

Exploring the Medicinal Potential of Native Plants Used by the Korku People of Popatkhed Village in Akot Tahsil for Treating Malaria: An Applied Ethnobotanical Study

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Abstract

This study aims to document the medicinal plants traditionally used by the Korku people of Popatkhed Village in Akot Tahsil, a rural community in central India, for treating malaria. Through interviews with local healers, field surveys, and laboratory analysis, the research seeks to identify plant species used in malaria treatments and assess their pharmacological properties. Initial findings indicate that plants such as *Mimosa pudica*, *Azadirachta indica*, *Tinosporacordifolia*, *Andrographis paniculata* and *Swertia chirayita* demonstrate antimalarial activity in laboratory tests. By combining traditional knowledge with modern pharmacological approaches, the study underscores the potential for discovering new, sustainable treatments for malaria and the importance of preserving indigenous knowledge for future generations.

KEYWORDS : Medicinal plants, Malaria disease, Korku people,

INTRODUCTION

Malaria continues to be a major health issue in rural India, particularly in tribal regions like Popatkhed Village, where access to modern healthcare is limited. The Korku people, native to this area, have depended on traditional medicine for generations, utilizing locally sourced plants to treat various health conditions, including malaria.

This study aims to document the plants used by the Korku people of Popatkhed Village to treat malaria and assess their pharmacological properties. The goal is to bridge the gap between indigenous plant knowledge and contemporary scientific research, potentially uncovering new antimalarial compounds.

Combining traditional knowledge with modern scientific research can help develop affordable, accessible, and culturally appropriate malaria treatments. Additionally, the study highlights the importance of conserving medicinal plants and preserving indigenous knowledge.

LITERATURE REVIEW

Ethnobotany of the Korku People: Previous studies have explored the medicinal plant knowledge of the Korku community, focusing on their traditional use of local plants for treating various ailments, including malaria. The Korku people have long relied on an intimate understanding of their natural environment, with medicinal plant knowledge being passed down through generations by oral tradition and hands-on training. This knowledge is deeply embedded in the cultural practices of the Korku people, with healers and elders playing a central role in maintaining and transmitting this vital information.

Traditional Malaria Treatments in India: Malaria treatment in India, particularly within tribal communities, often involves the use of local plants. Many indigenous groups, including the Korku, use plant-based remedies to manage malaria symptoms and fight the disease. Examples of plants used by other tribal groups for malaria treatment include *Artemisia annua* (sweet wormwood), *Tinosporacordifolia* (Giloy), and *Andrographispaniculata* (King of Bitters), which have been widely recognized for their antimalarial properties in traditional healing practices. These treatments reflect the deep-rooted knowledge of the local flora and the ways indigenous communities have adapted to combat malaria using available natural resources.

Pharmacological Studies on Malaria Treatments: Several pharmacological studies have investigated the antimalarial potential of plants commonly used in traditional medicine. For instance, *Azadirachta indica* (neem), *Swertiachirayita*, and *Mimosa pudica* are known for their bioactive compounds with antimalarial effects. Studies have demonstrated that neem contains compounds like azadirachtin that exhibit antimalarial properties, while *Swertiachirata* has been found to have potent antiplasmodial activity due to its bitter alkaloids. Similarly, *Mimosa pudica* has shown promise in vitro as an antimalarial agent, suggesting that these plants could offer new leads for developing antimalarial therapies. These findings highlight the potential of traditional plant knowledge as a valuable resource for identifying new, effective treatments for malaria.

MATERIALS AND METHODS

Study Area: The research was conducted in Papatkhed Village, situated in the tribal region of Maharashtra, India. The Korku people of this village predominantly rely on traditional medicine, particularly for treating common ailments like malaria.

Data Collection:

Interviews: Semi-structured interviews were conducted with 15-20 local healers from Papatkhed Village to document the plants used for malaria treatment. These interviews focused on plant species, their uses, preparation methods, and dosages.

Field Surveys: Field surveys were carried out to gather specimens of the plants identified by the healers. Plant identification was done with the assistance of local botanists and cross-referenced with herbarium records.

Phytochemical Analysis: The plant species identified, such as *Mimosa pudica*, *Azadirachta indica*, *Tinosporacordifolia*, *Andrographispaniculata* and *Swertiachirata*, were subjected to laboratory tests to evaluate their antimalarial properties. Extracts were prepared using water and ethanol, and their bioactivity was assessed through in vitro assays on *Plasmodium falciparum*, the parasite responsible for malaria.

Ethical Considerations: Informed consent was obtained from all participants, ensuring they understood the study's objectives and how their knowledge would be used. The intellectual property rights of the community were respected, and the research findings were shared with the Korku people for their benefit.

RESULTS

MEDICINAL PLANTS USED BY THE KORKU PEOPLE:

1. *Mimosa pudica* L. (Lajalu): Family- Fabaceae

Parts Used: Leaves and roots

Traditional Use: Treats fever, a common symptom of malaria.

2. *Azadirachta indica* A. Juss. (Neem): Family- Meliaceae

Parts Used: Leaves and bark

Traditional Use: Antipyretic (fever-reducing) and antimalarial properties.

3. *Tinosporacordifolia* (Thunb.) Miers (Gulvel): Menispermaceae

Parts Used: The entire plant is used

Traditional Use: Antipyretic (fever-reducing) effects.

4. *Andrographis paniculata* (Burm.f.) (Kalmegh): Family- Acanthaceae

Parts used: The whole plant

Traditional Use: Antipyretic and antimalarial benefits.

5. *Swertiachirata* (Roxb.) H. Karst. (Chirayata): Family- Gentianaceae

Parts Used: Bitter extracts of whole plant

Traditional Use: Reduces fever and treats malaria.

PREPARATION AND DOSAGE:

- *Mimosa pudica*: Typically boiled into a tea.
- *Azadirachta indica*: Leaves and bark is crush to prepare extract.
- *Tinosporacordifolia*: The entire plant parts crush to make extract.
- *Andrographis paniculata*: The whole plant is boiling to prepare a decoction.
- *Swertiachirayita*: Boiled to prepared decoction and Consumed as a bitter tonic.

Dosage: Based on age and severity of the illness. Traditional healers adjust the dosage depending on the individual's condition.

DISCUSSION

1. **Combining Traditional and Modern Knowledge:** The study provides solid evidence supporting the use of plants like *Mimosa pudica*, *Azadirachta indica*, *Tinosporacordifolia*, *Andrographis paniculata* and *Swertiachirata* for malaria treatment. The pharmacological findings are consistent with the traditional uses of these plants, demonstrating how indigenous knowledge can contribute valuable insights to the development of modern pharmaceuticals.
2. **Phytochemical Potential:** The findings suggest that *Mimosa pudica*, *Azadirachta indica*, *Tinosporacordifolia*, *Andrographis paniculata* and *Swertiachirata* contain bioactive compounds with potential for the development of new antimalarial drugs. These plants could offer a sustainable source of treatments, particularly in rural areas where access to conventional medicines is limited.
3. **Sustainability and Conservation:** It is crucial to implement sustainable harvesting methods to prevent the overexploitation of these important plant species. Community-driven conservation initiatives should be promoted to ensure the continued availability of these plants for future generations.
4. **Challenges:** Despite the promising results, incorporating traditional knowledge into formal healthcare systems presents several challenges. These include regulatory issues,

the need for standardization of plant-based treatments, and the requirement for further clinical trials to validate efficacy and safety.

8. Conclusion:

This ethnobotanical study emphasizes the potential of the Korku people's traditional knowledge in identifying new antimalarial treatments. The plants *Mimosa pudica*, *Azadirachta indica*, *Tinosporacordifolia* and *Swertiachirayita* demonstrate significant pharmacological potential, suggesting they could serve as viable alternatives to synthetic antimalarial drugs. By merging traditional knowledge with modern scientific methods, the research highlights the value of preserving indigenous knowledge and promoting sustainable use of plants for the future. Future research should focus on clinical trials, isolating active compounds, and integrating these findings into local healthcare systems.

Key Considerations for Future Research:

1. **Sustainability:** Implement methods to conserve the species used for malaria treatment to prevent overharvesting.
2. **Community Benefits:** Develop strategies for ensuring that local communities benefit from the commercialization or broader use of their traditional knowledge, such as fair trade practices and intellectual property rights agreements.
3. **Collaboration with Modern Healthcare:** Collaborate with healthcare providers to explore how these traditional remedies can be incorporated into local healthcare systems, especially in rural areas where malaria is endemic.

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