 2013, 02, 6-12.
- **Rahate Nikita B., Bodhankar Mitali M., Dhoke Priyanka N.** Crystallo-co-agglomeration : A novel technique to improve flow and compressibility. Journal of drug delivery and therapeutics, (4), 2013, 178-183.
- **Priyanka Dhoke, M.M. Bodhankar.** Microemulsion based alcohol-free emulsified fragrance. WJPPS, 2 (4), July 2013, 158-1672.
- **P. K. Bhaisare, S. K. Tilloo.** Formulation and in vitro characterization of transdermal film using *Hyptis suaveolens* seed mucilage. American Journal of Pharmtech Research. 2 (4), 2012, 945-953.
- **Subhash R. Yende** and Uday N. Harle. Antidepressant-like effect of *Sargassum ilicifolium* in mice model of depression. Advances in Pharmacology and Toxicology, 14(3), 2013, 7-13.
- Prashant R. Verma, Prakash R. Itankar, **Sumit K. Arora.** Evaluation of antidiabetic, antihyperlipidemic and pancreatic regeneration potential of aerial parts of *Clitoria ternatea*. Rev Bras Farmacogn (Brazilian Journal of Pharmacognosy) 23, 2013, 819-829.

Presentations

- **Roshan Tawale, Parikshit Tiwari, Himanshu Purohit, Rahul Pandey. Radhika ratti, Nikita Kapgate, Anjali Singh, Siddharth Anwani, Manish Vidhani, Monika Khubnani, Manju Nair** presented posters on Drug Price Control Order, at IES Management College and Research Center, Bandra, Mumbai.
- **Gajanan Panpatte and Mitali M. Bodhankar** presented article on Formulation and evaluation of microemulsion based hydrogel of Metronidazole for Periodontitis, in one day national seminar on current trends in formulation, development and regulatory affairs held at Department of Pharmaceutical Sciences, R.T.M. Nagpur University on 3/12/2013.

Seminar attended

- **Dr. Mitali M. Bodhankar** attended one day national seminar on "current trends in formulation development and regulatory affairs" held at Department of Pharmaceutical Sciences, R.T.M. Nagpur University.

Lecture Delivered

- **Dr. N. P. Sapkal** delivered guest lecture in UGC sponsored National Seminar on The chemistry of cosmetics & its impact on human health, organized by SS Girls College, Gondia, on 26/10/2013.
- **Mr. K. S. Moharir** delivered seminar on 'Pharmacokinetic consideration in targeted drug delivery system', in AICTE sponsored faculty development program held at IPER on 21/10/2013.
- **Mr. A. H. Deshpande** delivered seminar on 'Molecular complexes in drug targeting' in AICTE sponsored faculty development program held at IPER on 21/10/2013.
- **Dr. V. V. Kale** delivered lecture on Nanometal particle – Robustness of process, in AICTE sponsored staff development program held at Bharti Vidyapeeth College of pharmacy, Kolhapur on 03/12/2013.

Patent Filed

- **Dr. N. P. Sapkal** - Chewable Milk Compositions and Fortified Powder Formulations Thereof, Patent Application No. 3418/MUM/2012.
- **Dr. N. P. Sapkal** - Pharmaceutical Microemulsion Immobilized In A Thin Polymer Matrix and Methods of Making Them, Patent Application No.3947/MUM/2013.
- **Dr. N. P. Sapkal** - Water Soluble Pharmaceutical Film with Enhanced Stability, Patent Application No. 3221/MUM/2013.
- **Dr. S. K. Tiloo** – A mosquito coil formulation and a process for preparing the same, Patent Application No. 464/MUM/2013A.

SDP/QIP attended

- **Mr. K. S. Moharir and Mr. A. H. Deshpande** attended AICTE sponsored faculty development program on Current strategies in targeted drug development, held at IPER Wardha from 14/10/2013 to 25/10/2013.
- **Mr. T. M. Rasala** attended Quality Improvement Programme entitled 'Drug discovery and Development', held at Bharati Vidyapeeth, Poona college of pharmacy, Pune from 18/11/2013 to 30/11/2013.
- **Dr. Mrs. S. R. Walde and Ms. P. G. Gondane** attended Two weeks faculty development program on 'Recent advances in modern analytical techniques', from 25/11/2013 to 06/12/2013 organized by Govt. College of Pharmacy, Amravati.

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&

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