2025

e – Pharmat

Department of Pharmacy Magazine

A Good Pharmacist is a Happy Pharmacist

DEPARTMENT OF PHARMACY

T T D Sri Padmavathi Women's Polytechnic

Tirupati

Andhra Pradesh India – 517 502

TIRUMALA TIRUPATI DEVASTHANAMS

SRI PADMAVATHI WOMEN'S POLYTECHNIC

Department of Pharmacy

Vision

"To equip women with competencies essential for pharmacists for procuring, preparing, preserving, compounding and dispensing of medicinal drugs"

Mission

M1 -

"Designing outcome-based curriculum to impart essential knowledge for preparing, preserving, compounding and dispensing medicinal drugs".

M2 -

"Enforcing outcome-based learning and teaching in conformity with Bloom's Revised Taxonomy".

M3 -

"Implementing outcome-based assessment of student attainment using well designed rubrics".

M4-

"Adopting continuous internal assessment system for facilitating students to attain learning outcomes".

M5 -

"Providing land, built up space, furniture, laboratory equipment, computing and library facilities and any other facilities as per the norms and standards of regulatory bodies".

Editorial Board…..

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Dr. M Padmavathamma

M Pharm, Ph.D.

Associate Editor

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M Pharm, Ph.D.

Staff Advisor

Dr. K. V. Gopinath

M Pharm, Ph.D., CPhT.

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Ms Y. Lokeswari
Ms B Sumasri

Editorial Message …

Hailed as the first draft of creativity and innovation, a magazine presents a social and tasteful conversation of a powerful organization, where the refined imaginative sensibilities and abilities of its young personalities go to the front. It holds mirror to the bunch exercises and activities embraced by the foundation to etch the multifaceted characters of adolescents besides being a media platform. On this earth shattering event of drawing out the magazine, we, the publication group, appreciatively recognize the unmistakable assortment of commitments made by the students and the staff.

"All progress comes beyond comfort zone"

Dr M Padmavathamma

Principal

About Diploma in Pharmacy….

About Diploma in Pharmacy….

This is a diploma course in the field of pharmacy education & practice. The students those are interested in pharmacy practice can choose this course. After the completion of this course the students can practice as a registered pharmacist in clinical practice and a technician in an industry.

Pharmacy is a branch of health sciences that deals with the preparation and dispensing of drugs. Its aim is to ensure safe and effective use of drugs and pharmaceuticals. Pharmacists are the expertise health care professionals.

It is a two-year course plus 90 days internship in any approved hospital by the respective state pharmacy council.

PHARMACIST'S 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 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 counselling 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 my professional practice and never divulge unless compelled to do so by the 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 unviolated, 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!

SOCIAL RESPONSIBILITIES OF PHARMACISTS…..

Pharmacists are licensed practitioners of drugs in hospital and community practices. Today they have a social responsibility and do service that transmit the distinct composite of applied knowledge, skills, attitude and value to the profession of pharmacy in healthcare. Competent quality registered pharmacists are expected to do services to community like

Review Prescriptions: Pharmacist should receive and handle prescription in a professional manner. They check for the accuracy of the prescription. Also, Contact the prescriber for any clarifications and corrections in the prescription with suggestions if any.

Dispense Prescription and Non-Prescription Medicines: Pharmacist should be able to dispense the various scheduled drugs / non schedule drugs as per the implications of the Drugs and Cosmetics Act.

Provide Patient Counseling / Education: Pharmacist should be able to do effective counsel / educate the patients regarding drugs and its related issues plus diseases through communication skills.

Hospital and Community Pharmacy Management: Pharmacists should be able to manage hospital and community pharmacy practices as per the recommendations of the Drugs and Cosmetics Act and recommendations of the regulatory agencies. The social commitment includes effective drug distribution system and scientific inventory management.

Expertise on Medications: Pharmacists should be able to provide expert opinion on medications to healthcare professionals on safe, effective, appropriate and economic treatment.

Proficiency on Drugs / Pharmaceuticals: Pharmacists should select salts based on physioco-chemical and biological characteristics of Active Pharmaceutical Ingredients, excipients, drugs and dosage forms based on the knowledge and scientific resources.

Entrepreneurship and Leadership: Pharmacists should acquire and execute entrepreneurial skills and leadership skills to be independent practitioners in professional environments.

Delivery primary and preventive healthcare: Pharmacists are contributing in various healthcare programs of the nation in disease prevention to strengthen public health thereby nation's health.

Professional, Ethical and Legal Practice: Pharmacists are delivering professional services in accordance with social, ethical and professional guidelines with integrity.

Continuing Professional Development: All pharmacists are able to recognize the gaps in knowledge and skills in practice. And be self motivated bridge by acquiring higher education and attending continuous education modules from time to time.

Journalism: Pharmacists fills the gap in healthcare by inventions and innovations by evidence and practice based medicine. It will act like a catalyst and provide necessary information in a lucid language to healthcare professionals and citizens.

Volunteering services: All pharmacists are obligated to community services by organizing various health awareness programmes by conducting rallies, seminars, health camps, blood donation camps etc. on specific health day programmes of the nation and global.

Pharmacy Technicians: All pharmacists with diploma in pharmacy are technicians in pharmaceutical industries. They serve in research and development, production, quality control, quality assurance, packing and marketing.

Medical Reimbursement: Pharmacists Scrutiny, Processing and validation of medical reimbursement of claims submitted by the employees for formulary and nor formulary drugs in government and semi government bodies.

Medical Coding: Pharmacists transform healthcare diagnosis, procedures and medical services and equipment into universal medical alpha numeric codes. It's the responsibility of pharmacist to use right single code by reviewing the patient data for processing the medical claims.

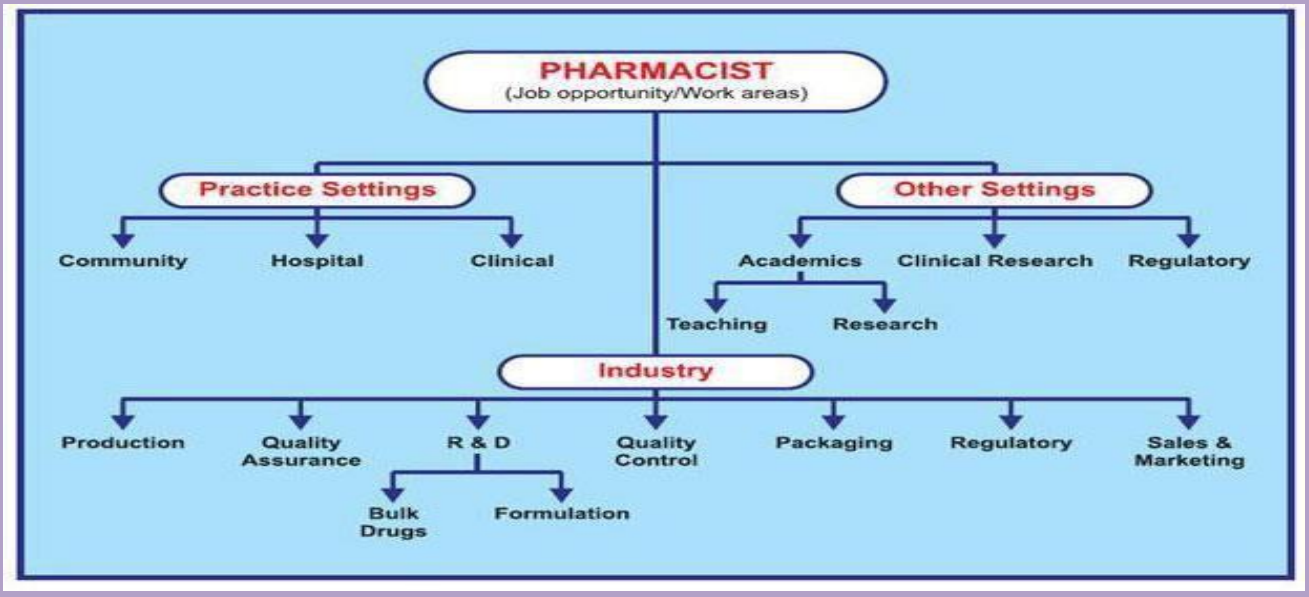
All pharmacists through their social, ethical and professional knowledge and skills are obligated by law to strengthen the health of the community thereby to the nation's health.

By K Tejaswini, M Bhavya, M Janaki, N Sujatha
I D Pharm

Job Opportunities for Diploma In Pharmacy

by P Maya & Y Lokeswari I D Pharm

- Lateral entry to B Pharm and Doctor of Pharmacy
- Hospital Pharmacist - Pharmacy Officer, Pharmacy Supervisor Phar Grade I and Pharmacist Grade II in state, central, quasi governments and autonomous bodies.
- Community Pharmacists as a druggist and chemist and Pharmacy managers, Pharmacy Clerks and Pharmacy Assistants
- Entrepreneur in Retail Pharmacy
- Entrepreneur in Wholesale Pharmacy
- Entrepreneur in Homecare Health Services
- Pharmacy Technician in a Pharmaceutical Industry
  - Pharmacy Technician in Production
  - Pharmacy Technician in Quality Control and Quality Assurance
  - Pharmaceutical Product Executive
  - Pharmacy Technician in Packing
  - Pharmacy Technicians in Research & Development
- Pharmacy Education
  - Lab Assistant
  - Lab Attendance
  - Lab Demonstrators
- Medical Transcription
- Medical Journalism



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Pharma Alumni ……

"STUDENTS ARE LONGTERM INVESTIMENTS FOR ANY INSTITUTION"

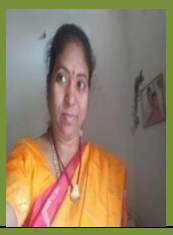
Alumni of Pharmacy

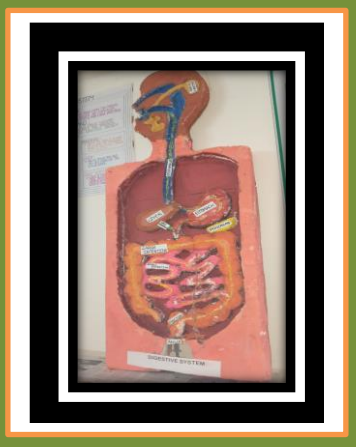
TTD SRI PADMAVATHI WOMEN'S POLYTECHNIC TIRUPATI

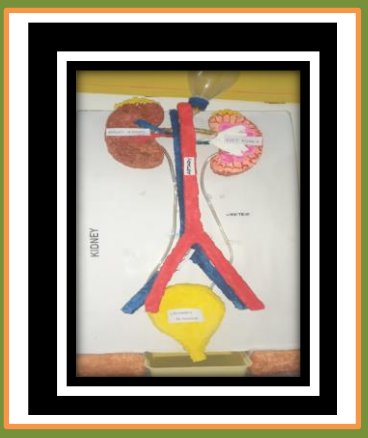
	**Mrs M ASHAJYOTHI** 2001-2003 RAGHAVENDRA MEDICAL STORES		**Smt K SUDHAMANI** **1999-2001** **Associate Professor** **Mallareddy Institute of Pharmaceutical Sciences** **Secunderabad**
	**Smt J MADHAVILATHA** **1997-99** **JUNIOR LECTURER IN VOCATIONAL**		**Smt K YAMINI** **1999-2001**
	**Smt K VARALAKSHMI** **1999-2001**		**Mr D VENKATA SAMANTHAKAMANI** **2001-2003** **ESWAR MEDICAL HALL**
	**MS K LAKSHMI DEVI** 2017-19 **HIGHER EDUCATION –M S NIPER**		**Smt P V LAKSHMI KUMARI** **1999 - 2001** **Product Executive Trainer** **Hyderabad**
	**Mrs B SREEVANI** 2000-02 **SRI MARUTHI MEDICALS**		**Mrs R SWAPNAKUMARI** **1999-2001**

	**Mrs. B NEELIMA** 2001-03		**Mrs SHANTHA** **Pharmacist – TTD Medical Services**
	**Dr K PRASANTHI** Lecturer in Pharmacy **Sri Padmavathi Women's Polytechnic Tirupati**		**Mrs K SARADA** **Pharmacist – AP Government**
	**Smt. K SUJANA** 2001-2003		**SmT K ARUNAKUMARI 2000-02**
	**Smt. D V S PADMA LATHA DEVI** **1999-2001** **Srinivasa Medical and General Stores**		**Smt SHYAMALA** **Pharmacist – AP Government**
	**Smt K LAKSHMI PRASANNA** **2000-2002**		**Smt G K UMADEVI 1985-87** **Entrepreneur**

t

	**Smt V S JYOTHI** **2001-03** **Assistant Director – Drug Control Administration Government of Andhrapradesh**		**Smt P LAKSHMI KANTHAMMA** **1999-2001**
	**Smt K RAJESWARI** **1995-97**		**Smt V USHASRI** **2013-15** **Ushasri Medicals and surgicals**
	**Smt G V L THULASI** **2001-2003** **Nagarjuna Textiles**		





Professional Activities: Pharmacist Day 2022

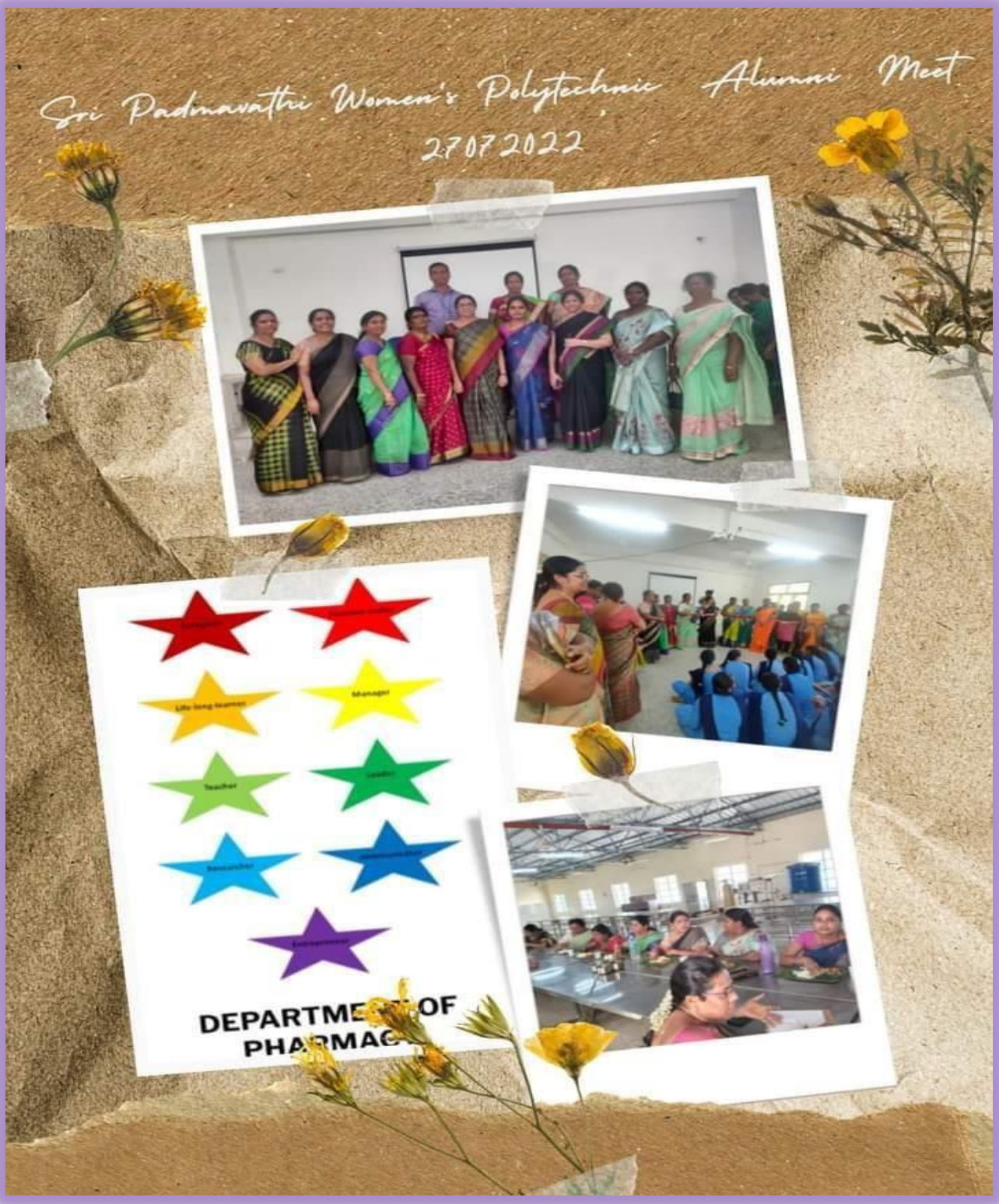
National Pharmacist Day 2022

National Pharmacist's day conducted in the department of Pharmacy TTD Sri Padmavathi Women's Polytechnic Tirupati on 23 10 2022. Students and faculty are attended the program. Mrs E Saraswathi Head of DECE was the chief guest of the function. Dr Padmavathamma Principal, Dr K Prasanthi and Dr K V Gopinath addressed on the theme. They stressed about the theme " Pharmacy United in Action for a Healthier world".. All pharmacy stake holders include industrial, regulatory, education, supply chain, hospital and community pharmacists, regulatory bodies of pharmacy including students for their united in action for quality education and practice to strengthen the community health thereby nations economy .and health.

II D Pharmacy Students

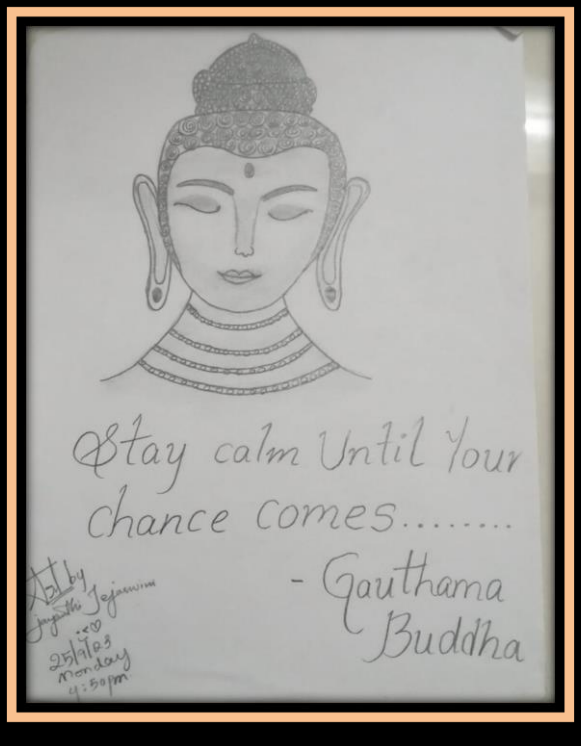
Alumni Meet:

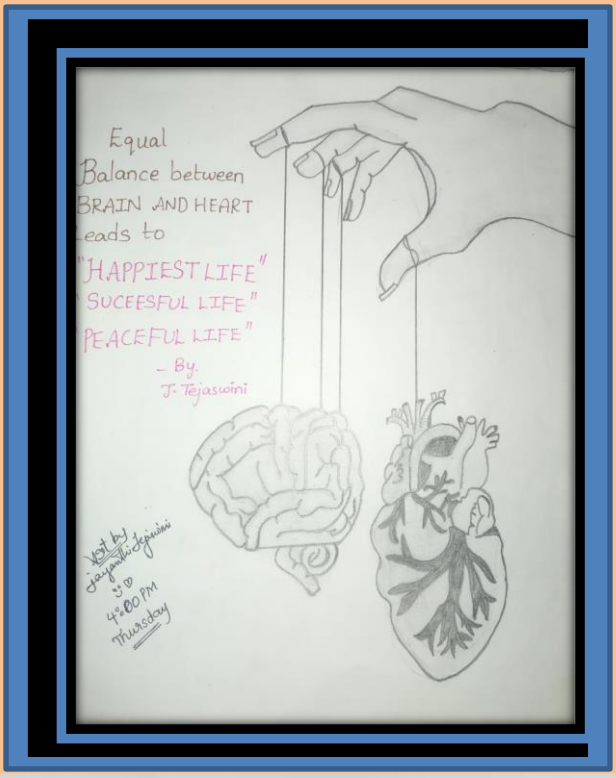
It is conducted on 27 07 2022 to interact with the students to share their experiences and skills in practice. It is totally inspiring session and get together meet.



Students Corner

By K Tejaswini I D Pharm

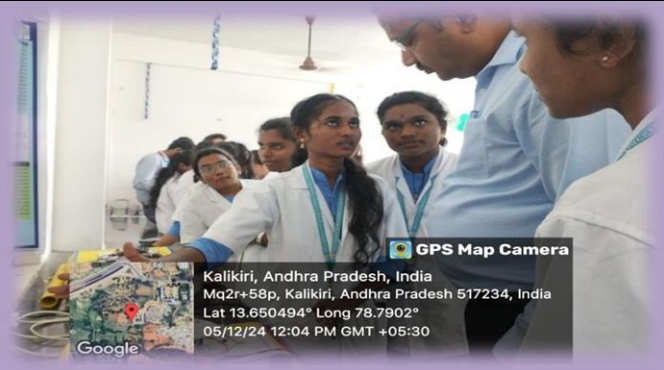


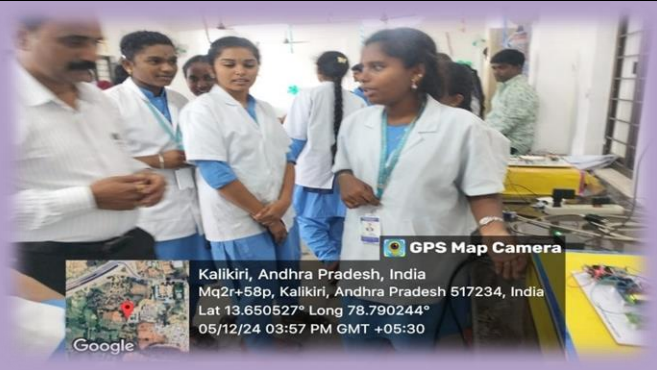


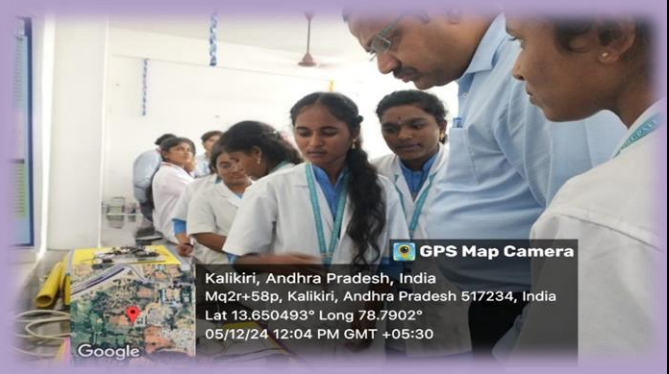
Ms J Tejaswini I D Pharmacy

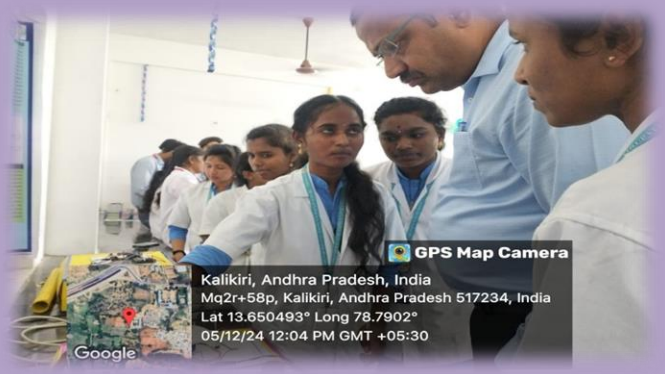
BY MS J.TEJASWINI 1 D PHARMACY

Polytech Fest 2024 @ Government Polytechnic Kalikiri









POLYTECH FEST 2023 @ Government Polytechnic, Kalikiri

DISPOSABLE ZERO STATIC ECOSPACER

BY M VISHNUPRIYA & G MADHULATHA

TTD S P W POLYTECHNIC TIRUPATI ANDHRAPRADESH

Abstract:

Asthma is a chronic inflammatory disorder of airways. It is a non-communicable disease. It affects all most all age groups and seen in either sex. There are 339 million patients in the world with asthma with 176 million asthma exacerbations occurring per year. In Asthma the air passages in the lungs become narrow due to inflammation and tightening of the muscles around the small airways. It cannot be cured, but it can be managed with medications. Short-acting beta2-adrenoceptor agonists (SABA), and bronchodilators (such as salbutamol), that open the air passages and relieve symptoms, also known as blue inhaler. Steroids (such as beclomethasone), that reduce inflammation in the air passages which improves asthma symptoms and reduces the risk of severe asthma attacks and death. However, the overuse of SABA in asthma is associated with increased risk of toxicity and mortality. The present invention is to develop a novel "An eco-friendly disposable antistatic or zero static spacer" with a lower cost, less complex design, maintenance free and an inspired spacer with dielectric anti-static properties made from inexpensive natural materials to improve the concern of patients relying on SABA.

Scientific Write up:

Covid -19 – A History

How did pharmacy practice change during Covid - 19? Exactly five years back. A small write up in the form Q & A to reflect on those days for perusal 🙏

1) How did the pandemic hit/change your daily routine?

   Ans: Covid-19 pandemic impacted throughout the globe and no exception to TTD medical institutions. We were functioning by fully complying with the protocols prescribed by the state and central ministries. But it is affected transportation, food and hospital administration especially in pharmacy.

2) What were the fears in you and those at your workplace and home?

   Ans: Since day one after the lock down i.e. 25 03 2020, especially in pharmacy no sufficient Covid supplies to fight against the cross contamination. But large quantities of essential and desirable drugs are dumped in the stores. Census is less and consumptions were dropped dramatically. There is a fear of consumption before their shelf-life. There are no diagnostic kits. There is uncertainty in diagnosis. There are no clinical protocols. But patients are with Covid symptoms and approaching hospitals for getting treatment. Most of the patients are rushing to pharmacy for Covid supplies and drugs without proper prescriptions. There are no specific fears regarding the Covid, but a question "how long the covid-19 will continue within the globe". Even at home there is a less fear of cross contamination due to personal and social hygiene throughout the community. But there is a fear of handling in children and elderly family members.

3) What changes did you have to make at your place of work?

   Ans: Changes are inevitable as per the protocols. We the pharmacists played a pivotal role during this pandemic. Special focus was on Covid supplies and vital drug, and critical health services. Ensured continuous services in pharmacy stores and dispensing of drugs to eligible outpatients. The major changes did at our place of work: No pediatric and geriatric patients are allowed inside for minor illness. All patients must wear at least disposable face masks and carry their personal sanitizers. All employees must wear N-95 masks and if necessary face shields and PPE kits while handling suspicious and confirmed Covid cases. Social distancing at all times minimum of 6 feet and personal hygiene are paramount. In pharmacy flexi glasses are used besides face masks. Prescriptions should be placed in drop boxes and drugs are supplied to the patient with non-touch process. Refills are introduced for chronic ill patients. Sick employees should not report for duty and no punitive action for inability to come. Close contact services like Covid -19 diagnostic testing are done with utmost care by wearing N-95 masks with respirator and PPE kits. The entire hospital and ambulances are sanitized twice a day with hypo solution.

4) How did you overcome the challenges?

   Ans: Special indents are raised on Covid supplies. Strict implementation of protocols issued by the ministries including guidelines issued by the AIIMS and professional and association bodies of pharmacy. Pharmacies are kept open round the clock (24/7). Duties are adjusted weekly or biweekly and instructed to available round the clock at work station. Free accommodation and food are arranged. Set isolation ward and covid-19 testing centers. All employees are trained and provided education to deal the Covid pandemic. A public awareness programmes are arranged. Special securities and help line centers arranged. Prophylactic treatments of Ayurveda and homeo medicines were given to employees within the hospital. A well-defined protocol was applied for dealing the Covids. It is done in mass screening tests with in hospital as well in satellite centers. And swab samples are collected and tested by Covid-19 Ag Rapid test. If the result is positive and symptoms are mild and no co-morbid, demographic data was collect and sent them to nearby Covid

centers or to home quarantine. Moderate to critical ill cases, sent either to SVRR/ SVIMS TTD for further evaluation (RT-PCR) and treatment. Here the patients are shifted to centers by a standard procedure i.e. applying PPE kits and medications (Tab. Azithromycin – 500 mg (5), Tab. Cetirizine 10 mg (5), Tab Paracetamol 650 mg (15), Tab Pantoprazole 40 mg (5) and prophylactic kits (Cap B Complex with Zn (10), Tab Calcium (10), Tab Multi vitamins (15), Vitamin E (15) to each patient. Every patient is monitored every day by phone call by a pharmacist. If any assistance or counselling is needed, do by a pharmacist. Finally, it is concluded that mass education, extensive screening, and isolation and treatment if necessary, incidence rate of morbid and mortality of covid-19 dropped dramatically.

5) How did your clients benefit because of your services in spite of the difficulties at your workplace?

Ans: All patients get easy access to get medicines and Covid supplies due to extended office hours. All are provided with Covid Supplies like disposable masks, sanitizer, gloves there by improved hygiene. Developed and Implemented strict protocols within the hospital help in overall healthy atmosphere. Pre-fills and refills really help patients stay less within hospital and improved patients' compliance. Covid-19 pandemic really given a golden opportunity to offer pharmaceutical care like disease management system and its follow up by monitoring BP, sugar levels, measuring oxygen and temperatures and medical treatments and counselling of minor ailments and chronic diseases within hospital and as well home (home care services) by prior authorization.

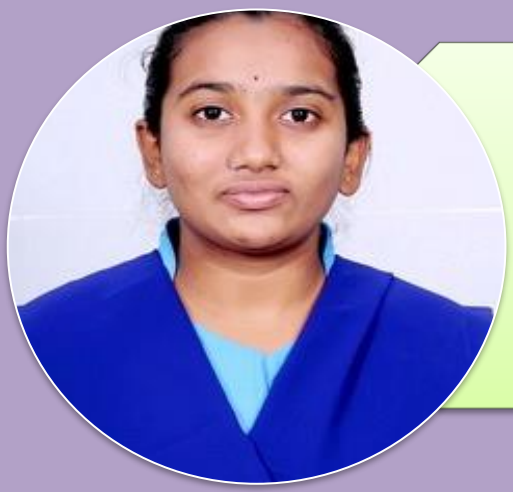
(By Dr K V GOPINATH, Pharmacy Education & Practice S P W POLYTECHNIC TIRUPATI - 517502) – Won second place at National level competition for pharmaceutical industry, academic, hospital, community, regulatory authorities and supply chain conducted by Indian Pharmaceutical Association National body.

Academic Excellency….2022-24

Malepattu Akhila

23019-Ph-018

First (87.23%)



Mekala Kavya

23019-Ph-021

Second (87.09 %)

Bapanapattu Kavya

23019-Ph-005

Third (85.71%)

Academic Excellency: 2021-23

Kakapudu Ramya

22019-Ph-012

First(86.2%)

Rajanna Thrisha

22019-Ph-025

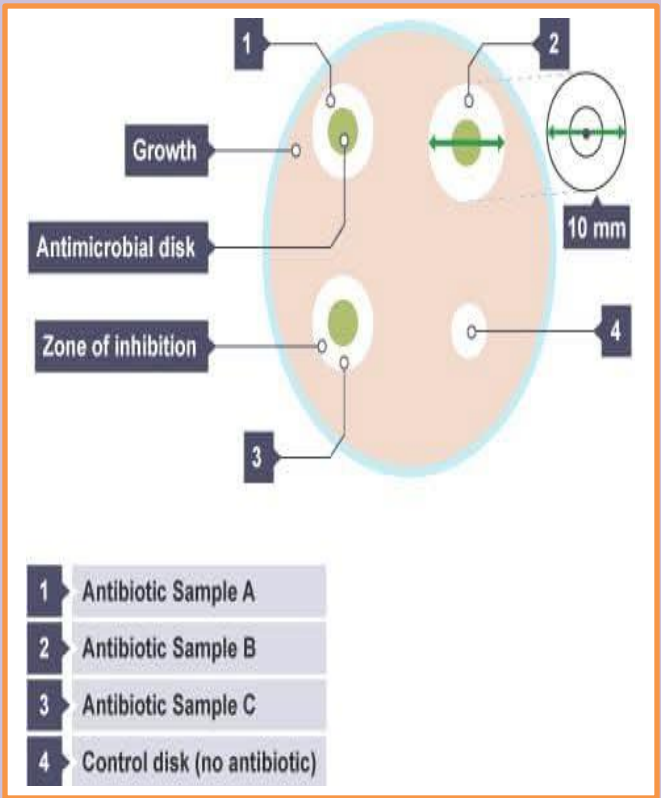
Second (84.85%)

Sanduru Aswitha

22019-Ph-026

Third(83.71)

Counselling Part: 1



ANTIBIOGRAM

An ANTIBIOGRAM is a cumulative report or an important tool summarizing the antimicrobial susceptibility testing results of bacteria or fungi. It is isolated from patients in a specific healthcare setting over a defined period usually quarterly or annually. It is used to guide empirical antibiotic therapy and monitor resistance trends in their particular hospital. Its an important activity of a healthcare provider in a hospital especially pharmacists to evaluate susceptibility of microorganisms and its resistance towards antibiotics expressed in terms of per centage. Also, it helps in selection of drug molecules in drug formulary therefore reduce the economic burden on the institution or nation. It is a tool for antimicrobial stewardship programs, which aim to optimize antibiotic use and reduce antimicrobial resistance.

By A Hemalatha, B Sridevi Bai, B Sumasri
I D Pharm

ఊబకాయం

ఊబకాయం (Obesity) అనేది T2DM కి ఒక ప్రబలమైన ప్రమాద కారకం. అధిక బరువు, ముఖ్యంగా విసెరల్ కొవ్వు, ఇన్సులిన్ నిరోధకతకు దారితీస్తుంది, దీని వలన శరీరం రక్తంలో చక్కెరను నియంత్రించడం కష్టమవుతుంది. కాలక్రమేణా, ఇది టైప్ 2 డయాబెటిస్, CAD మరియు దాని సమస్యలను అభివృద్ధి చేసే ప్రమాదాన్ని పెంచుతుంది. అందుకే ఊబకాయంతో నివసించే వ్యక్తులకు డయాబెటిస్ మరియు HT స్క్రీనింగ్ చాలా అవసరం. అందువల్ల మేము బరువును చివరిగా చికిత్స చేయకుండా మొదట బరువుకు చికిత్స చేయడంపై దృష్టిని మార్చాము. శరీర బరువులో కేవలం 5%-10% కోల్పోవడం వల్ల HbA1c, రక్తపోటు మరియు కొలెస్ట్రాల్ గణనీయంగా తగ్గుతాయి. బరువు మాత్రమే కారకం కాదని గుర్తుంచుకోండి. జన్యుశాస్త్రం, శారీరక నిష్క్రియాత్మకత/ నిశ్చల జీవితం, >40 సంవత్సరాల వయస్సు, మరియు జాతి లేదా జాతి నేపథ్యం కూడా మధుమేహం మరియు CAD అభివృద్ధిలో పాత్ర పోషిస్తాయి. ఊబకాయం యొక్క ప్రమాద కారకాన్ని లెక్కించడానికి BMIని కొలవడానికి ముఖ్యమైన ఆన్‌లైన్ సాధనాలు అందుబాటులో ఉన్నాయి. బరువు కిలోలలో మరియు ఎత్తు మీటర్లలో తెలుసుకోవడం ద్వారా ఇది మాన్యువల్‌గా లెక్కించబడుతుంది

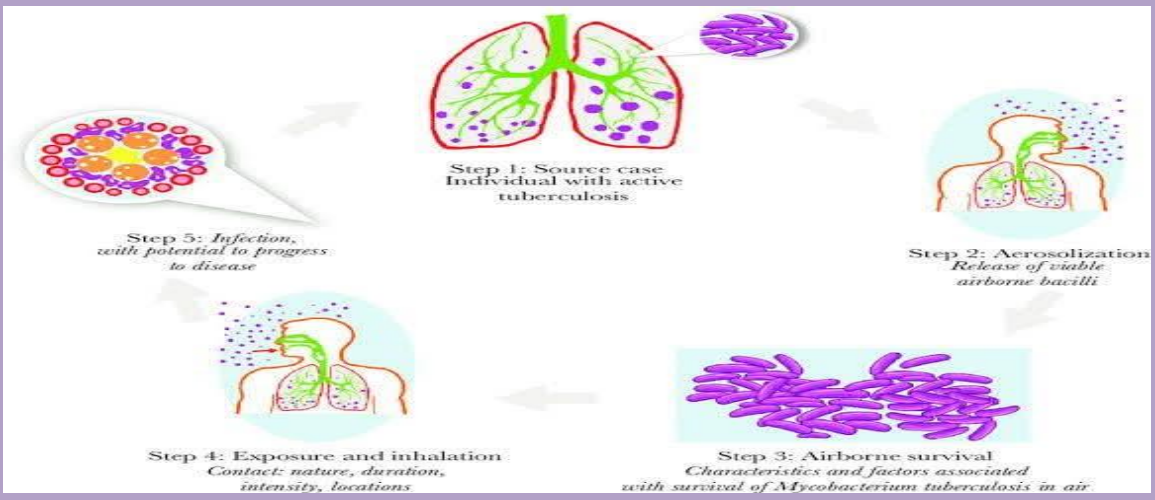
By B Maheshwari, C Usha, G Priya K Devadarshini
I D Pharm

Information, Education and Communication (IEC): World TB Day

By P Amrutha, M Kalpana, M Bhavani, I Haritha I D Pharm

World Tuberculosis Day - 24032025:

Tuberculosis (TB) is caused by Acid Fast Bacilli Myco- bacterium tuberculosis. It is spread through droplets infection when individuals with active TB cough, sneeze, or speak, and can infect the lungs pulmonary TB or other parts of the body like spine, kidney, bones, brain called extra pulmonary TB. It is caused by malnutrition, diabetes & immune compromised HIV. TB is preventable and curable with DOT & NonDOT therapy. And is prevented by the BCG vaccine given to children & geriatrics. TB is curable and let us join hands to reduce the prevalence rate by >90 % by 2030 to strengthen public health. It is possible by patient education & personal hygiene & etiquette.



Patient counselling Aids:

1) Patients need to be informed about TB, how the disease spreads, signs and symptoms & the consequences of not following treatment.

2) Why treatment is long and why completion of treatment is critical, likely adverse events during therapy, and cost involved in treatment and what free/public services are available to patients.

3) Patients need to be told that TB is a fully curable and treatable disease.

4) Patient given with protein rich food to prevent malnutrition.

5) We must use patient centered approaches, and recognize that all TB patients deserve minimum package of holistic TB care services that are not restricted to diagnosis and treatment, but include counselling and support services as well.

This year's theme, "Yes! We Can End TB: Commit, Invest, Deliver," by a collective approach:

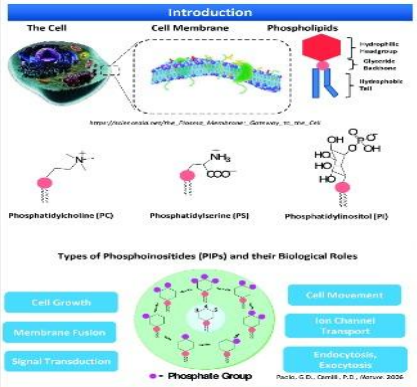
Research & Publications… 72nd Indian Pharmaceutical Congress Nagpur @ Rashtrasant Tukadoji Maharaj Nagpur University Nagpur

Evaluation of Stress Induced Diseases Based on a Signal Mediating Phosphoinositides Using Fluorescent Sensors

K V Gopinath M Padmavathamma K Prasanthi G Asuntha and K V Thulasiram

Sri Padmavathi Women's Polytechnic Tirupati Andhrapradesh India 517502

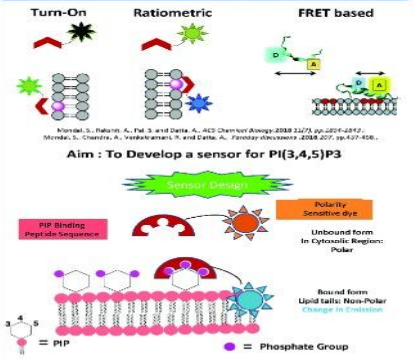
Introduction



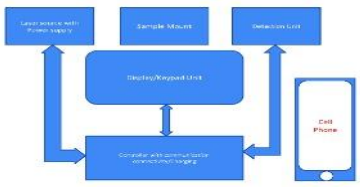
Abstract

Signal mediating lipids like Phosphoinositides have potential applications in detection those diseases like diabetes and some cancers. However the fluorescent sensors are limited application due to cost on expensive laboratory. This work will entail the development of a embedded optical communication system in development either in web or and mobile app. In this experiment a 395 nm wavelength LED diode was procured and tested using Arduino Uno kit through lab view programming environment. 3mm focal length focusing and defocusing lenses were procured. Quartz sample holder was fabricated. Demo STS Spectrometer was procured and used in characterizing the wavelength of the emission source. A prope is a peptide attached with dye which sense selectively a cell membrane component Phosphoinositides PI (3,4,,5) P3 using a HEPES buffer pH 7.4 as a standard. We observed that the major peak at 526.5 nm and minor peak with 395 nm excitation. And a similar experiment is carried out with a test sample shown that there is a blue-shift indicates that quantitative difference in concentration indicates application in evaluation of stress induced diseases like diabetes, cancer, hypertension and asthma in clinical practice using a just mobile app.

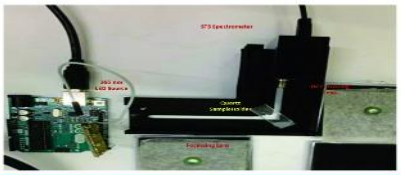
Strategies for Phosphoinositide Sensing



Design Theme



Prototype of the optical test Bench



Specifications of the Source

Procured locally available 395nm LED source with 5mw power

Specifications of the Fluorescence Detector

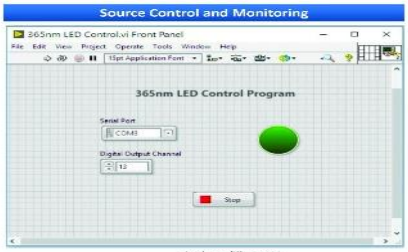
Detector Specification:
Physical Specification: 40mm x 42mm x 24mm
Weight: 60g
Power: 5V Suppy with average Current 150mA
Focal length: 28mm
Input fibre connector: SMA 905
Grating: 600g/mm
Entrance Slit: 50um slit
Detector : ELIS 1024, 1024 pixel linear CMOS
7.8 x 125 um pixels
Sensitivity: 6.74 V/lux-sec
Range: 190 - 650nm
Spectroscopic:
Integration time : 10us - 10s
Dynamic Range: 5 x 10(9)
S/N Ratio: > 1500:1(Max Signal)
Resolution: ~5nm(50um slit)
A/D Resolution: 14Bits
Communication : RS-232
Make: Ocean Optics

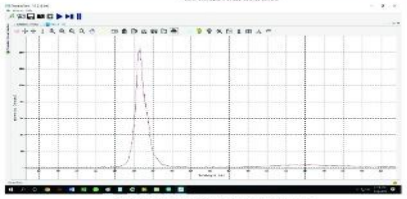
Experimental Details

- Each time the configuration of the quartz slide was different while performing experiment
- Probe is a peptide attached with dye which sense selectively a cell membrane component phosphoinositide PI(3,4,5)P3
- Buffer used is HEPES buffer ; pH 7.4

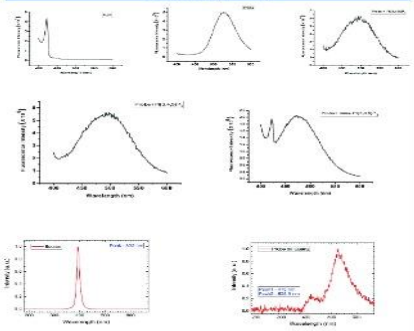
395nm wavelength LED diode was procured, integrated and tested using Arduino Uno kit through LabVIEW programming environment. An optical test bench prototype has been designed, fabricated at TIFR's workshop. 3mm focal length focusing and defocusing lenses were procured. Since the conventional glass sample is showing some variations in the results, quartz sample holder was fabricated. Demo STS Spectrometer was procured and utilized in characterizing the wavelength of the emission source.

Source Control and Monitoring





Preliminary Results



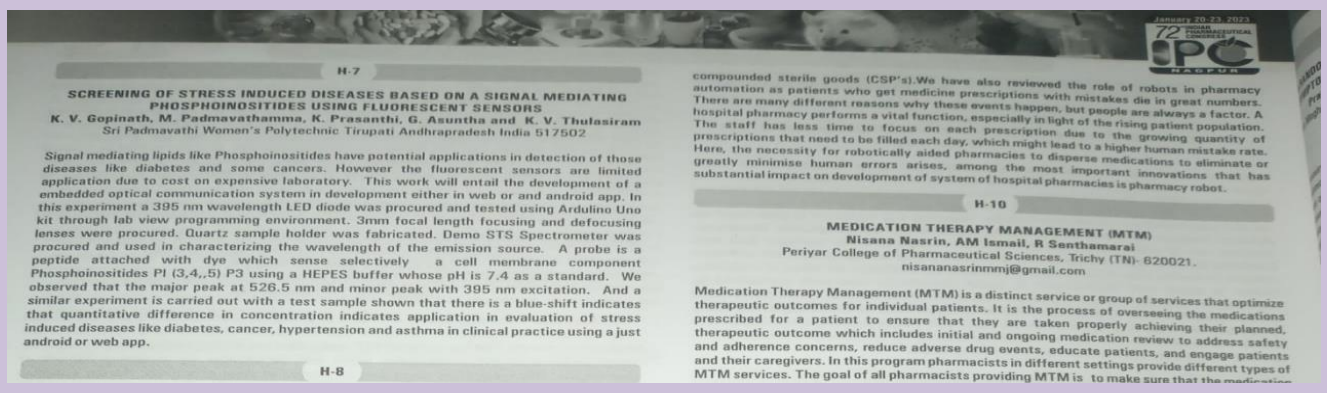
Summary and Future Directions

Till date we have observed the light source wavelength (procured 395nm - observed 392nm) and performance Of the probe on quartz glass with the major peak at 526.5nm. Minor peak may be Raman peak with 395nm excitation. We are still to observe the blue-shift with the sample.

References

[1] J. Eamonn et al, "Understanding phosphoinositides: rare, dynamic, and essential membrane phospholipids", Biochemical Journal, vol. 476, pp. 1–23, Jan. 2019.
[2] Gilbert Di Paolo, "Phosphoinositides in cell regulation and membrane dynamics", NATURE, vol 443, pp. 651-657, Oct. 2006.

Presented at the 72 Indian Pharmaceutical Congress held at Nagpur during 20-22, January 2023



H-7

SCREENING OF STRESS INDUCED DISEASES BASED ON A SIGNAL MEDIATING PHOSPHOINOSITIDES USING FLUORESCENT SENSORS

K. V. Gopinath, M. Padmavathamma, K. Prasanthi, G. Asuntha and K. V. Thulasiram
Sri Padmavathi Women's Polytechnic Tirupati Andhrapradesh India 517502

Signal mediating lipids like Phosphoinositides have potential applications in detection of those diseases like diabetes and some cancers. However the fluorescent sensors are limited application due to cost on expensive laboratory. This work will entail the development of a embedded optical communication system in development either in web or and android app. In this experiment a 395 nm wavelength LED diode was procured and tested using Arduino Uno kit through lab view programming environment. 3mm focal length focusing and defocusing lenses were procured. Quartz sample holder was fabricated. Demo STS Spectrometer was procured and used in characterizing the wavelength of the emission source. A probe is a peptide attached with dye which sense selectively a cell membrane component Phosphoinositides PI (3,4,,5) P3 using a HEPES buffer whose pH is 7.4 as a standard. We observed that the major peak at 526.5 nm and minor peak with 395 nm excitation. And a similar experiment is carried out with a test sample shown that there is a blue-shift indicates that quantitative difference in concentration indicates application in evaluation of stress induced diseases like diabetes, cancer, hypertension and asthma in clinical practice using a just android or web app.

H-8

compounded sterile goods (CSP's).We have also reviewed the role of robots in pharmacy automation as patients who get medicine prescriptions with mistakes die in great numbers. There are many different reasons why these events happen, but people are always a factor. A hospital pharmacy performs a vital function, especially in light of the rising patient population. The staff has less time to focus on each prescription due to the growing quantity of prescriptions that need to be filled each day, which might lead to a higher human mistake rate. Here, the necessity for robotically aided pharmacies to disperse medications to eliminate or greatly minimise human errors arises, among the most important innovations that has substantial impact on development of system of hospital pharmacies is pharmacy robot.

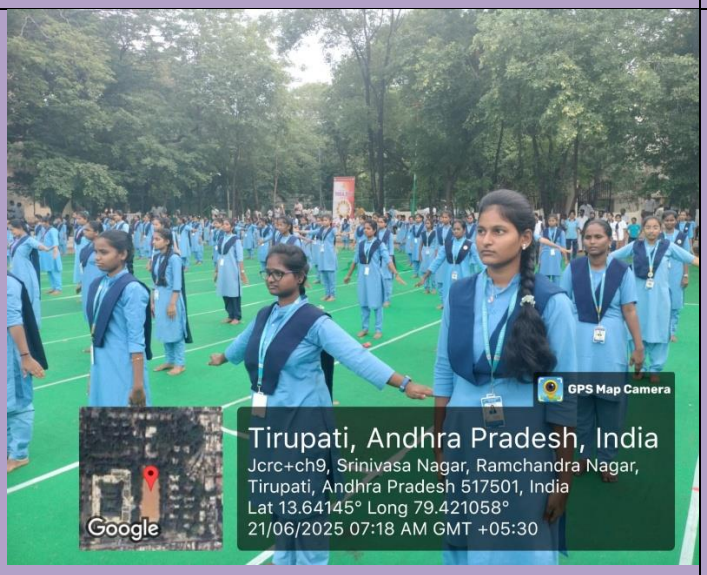
H-10

MEDICATION THERAPY MANAGEMENT (MTM)

Nisana Nasrin, AM Ismail, R Senthamarai
Periyar College of Pharmaceutical Sciences, Trichy (TN)- 620021.
nisananasrinmmj@gmail.com

Medication Therapy Management (MTM) is a distinct service or group of services that optimize therapeutic outcomes for individual patients. It is the process of overseeing the medications prescribed for a patient to ensure that they are taken properly achieving their planned, therapeutic outcome which includes initial and ongoing medication review to address safety and adherence concerns, reduce adverse drug events, educate patients, and engage patients and their caregivers. In this program pharmacists in different settings provide different types of MTM services. The goal of all pharmacists providing MTM is to make sure that the medication

YogaAndhra - International Yoga Day



Cultural Events….

Inter Polytechnic Sports & Games Meet…..

Students Corner…

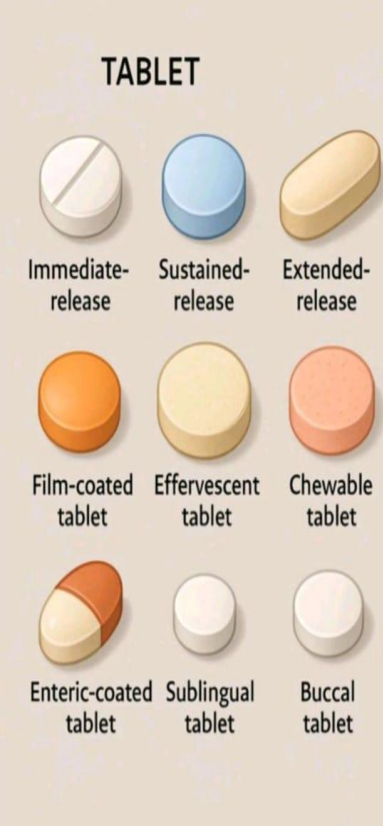
ANTIBIOTICS

By J. TEJASWINI I D PHARMACY

The Term **antibiotics** has its origin in the word **antibiosis.** The meaning it self-having **"against life".** Antibiotics are chemical substances obtained from various species of micro-organisms like **bacteria, fungi, actinomycetes** that supress the growth of microorganisms and eventually it may destroy them. Antibiotics may be having **physical**, **chemical**, **pharmacological or biological properties or** antibacterial spectrum of activities.

They have made it possible to cure diseases like **pneumonia, tuberculosis and meningitis** and other infections that they save the lives of million people around earth.

Actinomycetes are a group of bacteria that are often found in soil and other environments. They are known for their ability to produces antibiotics which are used for infections. Actinomycetes are also important for decomposing organic matter and they play a role in the nitrogen cycle. They are biologically Gram-Positive bacteria. It is filamentous, long and thread like structure. It requires oxygen to grow. It obtains energy from organic compounds (heterotrophs). They produce valuable and other bioactive compounds including streptomycin, erythromycin and tetracycline. It's the spectrum of activity ranges from narrow to broad spectrum that can kill or stop from growing of infectious agents. It is also used in meningitis. It is an inflammatory disorder of meninges, the membranes that surrounds the brain and spinal cord that it caused by bacteria, viruses, fungi (or) parasites. It is treated by giving Antibiotics. Therefore, antibiotics obtained from microorganisms are good and effective use for living system.



Tablets

Tablets are a fundamental pharmaceutical formulation designed to deliver medication in a convenient, precise and safe manner. There are different types of tablets are designed to meet specific functions like faster relief, longer effect or delayed or easier use. A brief review provided here.

Immediate-release tablet (IR): Releases the drug quickly into body after swallow it.

Sustained-release tablet (SR): Releases the drug slowly over a longer period for a steady effect.

Extended-release tablet (ER): Releases the drug even more slowly than sustained-release, often lasting long.

Film-coated tablet: It has a thin layer on the outside to make it easier to swallow or mask taste.

Effervescent tablet: Dissolves in water with bubbles, making a fizzy drink you consume.

Chewable tablet: Meant to be chewed before swallowing, often flavored.

Enteric-coated tablet: It has a coating that protects the drug from stomach acid, releasing it in the intestines.

Sublingual tablet: Placed under the tongue to dissolve and absorb directly into the bloodstream.

Buccal tablet: Placed between the cheek and gum to dissolve and absorb through the mouth's lining.

Collected by: T Shalini Devi, J Thejaswini, G Chandana I D Pharmacy

National Service Scheme & N C C Activities:

Industrial / Field Visits: The purpose of field visit is to provide a real-world experience to the students. It will help them to realize that they learn within the class room / laboratory can help them solve the problems they see in the world around them. It also helps them to widen their horizons of knowledge and broadening the scope**.**

 Balaji Institute of Rehabilitation & Research	 **Giyaan Pharmaceuticals**
 **Mythili Life Sciences**	 **Mythili Life Sciences**
 **Sri Srinivasa Ayurveda Pharmacy**	 **Sri Srinivasa Ayurveda Pharmacy**
 **BIRRD**	 **BIRRD**

Medical Assistance: Excellency in Health service 1) Centre for first aid and primary care for the students and staff of S P W Polytechnic Tirupati through Janaushadi Kendra 2) Centre for Counselling 3) Centre for Drugs & Poison Information 4) Centre for Pharmacovigilance 5) Centre for Education, Information and Communication (EIC) and 6) Centre for Computer Simulation Laboratory

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Medical Assistance Provided for IPSGM</td>
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Health Screening BY IMA Women Forum Tiruapti</td>
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Dr Bharathi Superintendent CS - Lecture</td>
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First Aid for the Student</td>
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Hands On Training – Janaushadhi</td>
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Beyond the Curricular ……Training for Pharmacy Teachers

Pharmacy Teachers of JNTU A

A Faculty Development Program (FDP) Organised by JNTU Anantapuramu at Seven Hills College of Pharmacy Tirupati Delivered a talk on Digital Technology – A Tool for Professional Competency in Pharmacy Practice and Education."

SEVEN HILLS COLLEGE OF PHARMACY (TIRUPATI)
DAY-WISE SESSION PLAN – FDP: ANNEXURE -I

Day	Dates	Sessions	Resource Person	Topic to be covered
Day 1	25.11.2024 FN 9.30am to 11.00am	Session	**Inaugural Session**	**Inaugural talk**
	25.11.2024 FN 11.15am to 12.45pm	Session I	**Dr K Umamaheswararao,** Professor, Sri Padmavathi Medical College for Women's - SVIMS, Tirupati, AP.	Role of Artificial Intelligence in pharmacy practice and Medication safety
	25.11.2024 AN 1.30pm to 3.00pm & 3.15pm to 4.45pm	Session II Session III	**Dr. Vasudharani Devanathan,** Professor, Indian Institute of Science Education and Research (IISER), Tirupati, AP.	Digital education and its benefits for pharmacy students
Day 2	26.11.2024 FN 9.30am to 11.00am & 11.15am to 12.45pm	Session IV Session V	**Prof. Santhraani Thaakur,** Department of Pharmacology, Institute of Technology, Sri Padmavathi Mahila Viswa Vidyalayam (Women's University), Tirupati, AP	Digital Transformation in Pharmacovigilance
	26.11.2024 AN 1.30pm to 3.00pm & 3.15pm to 4.45pm	Session VI Session VII	**Dr. Ambrish Saxena,** Professor, Indian Institute of Science Education and Research (IISER), Tirupati, AP.	Pharmacogenomics in the Digital Era: Precision Medicine and Personalized Drug Therapy
Day 3	27.11.2024 FN 9.30am to 11.00am & 11.15am to 12.45pm	Session VIII Session IX	**Dr.R.Indumathy,** Asst. Professor, College of Pharmacy, Madras Medical College, Chennai.	Digital Health in Pharmacy Education - Future Prospective
	27.11.2024 AN 1.30pm to 3.00pm & 3.15pm to 4.45pm	Session X Session XI	**Dr. D. Sujatha,** Institute of Technology, Sri Padmavathi Mahila Viswa Vidyalayam (Women's University), Tirupati, AP	Virtual clinical trials
Day 4	28.11.2024 FN 9.30am to 11.00am & 11.15am to 12.45pm	Session XII Session XIII	**Dr. K.V. Gopinath,** Senior Lecturer in Pharmacy Division and Pharmacy Practice, SPW Ployteckic College for Women's, Tirupati, AP.	Digital Technology - A tool for professional competency in pharmacy practice and education
	28.11.2024 AN 1.30pm to 3.00pm & 3.15pm to 4.45pm	Session XIV Session XV	**Dr. M. Ravi Sankar,** Professor and Head, IIT, Tiruapti, AP.	3D Printing : Pharmaceutical Applications
Day 5	29.11.2024 FN 9.30am to 11.00am & 11.15am to 12.45pm	Session XVI Session XVII	**Dr Arpana Parihar,** Women Scientist-B, Department of Translational Medicine, CSIR – Advanced Materials and Processes Research Institute (AMPRI), Bhopal, Madhya Pradesh, India.	3D Bioprinting-based Advanced Diagnostics and therapeutics
	29.11.2024 AN 1.30pm to 3.00pm &	Session XVIII	**Dr. Sri Harsha Cahlasani,** Asst. Professor, JSS Academy of Higher Education and Research, Mysuru, Karnataka.	What We Have Done with AI in Pharmacy Practice: A Case-Based Talk
	29.11.2024 AN		**Valedictory Session**	**Distribution of Certificates**

Life Sciences Sector Skill Development Council (LSSDCand Pharmacy Council of India and Andhra Pradesh State Pharmacy Council of India and Shanthi Ram College of Pharmacy jointly launched of PMKVY 4.0 RPL (Recognition of Prior Learning) Upskilling Training Program for Registed Pharmacist on 29 Jan 2025 and delivered a practice-based training on the topic **"Introduction to Community Pharmacy Business Operations".**

3 D Printing in Pharmaceutical Technology

By Dr K V Gopinath, Dr K Prasanthi and Dr M Padmavathamma
Department of Pharmacy
S P W Polytechnic Tirupati

(3D drug printing is an additive manufacturing technique for producing customized medications. This innovative technology enables precise control over drug dosage, shape, size, and release profile, facilitating personalized treatments for patients. It allows the creation of complex drug geometries that traditional methods cannot achieve. Key applications include personalized medicine, rapid prototyping of drug formulations, and polypharmacy production. By improving therapeutic outcomes, minimizing side effects, and transforming pharmaceutical manufacturing, 3D drug printing shows immense potential.)

3D printing is revolutionizing the pharmaceutical industry. The impact of 3D printing in pharmaceuticals include

1. Personalized Medicine: 3D printing allows for the creation of medications tailored to individual patient needs, such as specific dosages, release profiles, and drug combinations. This is particularly beneficial for patients with unique requirements, like children, the elderly, or co morbid conditions. It enables the development of "polypills" containing multiple drugs with different release characteristics in a single dosage form.
2. Complex Drug Delivery Systems: 3D printing facilitates the production of sophisticated drug delivery systems, including 1) Microneedle patches (for painless drug delivery through the skin) 2) Inhalable formulations (for targeted drug delivery to the lungs) 3) Controlled-release tablets (allowing for precise control over how and when a drug is released). These systems can be designed with varying drug concentrations, release rates, and geometries, optimizing drug efficacy and minimizing side effects.
3. Accelerated Drug Development: 3D printing enables rapid prototyping of new drug formulations and dosage forms, significantly speeding up the drug development process. It allows for the creation of realistic tissue models for research and testing, potentially reducing the need for animal testing. 3D printing can also automate compounding processes in pharmacies, ensuring accurate and consistent drug preparation.
4. Key Technologies in Pharmaceutical 3D Printing: 1) Extrusion-based printing (Uses a nozzle to deposit materials layer by layer, often using filaments or pastes). 2) Inkjet printing (Deposits droplets of liquid material onto a substrate to build up the structure) 3) Stereolithography (Uses a laser to cure a liquid resin layer by layer) 4) Selective laser sintering (Uses a laser to fuse powder particles together to create a solid structure).
5. Regulatory Considerations: The pharmaceutical industry is heavily regulated, and 3D printing technologies need to be validated and approved for use in drug manufacturing. Ensuring quality control, material consistency, and patient safety are crucial aspects of the regulatory framework.
6. Current Applications: One 3D printed drug, Spritam® (containing levetiracetam), has been approved by the FDA for human use. 3D printing is being used in research and clinical trials to develop new drug formulations and delivery systems for various conditions. Hospitals and pharmacies are also exploring 3D printing for personalized medication preparation and dispensing.

Therefore, it is concluded that 3D Drug Printing – A revolutionizing drug fabrication where medicines are tailored to unique needs, created with accuracy and precisely and optimized for better therapeutic outcomes with less adverse drug reactions.

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Technology in Patient and Patient Data Management

Quality means fitness for the purpose. When it applies to the e- governance for patient's safety, it means that doing the right thing at the right time for the right person and having the best possible result. Examples of core technology / terminology or type of technology used in patient or patient data management include cloud computing, artificial intelligence (AI), machine learning (ML), robotics, digital therapeutics (DTx), digital clones and wearable health technologies.

Artificial Intelligence : Technologies that uses algorithms and software to near human cognition in the analysis of complex data. Machines can perform tasks in ways that are 'intelligent' and can adapt to different solutions.. e.g. decision making, visual perception and speech recognition.

Machine Learning : A subset of artificial intelligence based on the idea that machines can be built to process large amounts of data and learn on their own using algorithms and statistical modelsrelying on pattern and inference

Cloud Computing : The delivery of computing services over the internet, rather than a local server, to offer faster innovation, flexible resources and economics of scale.

Robotics: It deals with the design, construction, operation and application of robotic technologiy.. There are many applications in healthcare like automation in dispensing practice as providing physical assistance and expedite patient engagement through socially assistive robotics..

Digital Clones: Deep learning algorithms which allows one to manipulate currently existing audios, photos

Digital Therapeutics (DTx) : It deliver evidence based therapeuticinterventions to patients that are driven hy highquality software program to prevent, manage or treat a medical deisorder. They are used independently or together with medications, devices, or other therapeies to optimize patient care and patient care or health outcomes

Wearable Health Technologies : Devices such as fitness trackers that can be worn by consumers to track information related to self management of their health

Fluidized Bed Dryer – A Versatile Unit Operation
(A Case Study)

K V GOPINATH Department of Pharmacy

Optimization of particle size will increase solubility !

A case study:

What can be done if a newly discovered drug, showing promising efficacy, but is insoluble?

Really made me to enter a class room. General methods of increasing solubility include
1) Co-solvency
2) Solubilization
3)Complexation
4) pH modification
5) hydrotrophy and
6) Converting into its soluble salts.

These were the basic methods to improve solubility. A versatile unit operation in pharmaceutical technology e.g. Fluid Bed dryer where multiple tasks are done (size reduction, mixing, drying, granulation) at a time there by the resultant product may have improved solubility by increased surface area $W = {}^{\delta} \Delta A$ (optimal or uniform particle size), thereby ' leaching' by the solvents, disintegration and dissolution and therefore increased solubility and absorption and bioavailability. But at the same time, we can't ignore the particle size distribution in which finer particles have higher cohesive force there by delayed solubility or a moderate force is needed to expedite the solution process. It's a totally a unit operation where many operations takings in one unit with higher efficiency in operation thereby increasing solubility too. But it's a case study vary from case to case

Review articles….

Community Pharmacy Practice

Bapanapattu Kavya , C B Vijaya Laxmi, C Mahalaxmi

II D Pharm

History

History of pharmacy from beginnings is as remote and simple. These came the proud profession of pharmacy. Its growth parallels that of a human being. Ancient man applied his knowledge and skills from the nature (cool water, leaf, dirt or mud for soothing application) for the benefit of other.

Pharmacy in Ancient Babylonia Babylon provides the earliest (about 2600 B.C) known record of apothecary practice. Practioners of healing were priest, pharmacist and physician, all in one. Medical prescriptions were on clay tablets for recording symptoms and directions for compounding and then an invocation to the gods in treating diseases.

Monastic Pharmacy (during the middle ages 5 to 12 centuries) , the monks used herbs and prepared according to the art of the apothecary.

In 17th century, the pharmacy was separated from medicine. Germany emperor Frederick II of Hohenstaufen separated the pharmacist's responsibilities from those of medicine and prescribing regulations for their professional practice. They developed syrups, confections, conserves, distilled waters and alcoholic liquids with aid of natural resources

In 1729, the Marshall Apothecary Christopher Marshall established his pharmaceutical enterprise became a leading retail drug depot in Philadelphia. It's a leading retail store.

In 1816, Sertuner – first of the alkaloid chemists was isolating organic acids from plants and conducted a new series of research experiments in his apothecary shop.

1837 William Procter Jr operated a retail pharmacy in Philadelphia. In 1868, a revolution in pharmaceutical education led to revolutionary innovations in theory, practicals and apprentice, and become full time course. He has had to discard many of its older ways,

In 1900 onwards today's retail pharmacists are finest educated people to fill a prescription. He provides a professional service in all branches of the profession - education, research, development, standards, production, and distribution.

Introduction

British India introduced allopathic drugs were made available through drugs stores in19 century. The practice before pre-independence era was highly unregulated and business oriented and there were no restrictions in India. The practice of prescribing and dispensing was normally a function performed by doctors. In addition, most doctors trained their compounders to dispense

medicines and assist in the compounding of medicinal preparations. Their status, functions and duties were ill defined. In 1985,

by introducing Consumers Act 1985, all activities of medical and pharmaceutical care go according to the consent of the patients. All services are legal and scientific.

Community Pharmacists

A community pharmacy often referred to as retail pharmacy or retail drug outlets or medical store or medical shop or druggist and chemist.

It can be defined as an establishment or places where medicines are procured, stored and dispensed, supplied or sold.

Pharmacists are registered under the clause (i) and section (ii) of the Pharmacy Act 1948, and their presence is legally required during the dispensing and selling of medicines according to Rule 65(15) of the Drugs and Cosmetics Rules 1945.

Pharmacy Regulation

Prior to 1984, persons without any pharmacy educational qualifications were able to register their names as pharmacists in the First Register of the pharmacy act, as long as they had five years of experience in the compounding and dispensing of drugs in a hospital or a clinic. However, section 32B provisions of the pharmacy act had been misused during 1980s and a large number of persons, without any recognized education or training, were reported to have registered their names as pharmacists.

After the enforcement of provisions of the Pharmacy Act 1948, pharmacists working in India must have a pharmacist registration certificate issued by the state. To obtain a registration certificate, pharmacist must acquire a basic degree diploma in pharmacy or B Pharm or Pharm D from a pharmacy institute that is approved by the Pharmacy Council of India (PCI).

Pharmacy Education in India

Sl NO	Corse	Entry Level	Duration	Remarks
1	Diploma In Pharmacy	10+2	2 years+ 90 days internship	Exit Examination
2	Bachelor of Pharmacy		4 years	
3	Doctor of Pharmacy		6 years	
4	Pharm D	B Pharm	3 years	
5	M Pharm – Pharmacy Practice	B Pharm	2 years	

Community Pharmacy and Availability of Medicines

The community pharmacy sector is the prime source of medicines for both ambulatory and hospitalized patients. The medicines manufactured by pharmaceutical companies are supplied to the community pharmacy through their distributor. In many developing countries, private community pharmacies are often seen as a source of inexpensive medical care . India is of no exception. Private pharmacies are often the first and only source of health care for a majority of patients in developing countries .

There are over 600,000 licensed retail outlets for medicines sale and supply. India faces massive challenges in providing health care for its vast and growing population. Despite many barriers, community pharmacy services are central to the safe and effective medicines management in advancing health. With rapidly occurring changes in the health care delivery and growing patient expectations, it is hoped that community pharmacy practice will change accordingly.

Spectrum of Pharmacy Education in Abroad

The qualification for practice in abroad varies from country to country. In US one must have a 6 years accredited Pharm D programme to practice. In order to practice pharmacy in US , a pharmacist typically needs to at minimum pass two examination 1) North American Pharmacists Licensure Examination (NAPLEX) and 2) Multi state Pharmacy Jurisprudence Examination (MPJE) licensure examination, . For pharmacy graduates other than US must have 5 years degree in Pharmacy and they need to go licensure examinations like FPGEE, Toefl and they can go for internship under the guidance of a registered pharmacist of respective state councils. The internship vary from state to state of the nation. After finishing the residency, one must go for NAPLEX and MPJE licensure examination, then one can go for registration in respective states and valid to practice only in that particular state.

Certifications in Pharmacy practice

Certifications offered by the Board of Pharmacy Specialties BPS: It include Board Certified Ambulatory Care Pharmacist (BCACP), Board Certified Cardiology Pharmacist (BCCP), Board Certified Sterile Compounding Pharmacist (BCSCP), Board Certified Critical Care Pharmacist (BCCCP), Board Certified Geriatric Pharmacist (BCGP), Board Certified Infectious Diseases Pharmacist (BCIDP), Board Certified Nuclear Pharmacist (BCNP), Board Certified Nutrition Support Pharmacist (BCNSP), Board Certified Oncology Pharmacist (BCOP), Board Certified Pediatric Pharmacy Specialist (BCPPS), Board Certified Pharmacotherapy Specialist (BCPS), Board Certified Psychiatric Pharmacist (BCPP), Board Certified Transplant Pharmacist (BCTXP).

Other advanced certifications (not all-encompassing): It include Certified Anticoagulation Specialist (CACP), Certified Asthma Educator (AE-C), Certified Diabetes Educator (CDE), Certified HIV Pharmacist (AAHIVP), Certified Pain Educator (CPE), Certified Specialty Pharmacist (CSP), Certified Tobacco Treatment Specialist (CTTS), Teaching Certificate for Pharmacists

The Pharmacy Practice Activity Classification

A. Ensuring appropriate therapy and outcomes

1 Ensuring appropriate pharmacotherapy

2 Ensuring patient's understanding/adherence to his or her treatment plan

3 Monitoring and reporting outcomes

B. Dispensing medications and devices

1 Processing the prescription or medicine order

2 Preparing the pharmaceutical product

3 Delivering the medication or device

C. Health promotion and disease prevention

1 Delivering clinical preventive services

2 Surveillance and reporting of public health issues

3 Promoting safe medication use in society

D. Health systems management

1 Managing the practice

2 Managing medications throughout the health system

3 Managing the use of medications within the health system

4 Participating in research activities

5 Engaging in interdisciplinary collaboration

Functions of Community Pharmacists

1) Dispensing prescription medicines to the public
2) Ensuring that different treatments are compatible
3) Checking dosage and ensuring that medicines are correctly and safely supplied and labeled (pharmacists are legally responsible for any dispensing errors)
4) Supervising the preparation of any medicines (not all are supplied ready made-up by the manufacturer)
5) Keeping a register of controlled drugs for legal and stock control purposes
6) Liaising with doctors about prescriptions
7) Selling over-the-counter medicines

8) Counseling and advising the public on the treatment of minor ailments
9) Advising patients of any adverse side-effects of medicines or potential interactions with other medicines/treatments
10) Preparing dosette and cassette boxes, usually for the elderly but also for those with memory/learning difficulties, where tablets are placed in compartments for specified days of the week
11) Undertaking Medicine Use Reviews (MUR), an advanced service to help patients understand how their medicines work and why they have to take them
12) Managing a needle and syringe exchange
13) Measuring and fitting compression hosiery
14) Monitoring blood pressure and cholesterol levels
15) Offering a diabetes screening service
16) Arranging the delivery of prescription medicines to patients
17) Managing, supervising and training pharmacy support staff
18) Budgeting and financial management
19) Keeping up to date with current pharmacy practice, new drugs and their uses

New Dimension of Pharmacy Practice

1) Pharmaceutical Care – it It is a process of interventions to have a better outcome of drug therapy in patients.
    a) Individual pharmaceutical care
    b) Population based pharmaceutical care –demographic and epidemiological based studies
2) Evidence Based Medicine – it is a Scientific evidence, built up from good quality research, is used as a guide, and adapted to each individual patient's circumstances
3) Meeting the patient's need – Easy access to medicines in adequate quantity with assure quality and affordable price.
4) Chronic disease Management System: HIV/AIDS
5) Self-Medication Care - responsibilities of pharmacists concerning advice on self-medication
6) Quality assurance of pharmaceutical care services - Quality assurance (structure, process and outcome) is that set of activities that are carried out to monitor and improve performance so that the health care provided is as effective and as safe as possible".
7) Clinical pharmacy services - whose primary job is to interact with the health care team, interview and assess patients, make specific therapeutic recommendations, monitor patient responses to drug therapy and provide medicines information
8) Pharmacovigilance - It is a structured process for the monitoring and detection of adverse drug reactions (ADRs).
9) Drug and Poison Information Centre
10) Generic Medicines Supply
11) Patient Counseling

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Review Article….2

Antimicrobial Resistance (AMR)

By J Lakshmi, M Akhila, M Kavya P Archana and M Hema
II D Pharm Students

Antimicrobial Resistance (AMR): It can be defined as a spontaneous process of mutations or resistance that are occur in microorganisms (bacteria, viruses, fungi and parasites) when they are exposed to antimicrobial agents used in treating the disease(s). In other words, AMR can be defined as the ability of micro-organisms to continue multiplying in the presence of therapeutic concentrations of the antimicrobial drug, thereby resulting in possible treatment failure. The Minimum Inhibitory Concentration (MIC) (needed to kill microbes) is higher than the concentrations achieved with therapeutic treatment

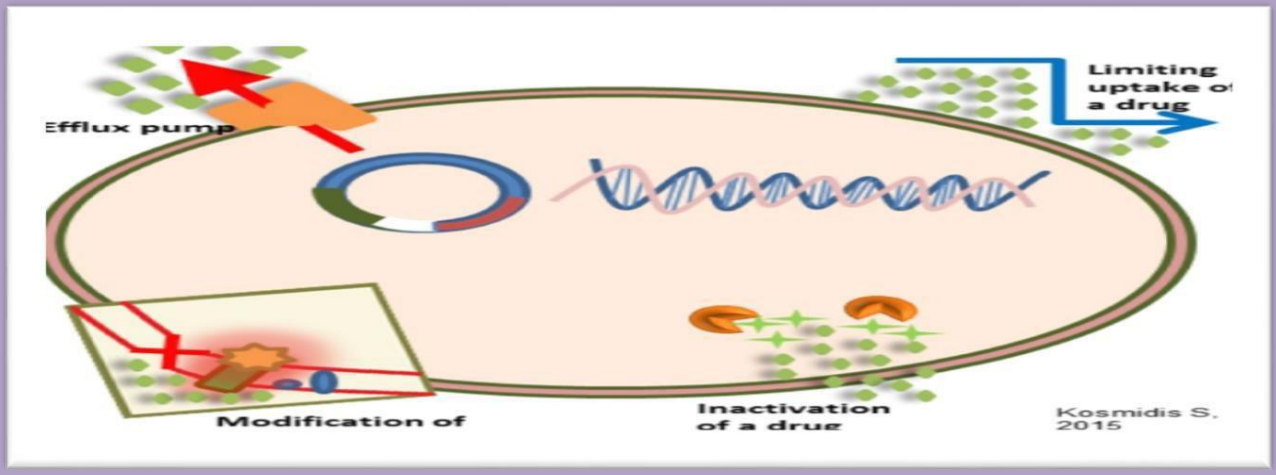
Resistance is an inevitable consequence of antimicrobial use. When microorganisms are exposed to antimicrobials, the "Survival of the fittest" strain become resistant and survive. It is found in humans, animals, food and environment. The sensitive and persistent ones are suppressed. Therefore, rational use of antimicrobial agents offers many advantages to reduce morbidity and mortality, and cost of treatment.

Resistant Vs Persistent Cells: When microorganisms are exposed antimicrobial agents, there may be cells which are resistant to antimicrobial (red cells) and sensitive cells (green cells). The sensitive cells are killed and resistant cells are transformed to all dormant cells. Similar reactions are seen in type B mechanism where persistent cells which are genetically produce more of sensitive newer cells active towards therapeutic agents and less of resistant cells. All dormant cells are insensitive and therefore a need of newer or alternative agents.

Mechanisms of resistance:

1) Change in cell wall permeability: Gram positive bacteria are more influx to antimicrobial agents than Gram negative due to inherent structural differences. Therefore, the resistance mechanism is more common in Gram negative.

Fig 1: Over view mechanism of Anti-microbial Resistance / Antibiotic Resistance (ABR)



2) Enzyme degradation of the drug — the best known is breakdown of the β-lactam ring of penicillin's, cephalosporins, and carbapenems by β -lactamases.
3) Efflux pumps actively remove the drug from the cell.

4) Mutation at the target site.
5) Alteration of penicillin-binding proteins (PBP) leads to resistance to β-lactam antibiotics.
6) Changes in structure of the enzyme reverse transcriptase lead to resistance to reverse transcriptase inhibitors antibiotics.

Some organisms can develop multiple resistance mechanisms.
Antimicrobial resistance leads to the following.

- Increase in morbidity and mortality
- Patients might be sick for longer time therefore extended hospital stay.
- Newer or alternatively potentially more expensive antimicrobials might have to be used; it may be toxic and Costly
- Increased direct and indirect cost of treatment (Drugs, aprons and gloves)
- Isolation and institutionalization.
- In some cases, equipment might have to be discarded.

New strains of resistant bacteria are appearing and problematic resistant organisms are

1. Methicillin Resistant Staphylococcus Aures (MRSA)
2. Methicillin Resistant Enterococci (MRE)
3. Vancomycin-Resistant Staphylococcus Aureus (VRSA)
4. Vancomycin-Resistant Enterococci (VRE)
5. Extended-Spectrum B-lactamases (ESBLs)
6. Acinetobacter baumanii.

They tend to be expensive and high-risk drugs are needed.

Measuring resistance: In vitro resistance tests generally require the organism to be cultured in presence of antimicrobials.

Anti-microbial Disk diffusion Test: Disk diffusion involves culturing bacteria on an agar plate that has had samples (impregnated standard disks) of an antibacterial placed on it. If there is no growth around the antibacterial, the bacteria are sensitive to the antibacterial, but if the bacteria grow around the sample, this means that they are resistant. Partial growth represents intermediate susceptibility.

Anti-microbial Equivalent to MIC - test: The E-test is based on similar principles to disk diffusion, but here an impregnated strip containing a single antibacterial at increase concentrations is placed on the agar plate. Bacterial growth is inhibited around the strip after it reaches a certain concentration. This is equivalent to the MIC.

These tests can be problematic for slow-growing bacteria, such as mycobacterium and HIV – resistant testing. And involve amplifying and examining genetic material for mutations that are associated with resistance.

Risk factors for antimicrobial resistance: Excessive and inappropriate and unnecessary antimicrobial use results in emergence of resistant micro-organisms without any clinical out come. It is estimated that up to 50. This includes the following.

1. Use of antimicrobials for infections that are trivial or self-limiting.
2. Use of antibacterial to treat infection of viral origin — e.g. the common cold.
3. Over-long antimicrobial prophylaxis or treatment courses.
4. Increase numbers of severely ill hospital patients.
5. More frequent use of invasive devices and procedures.
6. Presence of more severely Immunocompromised patients
7. Overcrowding in hospital and community healthcare facilities.
8. Poor cleaning and disinfection of rooms, equipment, and hands.

Strategies to decrease antimicrobial resistance: It is possible by prevention of infection through the following mechanisms:

1. Prophylaxis treatment by Vaccines or antibiotics as per protocol.
2. Decrease use of invasive devices.
3. Good hygiene.
4. Decrease dissemination of antimicrobial-resistant organisms
5. Limiting or modifying antimicrobial use.
6. Safe Disposal of Pharmaceutical Waste in Industry
7. Safe disposal of expired medicines in hospitals
8. Effective bio-wastage management in hospitals
9. Green Pharmacy

Rationale Use of Antibiotics to avoid Antibiotic or Antimicrobial Resistance

1. Use antibiotics only when indicated: Reserve new antibiotics
2. Sensitivity testing should be obtained before commencing antibiotic therapy
3. Choice of agent based on the spectrum of activity
4. Adequate dose and duration of treatment
5. Safety profile of the drug must consider
6. Prophylactic use of antibiotic should be avoided
7. Empirical antibiotic therapy – on local epidemiological data
8. Oral therapy should be used in preference to parenterals therapy.
9. Antimicrobial combinations should only be used where indicated
10. Topical antibiotics should be restricted to a few proven indications.

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Spiritual and Traditional Practices: Deepavali Celebrations

Quiz – *next level*

1) Nutritive Value of protein is ------- cal/gm

a) 4 b) 3.6 c) 9 d) zero

2) Dry granulation is also called-----

a) Direction Compression b) Milling
c) Roller Compaction d) Sieving

3) Aerosil is also known as-----

a) Cab-o-sil b) Fumed silica
c) Colloidal silicon dioxide d) All of the above

4) Croscarmellose sodium in tablets is used as -------

a) Glidant b) Disintegrants
c) Binder d) All the above

5) Calcium carbide is used as ------- food industry

a) Artificial ripening agent b) Preservative
c) Anti-oxidant d) coloring agent

6) Kollidone in tablet manufacturing used as -----

a) Suspending b) Binding c) Lubricant d) All the above

7) Starch in wet granulation used as

a) Binder b) Diluents
c)Disintegrants d) All the above

8) Mannitol in tablets is used as -----

a) Glidant
b) Disintegrant
c) Binder
d) Diluents

Ans) 1) a 2) **c** **3) d** **4) b** **5) a** **6) b** **7) d** **8) d**

Thank You


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