



AMITY  
UNIVERSITY  
— MADHYA PRADESH —

# AMIPHARM

AN OFFICIAL NEWSLETTER OF AMITY INSTITUTE OF PHARMACY

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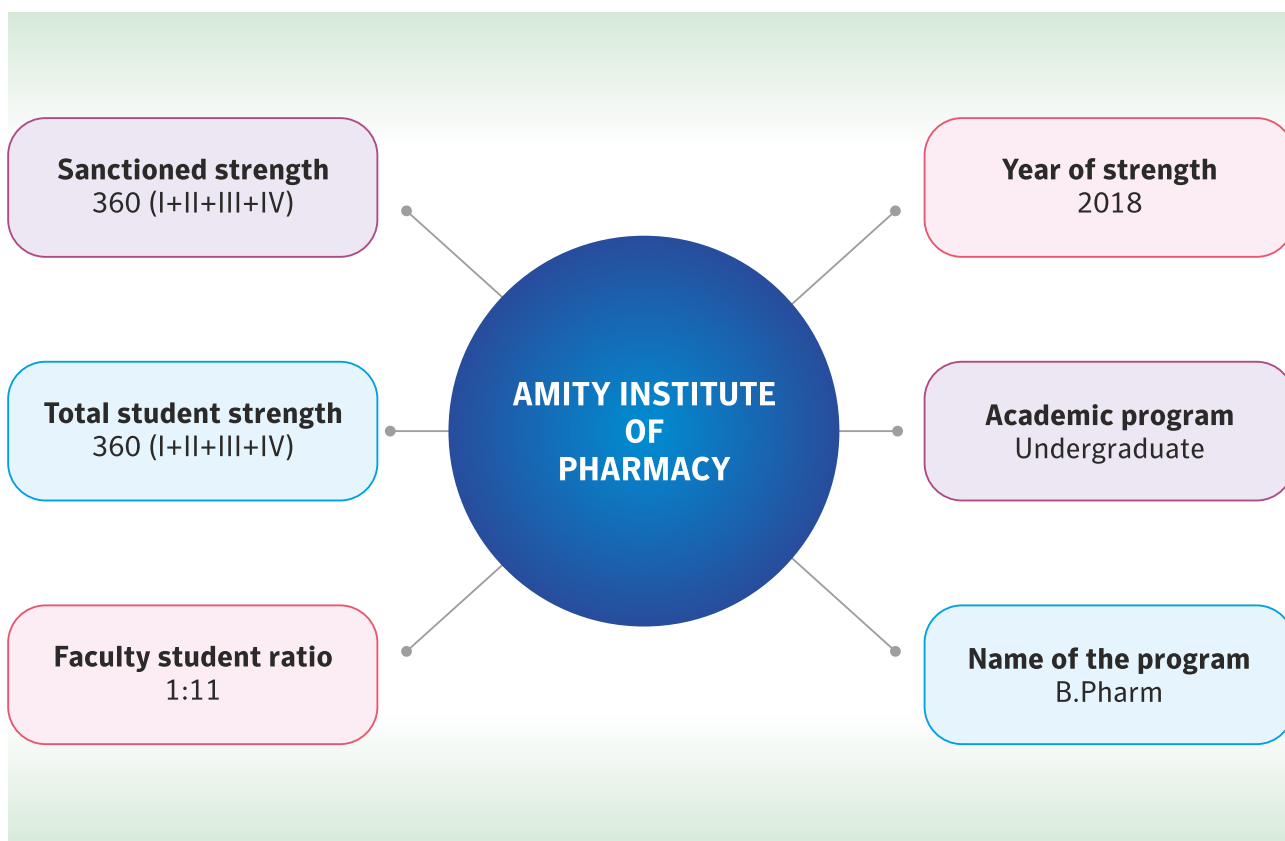
AMITY INSTITUTE  
OF PHARMACY

## ABOUT AMITY INSTITUTE OF PHARMACY

Amity Institute of Pharmacy (AIP) was established in 2018 and offers a Bachelor of Pharmacy, a 4-year undergraduate program. The institute is part of Amity University Madhya Pradesh, recognized by University Grants Commission (UGC), approved by the Pharmacy Council of India (PCI). The Committee for the Control and supervision of experiments on animals (CCSEA) approved the institute for conducting preclinical studies for education and research. The institute is also approved by the Indian Pharmacopoeia Commission, Pharmacovigilance Program of India for monitoring and reporting adverse drug reactions. The institute has a sprawling campus, providing a pleasant and intellectually stimulating ambiance. It has spacious air-conditioned lecture theaters, technology-enhanced state of art laboratories with access to

cutting-edge and contemporary equipment for academic learning and research.

The institute pays special attention on Industrial training, practice school courses and research projects to the participants. The institute is passionate about grooming leaders who are not only thorough professionals, but also good human beings with values and “sanskars” who can make a difference globally. The institute strives to ensure good placements across diverse roles by providing training sessions. The institutes launch impactful campaigns and excellent community outreach activities to help students nurture relationships and stay socially responsible. The institute encourage students to attend co-curricular and extracurricular activities to create a positive and supportive environment that recognizes and rewards their participation.





## FROM DIRECTOR'S DESK



As we embark on the Inaugural edition of our Pharma newsletter “AMIPHARM”, I am delighted to extend my warmest greetings to each of you. It is with great pleasure that I present to you the latest developments and insights from the Amity Institute of Pharmacy, AUMP.

In the dynamic realm of pharmaceuticals, staying informed and connected is paramount. Our newsletter serves as a vital conduit, bridging the gap between innovation and dissemination of knowledge within the field. With each issue, we strive to encapsulate the spirit of inquiry, discovery, and advancement that defines our institute.

At AIP, we are dedicated to nurturing a culture of excellence in pharmaceutical education and research. Through cutting-edge research endeavors, transformative educational programs, and collaborative initiatives, we endeavor to make meaningful contributions to the healthcare landscape.

This edition of our newsletter encapsulates the collective efforts and achievements of our esteemed faculty, researchers, and students. From groundbreaking research findings to insightful articles, it is a testament to our unwavering commitment to pushing the boundaries of knowledge and innovation.

As we navigate the ever-evolving landscape of pharmaceuticals, I urge each of you to actively engage with the content presented in this newsletter. Let us seize this opportunity to deepen our understanding, foster collaboration, and inspire positive change within our respective spheres of influence.

I extend my heartfelt gratitude to all contributors, editors, and readers who have played a pivotal role in making this newsletter a reality. Your dedication and enthusiasm are truly commendable, and I am confident that together, we will continue to achieve greater heights of excellence. We would like to hear from you to evaluate the quality of the newsletter and to serve you better.

Happy Reading!

**Prof. (Dr.) S. Mohana Lakshmi**  
Principal & Director (AIP)  
Amity University Madhya Pradesh



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**Ms. Devyani Rajput**  
Assistant Professor



## STUDENT'S ACHIEVEMENTS



Winners of Poster Making  
National Startup Day 2024



Winners of Quiz Competition  
International Francophonie Day 2024



Academic Excellence Award  
Convocation 2024



Winner of Poster Making Competition  
'मनोल्लास के नवरत्न', 2024



Winner of Oral Presentation  
National Science Day 2024

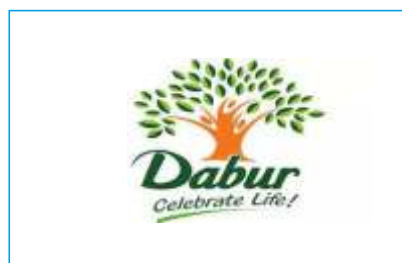


Winner of Singing Competition  
Amichroma 2024





## INDUSTRY PARTNERS





## PLACEMENTS@2024

Name of Student	Company	Department
Ankit Sharma	Macleods Pharmaceuticals	Quality control
Ayushi Chhabra	Macleods Pharmaceuticals	Quality control
Bhuvnesh Yadav	Macleods Pharmaceuticals	Quality control
Deshdeepak	Macleods Pharmaceuticals	Quality control
Gaurav Tiwari	Macleods Pharmaceuticals	Quality control
Himanshu Gupta	Macleods Pharmaceuticals	Quality control
Manjeet Kumar	Macleods Pharmaceuticals	Quality control
Navdeep Asthana	Macleods Pharmaceuticals	Quality control
Prakhar Singh	Macleods Pharmaceuticals	Quality control
Pranjal Mishra	Macleods Pharmaceuticals	Quality control
Sanjeev Kumar	Macleods Pharmaceuticals	Quality control
Shivam Singh Chauhan	Macleods Pharmaceuticals	Quality control
Vivek Yadav	Macleods Pharmaceuticals	Quality control
Yogesh Tomar	Macleods Pharmaceuticals	Quality control
Adarsh Jain	Macleods Pharmaceuticals	Quality control
Anshika Bhatnagar	IDS Infotech	Medical Scribe Trainee
Harender Singh	Panacea Smart Solution	Medical Scribe Trainee
Mishika Singh	Panacea Smart Solution	Medical Scribe Trainee
Radhika Gupta	Edclaps Innovation	BDA
Rhythm Milan	Panacea Smart Solution	Medical Scribe Trainee
Sakshi Mehra	Panacea Smart Solution	Medical Scribe Trainee
Ashutosh Kumar Singh	IDS Infotech	Medical Scribe Trainee
Aastha Mishra	Dabur India Ltd.	Product Specialist
Amit Chauhan	Med Script	Medical Scribe
Amita Parmar	Hindustan Wellness	Sales Executive
Ashish Kumar	Jeevan Organics	Trainee QC
Ashutosh Yadav	Extra Marks Education Ltd.	Business Development Executive
Awasthi Aryan Sarvesh	Dabur India Ltd.	Product Specialist
Bharat Upadhyay	Cloud Espacio	Digital Marketing Trainee
Gaurav Kumar	MedScript LLP	Remote Assistant
Nandini Dipty	Zyla Health	Business Operations
Richa Saxena	Dabur India Ltd.	Product Specialist
Ritik Motkar	Dabur India Ltd.	Product Specialist
Shubhi Gupta	Hike Education Pvt. Ltd.	Business Development Executive
Tanuj Upadhyay	IDS Infotech Ltd	Medical Scribe – Trainee
Vikash	Med Script	Medical Scribe
Vishal Tomar	Dabur India Ltd.	Product Specialist
Yash Khattri	Edukyu	Business Development Executive
Yoditya Sharma	Dabur India Ltd.	Sales Incharge
Saloni Jaisinghani	IDS Infotech Ltd	Medical Scribe – Trainee

## GLIMPSES OF EXTRA-CURRICULAR ACTIVITIES

Extracurricular activities encompass a diverse range of pursuits outside of the academic curriculum, providing students with opportunities for enrichment, exploration, and personal growth. These activities, which can include sports, clubs, hobbies, and community involvement, offer students avenues to develop leadership skills, teamwork abilities, and a sense of responsibility.

Engaging in extracurriculars allows students to explore their interests, passions, and talents beyond the classroom, fostering creativity, resilience, and a lifelong love for learning. Additionally, these activities promote social interaction, cultural understanding, and personal development, contributing to individuals who are prepared to excel academically and thrive in their future endeavors.



Sports Event,  
Amichroma 2024



Winner of Cricket Tournament,  
Amichroma 2024



Cultural programme during  
NAAC team Visit



Participants of Cultural programme  
with NAAC team



Plantation Programme,  
NSS Activity 2024



NSS Team



## GLIMPSES OF CO-CURRICULAR ACTIVITIES

Co-curricular activities play a pivotal role in the holistic development of students, extending beyond the confines of the traditional academic curriculum. Co-curricular activities offer

students opportunities to explore their interests, develop new talents, and build lifelong friendships, preparing them for success in both academic and personal endeavors.



Herbal Product Exhibition,  
Convocation 2024



Students - Expert interaction,  
Pharma Anveshan 2024



Students Interaction during  
National Seminar 2024



Capacity Development &  
Skill Enhancement Workshop 2024



Quiz Competition,  
National Science Day 2024



Pharmaceutical Product  
Exhibition 2024



## SOCIAL CONNECT

Social connections among students in terms of various camps and visits can offer numerous benefits, both academically and personally. Social connections offer opportunities for students to develop and refine their social skills, such as communication, empathy, teamwork, and conflict resolution.

Peer encouragement, support, and friendly competition can inspire students to strive for excellence in their academic pursuits. Students can exchange ideas, discuss concepts, and engage in group study sessions, which can deepen their understanding of course material and improve academic performance.



Health Checkup Camp at Village Berja  
World Pharmacist Day 2023



मतदान जागरूकता अभियान  
at Village Chakraipur, Gwalior



Nutrition Awareness Programme  
Community Outreach Activity



Health Checkup Camp, Shigora, Gwalior  
Community Outreach Activity

## ORIENTATION PROGRAM 2023@AIP

The Orientation Program held at the AIP provided incoming students with a comprehensive introduction to the institution and its resources. Through a series of workshops, presentations, and interactive sessions, students were familiarized with academic expectations, campus facilities, and support services available to them. The program aimed to ease the transition into university life, offering guidance

on academic planning, career development, and student life activities. Participants had the opportunity to connect with faculty, staff, and fellow students, fostering a sense of belongingness. Overall, the Orientation Program served as a vital platform for students to navigate their academic journey confidently and make the most of their university experience at AIP.



Address by  
Director, AIP



Gathering of Students and  
Faculty Members



Ice-breaking Session



Sensitization Regarding Discipline  
(Induction Programme)



Sensitization Regarding PCI &  
Academic Regulations



Visit of Freshers to  
Herbal Garden

## PHARMA NEWS UPDATE

### **MTBVAC live attenuated vaccine is under clinical trial for tuberculosis.**

A live attenuated vaccine derived from a human strain of Mycobacterium tuberculosis. MTBVAC is the only tuberculosis vaccine in clinical trials based on a genetically modified form of the pathogen. It's thought to be more effective and long-lasting than the BCG vaccine, which is currently available. MTBVAC is starting Phase 3 efficacy trials in newborns against TB disease.

### **ENTOD develops human insulin eye drops to treat corneal conditions**

Although Insulin has traditionally been administered through injections to manage blood sugar levels in diabetic patients globally, recent research from various global studies and literature searches has demonstrated its potential effectiveness when applied as eye drops. These findings suggest that insulin eye drops can aid in repairing corneal tissue and addressing ocular surface conditions. The company's next step involves initiating the drug regulatory approval process in India. This will begin with an application to the CDSCO for approval to conduct clinical trials of these eye drops. Subsequently, the company will seek approval from the DCGI for commercialization.

### **Sun Pharma and US-based Pharmazz to introduce cerebral ischemic stroke drug in India**

Sun Pharma, including its subsidiary companies, announced today that one of its wholly owned subsidiaries has entered into a licensing agreement with Pharmazz Inc., a biopharmaceutical firm based in the United States. The purpose of this agreement is to facilitate the commercialization of an innovative drug called Tyvalzi™ (Sovateltide) in the Indian market. Sovateltide, developed by Pharmazz with potential global applications, is designed for the treatment of cerebral ischemic stroke. Under the terms of the agreement, Sun Pharma has been granted the

rights to market Sovateltide in India using the brand name Tyvalzi™ (Sovateltide).

### **Sun Pharma recalls 55,000 bottles of generic drug from US market due to manufacturing norms violation**

Sun Pharma is recalling 55,000 bottles of Febuxostat Tablets, in 40 mg and 80 mg strengths, from the American market due to manufacturing practice deviations caused by microbial contamination at their Dadra-based plant. As per the USFDA, a class II recall is initiated in a situation in which the use of, or exposure to, a violative product may cause temporary or medically reversible adverse health consequences or where the probability of serious adverse health consequences is remote. Sun Pharma is one of the leading generic pharmaceutical companies in the US. The US generic drug market was estimated to be around USD 115.2 billion in 2019. It is the largest market for pharmaceutical products.

### **For the first time, 'Made in India' drugs launched for rare diseases**

The Centre has come up with a game-changer special initiative by manufacturing four types of homegrown. 'Made in India' drugs for rare diseases for the first time. The Central Government has prioritised 13 rare diseases and sickle cell disease. The most awaited initiative was taken in July 2022 after discussions held with the academia, pharma industries, organisations and CDSCO department of pharmaceuticals. "After the discussion with pharma companies, scientists, drug regulators and academia we decided to initiate manufacture to deliver the drugs. We prioritized drugs for 13 rare diseases and for sickle cell disease also," official sources from the Union Health Ministry stated. "This is a revolutionary change with a huge cost difference. If a drug is costing 2.5 crore, then in India it will cost 2.5 lakh," sources said.



## ROLE OF SYNBIOTICS IN INFLAMMATORY BOWEL DISEASE



**Dr. Neeraj Mishra**

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Inflammatory Bowel Disease (IBD) is characterized by chronic inflammation in the digestive tract. Currently, in Europe and the United States, 3.6 million people suffer from IBD, including UC and CD, which are becoming increasingly prevalent worldwide. IBD is an autoimmune disease involving intestinal inflammation, which includes conditions like Crohn's disease and ulcerative colitis. IBD manifests as a wide range of lesions, often extending to the entire colon, and is characterized mainly by ulcers and erosions of the colonic mucosa. Most of the clinical symptoms are abdominal pain, diarrhea, bloody stools, and weight loss. Although genetic, epigenetics, immunological, microbial, and environmental factors are involved in the etiology of IBD, none have been identified as the explicit and direct cause of IBD. A generally accepted perspective is that the gut microbiota is affected by environmental factors (e.g., diet, medications, smoking, and contaminants) that further impact the host immune response, contributing to the occurrence and development of IBD.

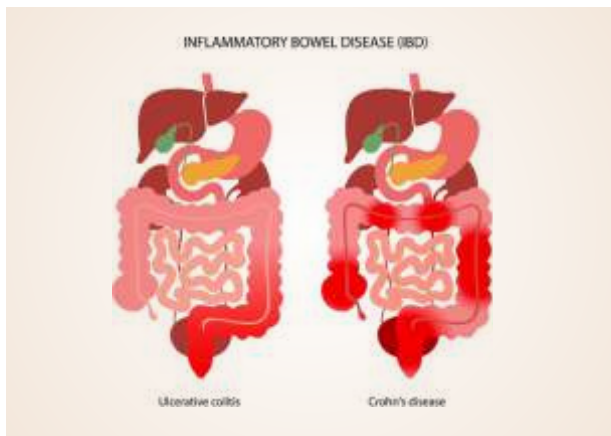
In the context of IBD, symbiotic has been a subject of interest and research because of their potential to modulate the gut microbiome and alleviate some of the symptoms associated with IBD. It is thus clear that gut microbiota represents a link between environmental factors

and the immune response. Recent studies have found that lack of intestinal microorganisms during early childhood influences the maturation and tolerance of the intestinal immune system, thus increasing IBD risk in adulthood.

Synbiotics are a combination of probiotics and prebiotics that work together to support the health and balance of the gut microbiota. Combining probiotics and prebiotics in synbiotics can have a synergistic effect on the gut microbiota. The prebiotics provide nourishment for the probiotics, helping them multiply and exert their beneficial effects more effectively. This combination can potentially enhance the overall impact on the gut's health and immune function.

Probiotics are live microorganisms that may provide health benefits when consumed in adequate amounts. They are often marketed as supplements or found in certain foods, such as yogurt, and are believed to help maintain a balanced gut microbiota. Probiotics can be easily incorporated into the diet through the consumption of fermented foods (i.e., yoghurt, kefir, kimchi, sauerkraut), or consumed on a daily basis as a probiotic supplement. The human intestinal tract contains approximately 1000 species of intestinal bacteria, totaling 100 trillion bacteria. The use of probiotics in IBD remains a complex and evolving topic.





The decision to use probiotics should be made on an individual basis, considering the specific circumstances and needs of the patient. The management of IBD in India typically involves a combination of medications, lifestyle modifications, and, in some cases, surgery. Biologic therapies and immunosuppressants are increasingly being used in the treatment of IBD in India. Current available treatment options are mesalazine, corticosteroids, immunosuppressive drugs etc.

## PHARMACOVIGILANCE PROGRAMME IN INDIA (PVPI): DRUG SAFETY ALERT



**Dr. Naveen Sharma**

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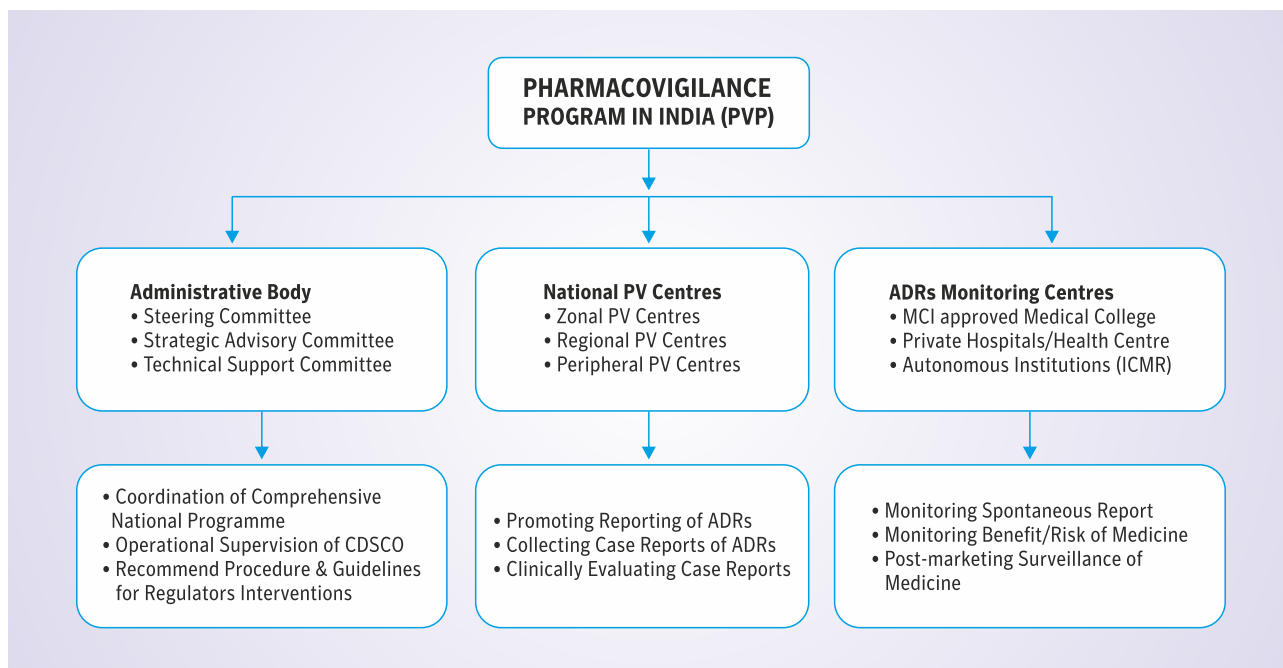
Pharmacovigilance is defined as the activities involved in the detection, assessment, understanding, and prevention of adverse effects or any other drug-related problems. The main goal of pharmacovigilance is thus to promote the safe and effective use of health products, particularly by providing timely information about the safety of health products to patients, health-care professionals, and the public. Pharmacovigilance is therefore an activity that contributes to the protection of patients and maintaining public health.

Promoting safe use of medicines is a priority of Indian Pharmacopoeia Commission that

functions as the National Coordination Centre (NCC) for Pharmacovigilance Programme of India (PvPI).

The National Coordination Centre- Pharmacovigilance Programme of India, Indian Pharmacopoeia Commission, Ministry of Health and Family Welfare, Government of India was launched as a WHO Collaborating Centre for Pharmacovigilance in Public Health Programmes and Regulatory Services on 30 October 2017.

The Indian Pharmacopoeia Commission through National Coordination Centre, Pharmacovigilance Programme of India is one of the active member countries in WHO- Programme of International



Drug Monitoring and is also leading the thematic area of Vigilance as part of the South East Asia Regulatory Network (SEARN).

The Central Drugs Standard Control Organization (CDSCO), under the Directorate General of Health Services (DGHS), and the Ministry of Health, Family & Welfare, Government of India is the National Regulatory Authority (NRA) of India.

The Pharmacovigilance Programme of India has progressed considerably in the last few years. The Pharmacovigilance Programme of India was approved by the Ministry of Health and Family Welfare, Government of India in July 2010 with the primary objective of the programme to create a nation-wide system for patient safety reporting.

There are 760 functioning Adverse Drug Monitoring centres (AMCs) in the country as part of the Pharmacovigilance Programme of India. Current India contribution to global safety database reaches 3% and the completeness score is 0.93 out of 1. The NCC is taking several measures to enhance patient safety including capacity building for monitoring, surveillance, collaboration with national health programs and

other organizations to increase ADR reporting and to ensure that PvPI is a vital knowledge database for Indian regulators.

The main goal of pharmacovigilance is thus to promote the safe and effective use of health products, in particular by providing timely information about the safety of health products to patients, health-care professionals, and the public.

India is now being recognized as a hub of global clinical trials and clinical research studies. Hence, it is the need of the hour in India to have a dynamic PV network system with an efficient and prudent operation method. Nevertheless, in India, PV programs are at an early stage on par with other countries, and only because of less reporting of ADRs.

In recent years, various type of training and skill development programmes have been started by the NCC- PvPI, the main objective of these programme is to train various type of participants in pharmacovigilance to develop skill, capacity building, create awareness and sensitize the participants for reporting of ADR and foster research in the area of PV.

To enhance the participation of patients, healthcare professionals, and the pharmaceutical industry in enhancing medicines safety by reporting suspected ADRs to the PvPI, NCC recently launched a helpline number (toll free), i.e., 1800 180 3024 facility for reporting adverse events. This facility will be useful for the healthcare professionals those who are working in tertiary healthcare system to report ADRs.

Adverse events-related information which received at NCC will be communicated to nearest AMCs for validating the reports. The websites of CDSCO and NCC are important tools for communication to the stakeholders and public seeking specific information. PvPI documents on these websites can be searched by navigating from the home page.

## UTILIZATION OF ARTIFICIAL INTELLIGENCE (AI) IN THE DOMAIN OF RETROSYNTHETIC CHEMISTRY



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In recent years, there has been a dramatic rise in interest in retrosynthesis prediction with artificial intelligence (AI) techniques. AI-driven retrosynthesis prediction, in contrast to conventional retrosynthesis prediction carried out by chemists and rule-based expert systems, automatically learns chemical knowledge using commercially available experimental datasets to anticipate reactions and retrosynthesis pathways.

The primary distinction between synthesis and retrosynthesis is the direction of the approach. In synthesis, when designing reaction pathways, this method starts with the starting compound and works forwards toward the target compound. The design of reaction pathways in retrosynthesis starts with the target compound and works backward towards the starting compound. In retrosynthetic analysis, the target compound will

be imaged with broken bonds, so simpler parts of the target compound can be realized. These simpler parts are called synthons. Real compounds needed to be determined for the synthons, which are called synthetic equivalents. Depending on the complexity of the target compound, the synthetic may need to be broken down into synthons for a starting compound to be identified. The retrosynthetic process of tracing the synthesis pathway from a desired product back to available building blocks can be time-consuming and tedious.

Artificial intelligence (AI) has indeed revolutionized the field of retrosynthetic pathways for a given molecule and the identification of molecules that can be synthesised or alternative pathways for a desired outcome. Chemistry-related AI tools that are helpful for retrosynthesis are:



SYNTHIA retrosynthesis software provides invaluable information that can point towards the best possible route to execute – minimizing cost, the number of steps, and the best chance of making the required molecule with the desired properties. This can significantly shorten the time it takes a chemist to come up with a workable plan of action in the lab.

M1 RetroScore, powered by CAS, is a synthetic accessibility score tool designed to save time by predicting the possibility of synthesis for new small molecules using deep learning models trained on CAS chemical reaction information.

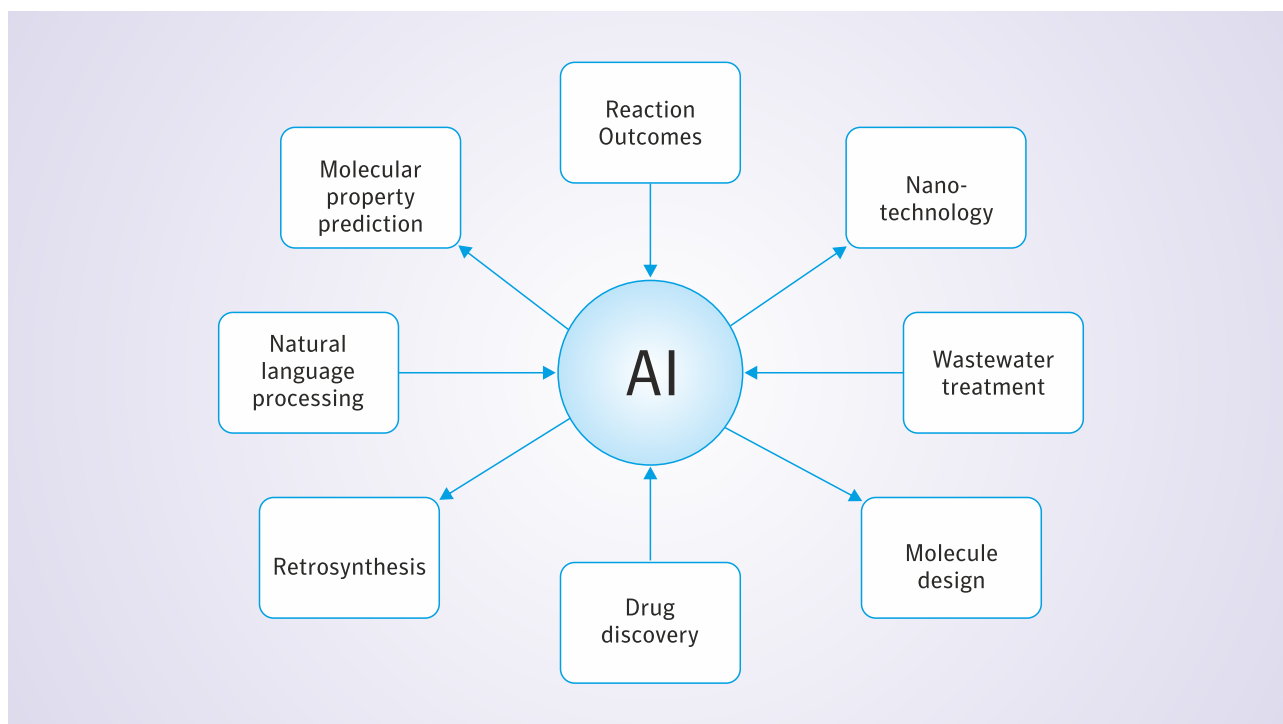
These AI tools' main characteristics are:

- Number of steps in the synthesis pathway
- Availability and cost of starting materials
- Feasibility of reactions in the pathway
- Order of the reactions

**IBM RoboRXN:** Work on reverse-engineering Scientists upload the molecule to the IBM RoboRXN cloud. AI model trained on over 3 million chemical reactions (derived from patents) quickly breaks the molecule down into a series of reactions and ingredients.

**ASKCOS:** MIT (Massachusetts Institute of Technology) created software tools for organic synthesis. There are several applications available through the ASKCOS AI Tools.

- Identifying the synthetic routes to be employed in a sequence of reactions to produce a target chemical.
- Predicting whether a target compound of interest will be generated when specified precursors react with one another.
- Determining the circumstances that are most likely to encourage the synthesis of the designated target compounds.
- Predicting the synthetic complexity of a molecule [1-5 scale] using a trained neural network model. Artificial intelligence (AI) techniques enable researchers to develop hypotheses, plan experiments, gather and analyse massive amounts of data, and come to conclusions that might not have been possible using only conventional scientific methods.



## NIRGUNDI: A POTENTIAL INDIGENOUS MEDICINAL PLANT OF GWALIOR - CHAMBAL REGION



**Mr. Jamal Basha Dudekula**

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### INTRODUCTION

Traditional medicines were originally used with vast knowledge about the therapeutic utility of numerous plants. *Vitex negundo* Linn (nirgundi) is one of the very useful plants in Indian System of Medicine, Nirgundi is a Sanskrit word, which means it protects the body from infections. The botanical name of Nirgundi is *Vitex negundo* and it belongs to the family Verbenaceae. This herb finds place in all the Samhitas of Ayurveda, *Vitex negundo* is a deciduous shrub naturalized in many parts tropical and sub tropical parts of the world. It is used in all Indigenous systems of medicine– Ayurveda, Unani, Siddha, etc. It is commonly used in folk medicine in India, Pakistan, Bangladesh, China, Sri Lanka, and Japan. In Ayurveda, nirgundi has been used as medicine since ancient times.

### MYTHOLOGICAL STORY OF NIRGUNDI

It is recognized as Sacred plant in India, used in rituals in rural areas of Gwalior Chambal region and is thought to have originated from the abdomen of lord Ganesha. The leaves are offered to Lord Shiva & Parvati on Nitya Somavara Vrata and to lord Vishnu on Ekadashi Vrata.

### GEOGRAPHICAL SOURCE

The plant is found throughout India, Ceylon, Pakistan, Iran, Afghanistan, tropical Africa, China and south Asian countries. The plant occurs in

Madhya Pradesh, Uttar Pradesh, Bengal, and Southern India.

**Nirgundi Vernacular names:** Assamese - Pochotia, Bengali -Nirgundi, Nishinda, English - Five-leaved chaste tree, Horseshoe vitex, chinese chaste tree, Gujarati- Nagoda, Shamalic Hindi Mewri, Nirgundi, Kannada- Bile-nekki, Malayalam- Indrani, Marathi -Nirgunda Nepali - Nirgundi Punjabi - Marwan Sanskrit- Nirgundi, Konkani- Lingad, Tamil - Chinduvaram; Notchi Vellai-nochchi, Telugu - Vavili Nalla-vavili Tella-vavilibhb

**Morphology:** A large shrub or a small slender tree, bark mostly thin, grey, branchlets quadrangular, whitish with a fine tomentum.

### CHEMICAL CONSTITUENTS

Phytochemical studies on *Vitex negundo* Linn revealed the presence of volatile oil, triterpenes, diterpenes, sesquiterpenes, lignan, flavonoids, flavones, glycosides, iridoid glycosides and stilbene derivative. Leaves are particularly rich in vitamin C.

### TRADITIONAL USES

Traditionally in the Gwalior Region the root is considered analgesic, tonic, febrifuge and expectorant.

The leaves are aromatic, tonic and vermifuge. A decoction of negundo leaves is given in fever, The



flowers are useful in diarrhoea, dysentery, fever, , liver and kidney problems and cardiac disorders.

Externally it is used in the form of paste or oil, and for oral administration in the form of powder, leaf juice , or decoction. It is useful in intestinal worm infestation, eczema, fungal infection, abdominal tumour, relieves anxiety, good for eyes, relieves arthritis related pain. The leave is made into paste, heated a little and applied externally to

wounds. Water decoction of Nirgundi is used for vaginal douche. Water decoction is used for mouth gargling .The dry leaves are burnt and fumes are inhaled to relieve ashthma. Essential oil is obtained from the leaves which contain terpenes.

### CONCLUSION

Nirgundi is one of the most used herbal plants traditionally in Gwalior Chambal region. It has been widely used externally as well as internally. Thorough screening of the literature available on Nirgundi (*Vitex negundo* Linn.) depicted the fact that it is a popular remedy. The merit of the traditional use of Nirgundi has also been supported by the isolation and identification of several possible active chemical constituents, mainly terpenes and flavonoids from different parts leaves and flowers, bark, seeds and roots. So it is essential and needful for all of us to plant a Nirgundi in our surrounding for future research and the betterment of our present as well as coming generations also.

## LACK OF SLEEP CAN IMPACT YOUR IMMUNE SYSTEM



**Navdeep Asthana &  
Anukrati Mishra**  
B.Pharm VIII Sem

Sleep is a fundamental aspect of human life, yet it often takes a back seat in our fast-paced, modern world. The importance of a good night's sleep is well-documented, but one aspect that is often overlooked is its profound impact on our immune system. In this article, we'll delve into the statistics behind how insufficient sleep can

weaken our body's defenses, making us more susceptible to illnesses.

### THE PREVALENCE OF SLEEP DEPRIVATION

- **Global Sleep Duration Trends:** According to the World Sleep Society, the global average sleep duration has decreased by over an hour



in the last 100 years, with people now averaging around 6.8 hours of sleep per night, below the recommended 7-9 hours for adults.

- **Chronic Sleep Deprivation:** A National Sleep Foundation poll reveals that 45% of Americans report that insufficient sleep has affected their daily activities at least once in the past seven days.
- **Shift Work Sleep Disorder:** The International Classification of Sleep Disorders states that approximately 20% of the global workforce engages in shift work, which disrupts natural sleep patterns, potentially leading to sleep deprivation.

### IMPACT ON IMMUNE FUNCTION

- **Reduced White Blood Cells:** Chronic sleep deprivation can lead to a reduction in the number of white blood cells, which are crucial for immune responses. A study published in JAMA Pediatrics found that adolescents with inadequate sleep had a significantly lower white blood cell count.
- **Diminished T-cell Activity:** T-cells play a key role in the immune system's response to viral infections. Research published in the journal Sleep discovered that insufficient sleep reduces the effectiveness of T-cell responses.
- **Increased Susceptibility to Infections:** A study published in the Archives of Internal Medicine reported that individuals who slept less than seven hours per night were nearly three times more likely to develop a cold after virus exposure than those who slept eight hours or more.

### INFLAMMATORY MARKERS AND SLEEP

- **Cytokines and Inflammation:** Sleep deprivation can elevate pro-inflammatory cytokines. A study in the journal Sleep Medicine Reviews found that even one night of sleep loss can lead to an increase in inflammatory markers like IL-6.

- **Chronic Inflammation:** Chronic inflammation is a risk factor for various health conditions. Prolonged sleep deprivation can lead to persistent low-grade inflammation, as demonstrated in a study published in Brain, Behavior, and Immunity.

### SLEEP AND VACCINATION EFFECTIVENESS

- **Influence on Vaccine Response:** Research in the journal Sleep showed that people who slept fewer than six hours per night were significantly less likely to respond to a hepatitis B vaccine compared to those who slept more than seven hours.

### STRESS AND SLEEP DEPRIVATION

- Cortisol and Sleep
- Psychological Stress and Immunity

### SLEEP AND MENTAL HEALTH

- Depression and Immunity
- Anxiety and Immune Response

### IMPACT ON PRODUCTIVITY AND HEALTHCARE COSTS

- Economic Consequences
- Workplace Productivity

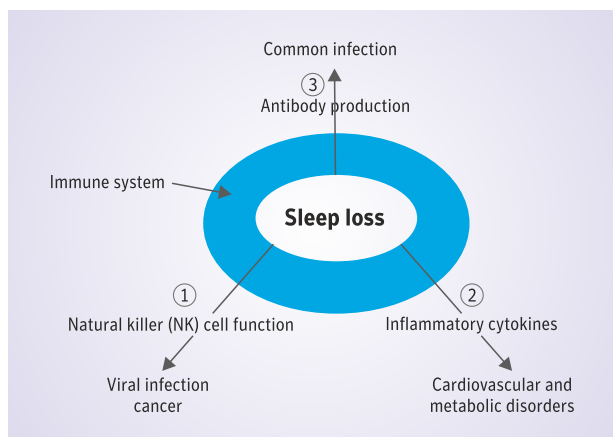
### THE IMPORTANCE OF QUALITY SLEEP

- REM Sleep and Immunity
- Sleep Hygiene

### STRATEGIES TO IMPROVE SLEEP

- Education and Awareness
- Lifestyle Changes
- Medical Intervention

**The statistics are clear:** lack of sleep can significantly impact our immune system, making us more vulnerable to infections, chronic diseases, and mental health issues. Understanding these statistics is the first step towards making sleep a priority in our lives. To protect our overall well-being and enhance our body's defense mechanisms, it's crucial that we recognize the



value of a good night's sleep and take steps to ensure we get the recommended amount of rest each night. In doing so, we can better equip ourselves to face the challenges of the modern world and safeguard our long-term health.

## HOW BLOCKCHAIN TECHNOLOGY CAN BOLSTER THE PHARMACEUTICAL INDUSTRY



**Ms. Palak Velankar**  
B. Pharm VI Sem

We often hear people complaining about how they place an order on an E-Commerce platform, hoping to get it delivered on the predicted date; but instead, they receive it after a month or two, and what is worse- they get some different or a substandard object than what they originally ordered.

While this can be rectified or compensated for daily- life items, the seriousness of such a scenario can rise ten-fold when it concerns our health, and, in turn, our lives.

What I am talking about is the status of the provision of medications and other healthcare

supplies by the Pharmaceutical or Pharma industry, which is a sector responsible not just for the marketing and distribution, but also for the discovery, research, development, and manufacture of the medicines we use to boost our health and wellness. However, from the discovery of a chemical molecule that displays the potential to respond therapeutically, to its formulation into a dosage form, each step is checked by appropriate evaluations, of its labelling, packaging, and distribution into the market, followed by its access to the patients, is an overly complex operation with numerous variables to keep a track on, along with ensuring

its efficacy and fulfilment of customers' expectations. This need to authenticate every step and evade all frauds is satisfied by Blockchain Technology. Yes, it is the very same technology used for cryptocurrencies today. It is a decentralized and distributed digital record or ledger system, which records the activities across multiple systems, such that it ensures the security, transparency, and traceability of the data.

In simple words, it consists of a chain of blocks in which the entered data is difficult to alter, making it trustworthy for data tracking and analysis. Also, with decentralized information across all the connected systems, it is quite impossible to get hacked, with more access provided to the users to assess each stage all by themselves and take necessary actions at the very instant, if required.

To understand it systematically, let us segregate the Pharma industry into two broad domains- Drug Discovery and Development, and Drug Distribution, and understand the requirement of Blockchain separately.

### **BLOCKCHAIN TECHNOLOGY IN DRUG DISCOVERY AND DEVELOPMENT**

It is the process of preclinical research on cell-based and animal models and clinical trials on humans and finally obtaining regulatory approval to market the drug. This takes years, even decades, with extensive research, experiments, and trials on lead molecules, formulation of dosage forms, in-process quality control examinations, clinical trials, and post-marketing surveillance studies. The data associated with all these processes is hard to maintain and update, let alone the disparity caused due to lack of verification and interference of different platforms.

This speck of an issue is one of the major reasons why most of the drugs get delayed and rejected from being approved, losing a hefty number of resources.

Now, what if individual study data could be in one secure controlled location, accessed by all those who need it and updated through a structured, consensus model? What if patients could own their data in a single place?

This is where Blockchain Technology comes in handy. It can enhance transparency, integrity and collaboration of data and its providers. The following points describe how this is true:

- Pharmaceutical companies and research institutions can use Blockchain to discreetly share research data, clinical trial results and other information. This ensures data exchange with integrity.
- Researchers can timestamp and securely store their discoveries and innovations on the blockchain. This helps to maintain a clear record of when information was created, which is significant for patent applications.
- Blockchain can be used to securely record and manage clinical trial data. This prevents data manipulation, ensuring its accuracy and transparency.
- For research materials like cell lines, DNA samples and chemicals, blockchain can be used to track their origin and handling, ensuring their authenticity and quality.

All these reasons, if not more, guarantee that this technology has the potential to drive significant gains in discovering and developing new drugs and medicines.

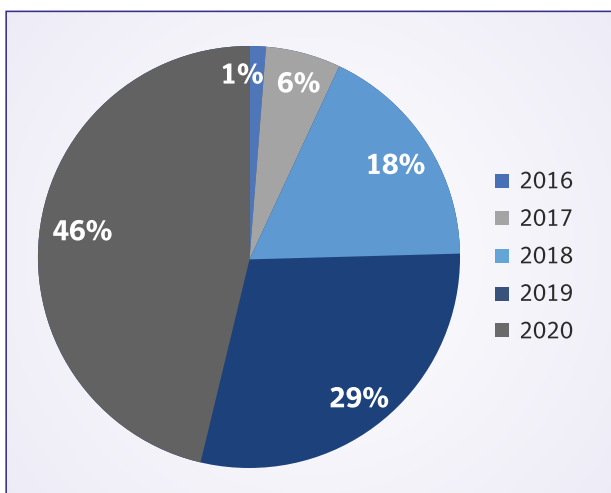
### **BLOCKCHAIN TECHNOLOGY IN DRUG DISTRIBUTION**

After their approval and manufacture, the drug supply is set to get into the market. It goes through various mediators, wholesale purchasers and finally to the hospitals and licensed pharmacies, where patients can seek its reach. All these levels need to be valid and authentic enough to provide the actual supply in patients' hands.





Along with this, pharmaceutical companies must deal with the returned drugs periodically, due to overstocking by the wholesalers. Here is where the issue of “Counterfeit drugs” arises. The main challenge is to identify them and separate them before their reselling to the market.- Another matter is about some medications like vaccines, which always require multiple parameters to be tracked, such as air quality, humidity, temperature etc.



They require a carefully operated environment throughout the journey in the supply chain. And Blockchain technology proves extremely useful to tackle these issues:

- It provides a transparent and immutable record of the entire drug supply chain, from

manufacturer to distributor to pharmacy or hospital.

- Blockchain enables real-time tracking of drug shipments. Every time a batch of drugs goes to the next level, the transaction is recorded on the blockchain, allowing all the parties to know where the batch is at the given time.
- Once a transaction is added to the blockchain, it is impossible to alter, ensuring the integrity of the distribution process. This is crucial for maintaining the safety and effectiveness of pharmaceutical products.
- Blockchain can help pharmaceutical companies and distributors comply with regulatory requirements by maintaining a transparent and verifiable record of the distribution process.

In India, Oracle, Apollo Hospitals and Strides Pharma Sciences have commenced the drug supply chain using Blockchain decentralized ledger. This technology has much potential to be explored further to benefit the healthcare and pharma universe in the coming years.

Overall, Blockchain technology can significantly improve patient safety and regulatory compliance in the pharmaceutical industry. It can do wonders in the global market. There are many countries that have started using Blockchain Technology in their Pharma sectors.

## AN OVERVIEW OF CAREER OPPORTUNITIES IN THE PHARMACEUTICAL INDUSTRY



**Mansi Chaubal &  
Arpit Bajpai**  
B. Pharm II Sem

The pharmaceutical industry, a vital part of human health, is projected to generate \$1,115 billion in revenue in 2023, with oncology drugs being the largest segment, with a projected CAGR of 5.80%. The pharmaceutical industry is expanding due to new treatments and rising healthcare demand, with original goods dominating the market, despite the limited availability of OTC medicines. People interested in science, business, or healthcare can find a variety of employment options in the pharmaceutical sector.

### MAJOR KEY AREAS OFFERING CAREER OPPORTUNITIES IN PHARMACEUTICAL INDUSTRIES

**Research and Development (R&D):** This division is in charge of finding and creating novel medications and medical procedures. Scientists, chemists, biologists, research associates, and clinical researchers are among the professions in R&D. The pharmaceutical sector has seen significant growth in research and development due to the increasing demand for innovative drugs, technological advancements, regulatory incentives, collaborations, and personalized medicine. The global population's growing aging population has led to increased investment in R&D to develop new treatments. Advancements in technology, such as genomics and proteomics, have accelerated drug discovery and

development. Governments have also implemented incentives and patent protection mechanisms to encourage R&D. These factors have accelerated the development of new treatments for various diseases.

**Regulatory Affairs:** A career in the pharmaceutical industry involves ensuring pharmaceutical products comply with regulations and guidelines set by regulatory authorities. Career options include Regulatory Affairs Specialists, Regulatory Affairs Managers, Clinical Trial Managers, Drug Safety Officers/Pharmacovigilance Specialists, Regulatory Operations Specialists, Regulatory Compliance Specialists, and Regulatory Affairs Consultants. These professionals prepare and submit regulatory documents for product approvals, monitor and interpret guidelines, and ensure compliance with relevant regulations. They also manage regulatory activities, develop regulatory strategies, manage submissions and ensure compliance with requirements. Regulatory Compliance Specialists develop and implement compliance programs, conduct audits, and provide guidance on compliance issues.

**Quality Control and Quality Assurance:** A career in the quality assurance and quality control (QA) department of the pharmaceutical industry involves ensuring that pharmaceutical products



meet quality standards and regulatory requirements. QA specialists develop and implement quality assurance systems, conduct internal audits, and investigate non-conformances. QC analysts perform laboratory testing and analysis, and validate manufacturing processes, equipment, and systems. Quality assurance managers oversee quality assurance activities, manage quality control laboratories, and manage QA professionals. Quality auditors conduct internal and external audits to assess compliance with quality systems, regulations, and standards. Supplier quality managers ensure suppliers and contract manufacturers meet quality requirements, evaluate and approve suppliers, conduct audits, and manage supplier quality agreements. Documentation specialists create, review, and maintain quality-related documents, ensuring accuracy, and compliance with regulatory requirements.

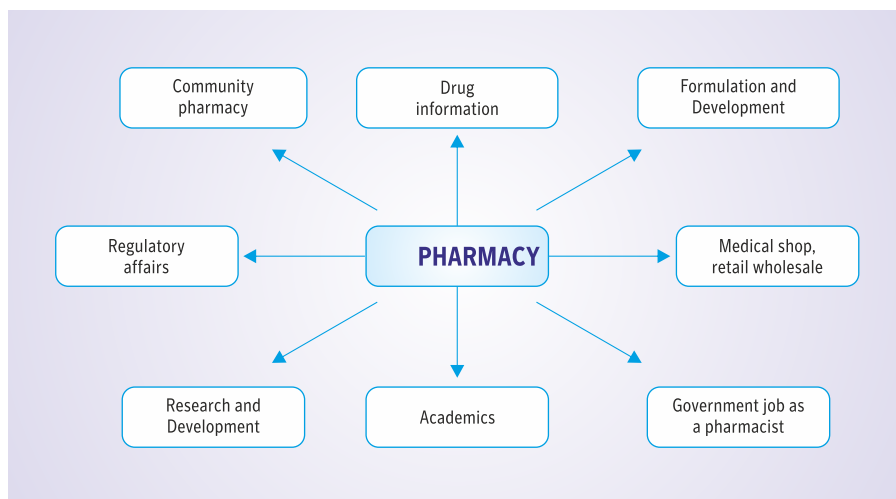
**Manufacturing and Production:** The pharmaceutical industry's manufacturing and production department oversees the production and manufacturing processes of pharmaceutical products, ensuring efficient, safe, and regulatory compliance. Career options include production supervisors, manufacturing technicians, packaging engineers, process engineers, validation specialists, continuous improvement managers, supply chain managers, and quality control analysts. Production supervisors coordinate and schedule production activities, while manufacturing technicians operate and maintain production equipment. Packaging engineers design and optimize packaging systems, while process engineers optimize manufacturing processes. Validation specialists develop validation protocols, perform qualification studies, and analyze data to meet acceptance criteria. Continuous improvement managers use Lean Six Sigma methodologies to streamline processes and optimize efficiency. Supply chain managers manage the end-to-end supply chain activities, while quality control analysts perform laboratory testing to ensure product quality and purity. Successful

professionals in this field require strong technical skills, knowledge of regulatory guidelines, and attention to detail.

**Sales and Marketing:** Sales and marketing in the pharmaceutical industry involves promoting and selling pharmaceutical products to healthcare professionals, hospitals, and other stakeholders. These professionals drive product awareness, increase sales, and build strong customer relationships. Career options include Pharmaceutical Sales Representatives, Product Managers, Medical Science Liaisons, Key Account Managers, Market Research Analysts, Digital Marketing Specialists, Marketing Communications Managers, and Market Access Managers. Sales representatives promote pharmaceutical products to healthcare professionals, providing product information, identifying sales opportunities, and achieving sales targets. Product managers develop and implement marketing strategies, while Medical Science Liaisons bridge the gap between pharmaceutical companies and healthcare professionals. Key account managers manage relationships with key customers, while Market Research Analysts gather and analyze data to provide insights into market trends, customer preferences, and competitor activities. Digital Marketing Specialists leverage digital channels to promote pharmaceutical products, while Marketing Communications Managers develop integrated marketing communication strategies. Market Access Managers ensure pharmaceutical products are accessible to patients and reimbursed by payers.

**Supply Chain and Logistics:** Supply chain and logistics professionals in the pharmaceutical industry manage the movement and distribution of pharmaceutical products from manufacturers to end-users. They ensure timely delivery while maintaining quality and regulatory compliance. Career options include Supply Chain Manager, Logistics Coordinator, Warehouse Manager, Demand Planner, Regulatory Compliance Specialist, Procurement Specialist, Distribution Manager, and Cold Chain Specialist. Supply chain



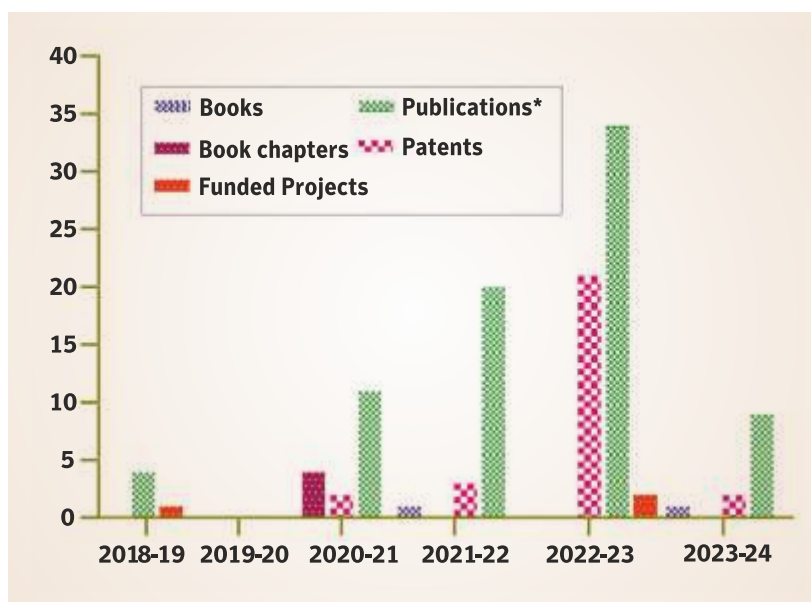


logistics partners. Warehouse managers oversee storage, inventory management, and distribution, while demand planners analyze sales data and market trends to forecast product demand. Regulatory compliance specialists ensure compliance with regulations and guidelines. Procurement specialists' source and procure raw materials, manage supplier relationships, and oversee distribution networks. Cold

managers oversee the end-to-end supply chain activities, coordinating production scheduling, inventory management, and ensuring on-time delivery. Logistics coordinators coordinate transportation and distribution, working closely with shipping companies, freight forwarders, and

chain specialists manage temperature-sensitive products and maintain temperature ranges. Strong analytical skills, attention to detail, knowledge of regulatory requirements, and cross-functional teamwork are essential for success in this field.

## RESEARCH PROGRESSION





## RECENT PUBLICATIONS

### RESEARCH/REVIEW PUBLICATIONS

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- Akram W, Pandey V, Sharma R, Joshi R, Mishra N, Garud N, Haider T. Inulin: Unveiling its potential as a multifaceted biopolymer in prebiotics, drug delivery, and therapeutics. *International Journal of Biological Macromolecules*. 2024;129131. (Impact Factor: 8.2) (Elsevier)
- Mazahir F, Sharma R, Yadav AK. Bioinspired theranostic quantum dots: Paving the road to a new paradigm for cancer diagnosis and therapeutics. *Drug Discovery Today*. 2023;28(12):103822. (Impact Factor: 7.4) (Elsevier)
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- Vishwakarma M, Haider T, Soni V. Update on fungal lipid biosynthesis inhibitors as antifungal agents. *Microbiol Res*. 2024 Jan;278:127517. (Impact Factor: 6.7) (Elsevier)
- Vanangamudi M, Palaniappan S, Kathiravan MK, Namasivayam V. Strategies in the Design and Development of Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIs). *Viruses*. 2023; 15(10):1992. (Impact Factor: 4.6) (MDPI)
- Ashique S, Mishra N, Mohanto S, Garg A, Taghizadeh-Hesary F, Gowda BHJ, Chellappan DK. Application of artificial intelligence (AI) to control COVID-19 pandemic: Current status and future prospects. *Heliyon*. 2024; 10(4):e25754. (Impact Factor: 4.0) (Cell Press)
- Ashique S, Pal R, Sharma H, Mishra N, Garg A. Unraveling the Emerging Niche Role of Extracellular Vesicles (EVs) in Traumatic Brain Injury (TBI). *CNS Neurol Disord Drug Targets*. 2024 Feb 13. (Impact Factor: 3.0) (Bentham Science).
- Nirbhavane P, Sharma G, Sharma R, Katare OP. Steroidal nanoformulations for the treatment of uveitis: potential, promises and future perspectives. *Int J Ophthalmol*. 2024; 12;44(1):58 (Impact Factor: 1.6) (Springer).
- Surendran V, Prathap M, Ravula P, Rajavel P, Prabahar A, Chemometrics Assisted Formulation of Glimepiride Nanosuspension for Solubility Enhancement in Diabetic Therapy—A Systematic Approach, *Macromolecular Symposia*, 413(1),2024, 230011 (Impact Factor: 1.5) (Wiley).
- Shrivastava V, Sharma N, Shrivastava V, Dwivedi K. In-Vitro Assessment of Antioxidant and Antimicrobial Activity of Field Grown and Tissue Cultured Fruit Callus of *Nothapodytes nimmoniana*. *Biomed Pharmacol J* 2023;16(4). (Impact Factor: 1.5)

### PATENTS

- A design patent on “Spirometer” by Mr. P Sagar. Patent No 389060-001.
- A design patent on “IoT enabled battery assisted mosquito and rodent repellent device” by Dr. Neeraj Mishra. Patent No 389607-001.

- Copyright on: "Potential implications of Beta-Amyloid (A $\beta$ ) Plaques (Amyloidogenic Pathway) in occurrence of Alzheimer's disease". Diary Number: 12252/2023-CO/L/2022-CO/L. Registration No.: L-144085/2024 by Mrs. Monika Kaushik.
- Copyright on: " Protein aggregation pathways (Amyloid fibrils and NFT's) and Neuronal loss". Diary Number: 24481/2023-CO/L. Registration No.: L-139547/2023 by Mrs. Monika Kaushik.

### BOOKS

- Mishra N, Pandey V, editors. Block Co-polymeric Nanocarriers: Design, Concept, and Therapeutic Applications. Singapore: Springer Nature Singapore; 2023. Page No:1-429.
- Sharma P, Akram W, Jain V, Tailang M, editors. Smart Nanocarrier for Effective Drug Delivery. CRC Press, Taylor & Francis Group; 2024.

### BOOK CHAPTERS IN REFERENCE EDITED BOOKS

- Kanoujia J, Kishore A, Mohana Lakshmi S. Role of Block Copolymers in the Enhancement of Poor Solubility of Drugs. In: Mishra N, Pandey V, editors. Block Co-polymeric Nanocarriers: Design, Concept, and Therapeutic Applications. Springer Nature Singapore; 2023. p. 53-74.
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- Sharma, K, Saini K, Chimaniya P, Sahu S, Gantayat D, Sharma R, Bhatt S & Shilpi S. Lung Cancer Therapy: Synergistic Potential of PD-1/PD-L1 and CTLA-4 Inhibitors. In: Bhatt, S., Eri, R.E., Goh, B.H., Paudel, K.R., Andreoli Pinto, T.d.J., Dua, K. (eds) Immunotherapy Against Lung Cancer. Springer, Singapore. 2024, pp 297–316.
- Chauhan R, Kushwah P, Mourya H, Garud N, Joshi R, Akram W, Kumar P, Haider T. Nanocarriers for Topical Delivery of Drug. In Smart Nanocarrier for Effective Drug Delivery. 2024 (pp. 224-242). CRC Press.



## RESEARCH: FUNDED PROJECTS

### NAME OF THE FUNDING AGENCY:

#### MADHYA PRADESH COUNCIL OF SCIENCE AND TECHNOLOGY

- **Name of the Principal Investigator:** Dr. Ajay Sharma, Professor
- **Name of the Co - PI:** Dr. Naveen Sharma, Professor
- **Title of the Project:** Biotechnological Approaches for Camptothecin Analogs Production from Cell Culture of Nothapoytes Nimmoniana: An Anticancer Medicinal Plant
- **Date of Sanction:** 28.07.2018
- **Total Budget Sanctioned:** 9.53 Lakhs
- **Project Status:** Completed

### NAME OF THE FUNDING AGENCY:

#### MADHYA PRADESH COUNCIL OF SCIENCE AND TECHNOLOGY

- **Name of the Principal Investigator:** Dr. Neeraj Mishra, Professor
- **Name of the Co-PI:** Dr. Vikas Pandey, Associate Professor
- **Title of the Project:** Dual functional colon- Targeted tofacitinib and probiotics loaded microparticles for the treatment of inflammatory bowel disease”
- **Date of Sanction:** 31.03.2023
- **Total Budget Sanctioned:** 3.2 Lakhs
- **Project Status:** Ongoing

### NAME OF THE FUNDING AGENCY

#### MADHYA PRADESH COUNCIL OF SCIENCE AND TECHNOLOGY

- **Name of the Principal Investigator:** Dr. Rajeev Sharma, Assistant Professor
- **Name of the Co-PI:** Dr. Wasim Akram, Assistant Professor
- **Title of the Project:** “Ligand tethered polymer-lipid based self- assembled nanoconstructs for the effective brain targeting against glioma”
- **Date of Sanction:** 05.10.2023
- **Total Budget Sanctioned:** 6.20 Lakhs
- **Project Status:** Ongoing



## MEDIA COVERAGE



## एमिटी वित्ति में इंटरनेशनल फ्रैंकोफोनी डे आयोजित



संपुष्प सेवाएद्वारा • सहायिका  
संपुष्प सेवाएद्वारा • सहायिका

द्वितीय विधि मध्य प्रदेश में अंतर्राष्ट्रीय फ्रेमवर्कके दिशा की पूर्ण संस्था पर अनेक कार्यक्रमों का आयोजन किया गया। इन कार्यक्रमों में प्रमुखतापूर्वक प्रतिस्पर्धिता, संसाधन की, मध्यम प्रतिस्पर्धिता, उच्च पाक कला प्रतिस्पर्धिता, निराला प्रतिस्पर्धिता, मध्यम प्रतिस्पर्धिता और नए प्रतिस्पर्धिता शामिल हैं। कार्यक्रम के मुख्य उद्देश्य अनिवार्य प्रतिस्पर्धिता, उच्च पाक कला प्रतिस्पर्धिता, निराला प्रतिस्पर्धिता और नए प्रतिस्पर्धिता शामिल हैं। कार्यक्रम में शांति और विचारों के कार्यक्रमों में शामिल हैं।

आर्य समाज का आचार्य महाराज

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एमटी विवि  
में सीपीआर  
जागरूकता  
कार्यक्रम  
आयोजित

सीपीआर से बच सकती  
है किसी की जान

संस्करण संख्या: २०१८/२०१९

एशियाई विकासबैंकालय में  
नेशनल बोर्ड ऑफ एज्युकेशन  
इन मैड्रिडल सहयोग और फर्नोसो  
काउन्सिल ऑफ इंडिया के सहयोग  
से एशियाई इंस्टीट्यूट ऑफ फर्नोसो  
द्वारा काउन्सिलऑफनेशनल रिसर्चिंस्टेशन  
सीपीएन जगन्नाथ कार्यालय का  
आयोजन किया गया।

कार्यक्रम विभिन्न विद्यालय के प्रिंसिपल, टेचर्स, गैर-सरकारी संगठनों के प्रतिनिधियों और डॉ. मोहन-लाल शर्मा निदेशक, एमटी ईस्टर्न यूट अफ पावोमी के मार्गदर्शन में आयोजित हुआ। कार्यक्रम का उद्देश्य छात्रों और संकाय सदस्यों को राष्ट्रीयतर के महत्व के बारे में जागरूक करना और उनके अपने-अपने क्षेत्रों में



ਅਰਜਿੰਦ ਸਿੰਘ ਯਾਦੀਨ ਨੇ ਸੀਪੀਐਮ  
ਭਰੀ ਲਾਠੀਚਾਰ ਖਾਧਾ।

उन्होंने बताया कि कांतिग्राम के निवासी अक्सर एक अलग-अलग जमात के रूप में व्यवहार करते हैं।

बनाना रखने में मदद कर सकता है। सीपीआर सीखना एक महत्वपूर्ण कौशल है जो किसी के जीवन को बचा सकता है। कार्यक्रम के दौरान प्रतिभागियों को सीपीआर के मूल सिद्धांतों और तकनीकों के बारे में

## Industry Partners



Gland Pharma Limited



Makin Laboratories Pvt. Ltd.  
(A WHO GMP certified company)

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Website: [www.amity.edu/gwalior](http://www.amity.edu/gwalior)