

Research Group- Phytopharmaceuticals Research Group

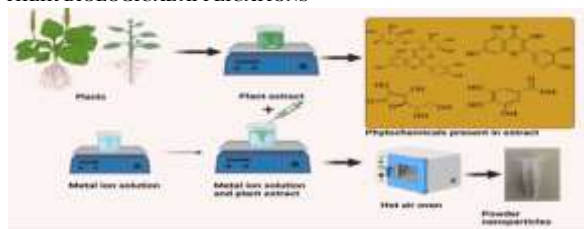
- **Name of Principal Investigator/ Group Leader: Dr. Anima Pandey**
- **Research Theme:** Bridging Traditional Insights and Modern Uses through Bioactive Phytochemicals
- **Broad Area of Research and Scope:**
 - Exploration of Medicinal Plants from Jharkhand for Therapeutic Applications
 - Standardization and modernization of traditional Ayurvedic formulations
 - Investigation of Plant-Based Materials as Pharmaceutical Excipients



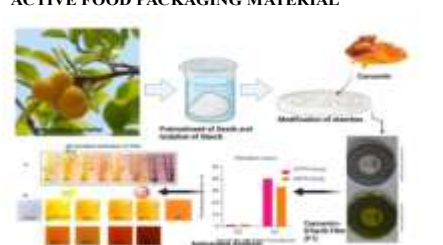
Schematic Representation of Broad Area of Research

Starch Isolation and Preparation of Film as an active food packaging material

GREEN SYNTHESIS OF NANOPARTICLES USING PLANT EXTRACT AND THEIR BIOLOGICAL APPLICATIONS

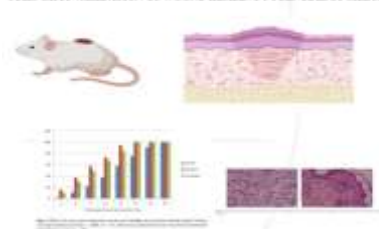


STARCH ISOLATION AND PREPARATION OF FILM AS AN ACTIVE FOOD PACKAGING MATERIAL



ETHANOBOTANICABESERA

SCIENTIFIC VALIDATION OF WOUND HEALING POTENTIAL OF MEDICINAL PLANTS



INVESTIGATING ANTIMALARIAL ACTIVITY OF PLANT EXTRACT AND PHYTOCHEMICALS USING IN VITRO TECHNIQUES AND MOLECULAR DOCKING



Total Number of Publications by the group: 17

Top 5 Article with impact factor:

1. Mal T, Pandey A. Isolation and effect of physical modification on the release characteristics of *Euryale ferox* Salisb polysaccharide. *IJBM*. 2025; 19:141243. **IF: 7.7**
2. Chaurasia S, Pandey A. *Artocarpus lakoocha* seed starch and thymol-based films for extending fresh fruit shelf life: Antioxidant and physicochemical properties. *IJBM*. 2025; 294:139556. **IF: 7.7**
3. Pandey A, Yadav SK, Mali SN. Biogenic nanoparticles as safer alternatives for gastric ulcers: An update on green synthesis methods, toxicity, and their efficacy in controlling inflammation. *BTER*. 2025. Accepted for publication. **IF: 3.37**
4. Mali SN, Pandey A. Development of curcumin integrated smart pH indicator, antibacterial, and antioxidant waste-derived *Artocarpus lakoocha* starch-based packaging film. *IJBM*. 2024; 275:133827. **IF: 7.7**
5. Mittal A, Sardana S, Pandey A. Scientific validation of wound healing potential of *Jasminum sambac* Ait. *SAJBo*. 2019. 121:584–589. **IF: 3.31**

Research Projects:

Title	Role (PI/ Co-PI)	Funding Agency	Amount (in Lacs)	Duration
Screening and Validation of Phytoconstituents as Antimalarials from Plants of Jharkhand	PI	MRHRU Angara – a scheme of Dept. of Health Research, Govt of India. 2024.		

Industry/Academia Collaborations:

- National Institute of Malarial Research Field Unit Ranchi, Jharkhand, India.
- Model Rural Health Research Unit, Angara, ICMR.
- Department Of Pharmacology RIMS, Bariatu, Ranchi, Jharkhand.

Targeted Application Area:

- Therapeutical application in communicable and non-communicable diseases.
- Phytopharmaceutical and Phytocosmetics applications
- Isolation and value addition of natural excipients

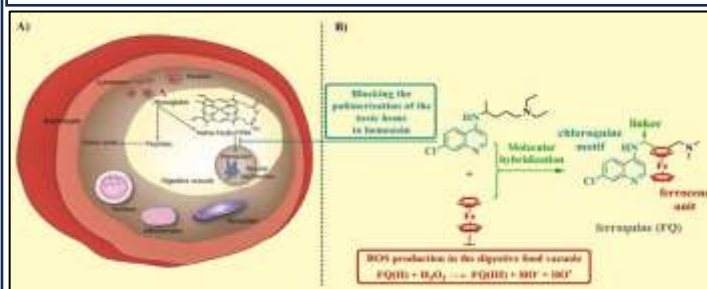
Brief Description of Projects

Problem Statement:

The increasing problem of antimalarial drug resistance necessitates exploring alternative treatments, especially considering the rich biodiversity of Jharkhand. However, the potential therapeutic benefits of indigenous plants remain largely untapped due to the absence of a systematic scientific approach and adequate support. This underutilization of natural resources hampers efforts to combat malaria effectively. To address this challenge, there is an urgent need to identify novel antimalarial agents. Traditional knowledge provides valuable insights into indigenous plants with potential antimalarial properties, yet systematic exploration is lacking. Targeting the hemozoin pathway offers a promising strategy, yet many potential β -hematin inhibitors from indigenous plants remain unidentified. A high-throughput screening approach, guided by medicinal plants insights, is needed to efficiently discover cost-effective natural antimalarial agents.

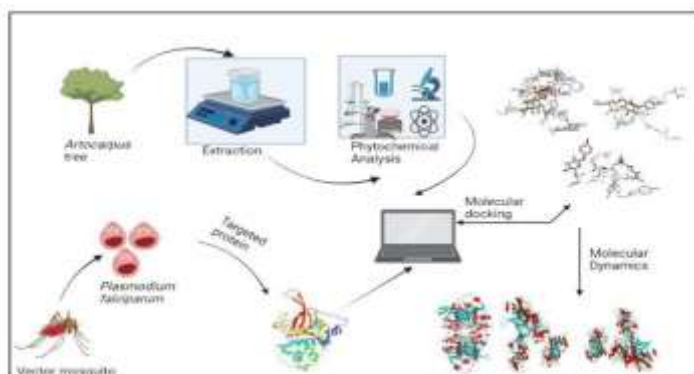
Applications:

- **Speeding up the identification** of promising antimalarial phytochemicals.
- **Screening multiple samples efficiently**, saving both time and resources.
- **Enabling systematic analysis** of underutilized medicinal plants from Jharkhand.
- **Focusing efforts on the hemozoin formation pathway**, a validated antimalarial target.
- **Supporting the development of plant-based therapeutics**, backed by scientific evidence and traditional knowledge.



Strategy/ Approach/ Technique/ Experiments used to solve

To address the growing challenge of antimalarial drug resistance, this study focuses on exploring medicinal plants from Jharkhand, selected based on traditional Ayurvedic knowledge. The research targets the hemozoin formation pathway, a critical mechanism in the survival of the malaria parasite. A high-throughput screening approach is employed to efficiently test a wide range of plant extracts for their ability to inhibit β -hematin formation. The process includes systematic collection and extraction of plant materials, followed by in vitro assays to evaluate antimalarial activity. Active extracts are further analyzed through phytochemical profiling and preliminary toxicity screening to ensure safety and effectiveness. That provides a more natural walking experience and reduces these issues.



Pathway for hemozoin formation & inhibition

Group Members

