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Traditional Herbal Remedies For Jaundice Among Tribal Communities In Idukki District Of Kerala State In India

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For generations, indigenous people have relied heavily on traditional herbal remedies as part of their healing procedures for various ailments. The usage of herbs to treat jaundice is a long-standing custom among the tribal communities of Idukki, Kerala, that has been carried down through the generations. A common condition that affects the liver and bile ducts, jaundice is mainly defined by yellowing of the skin and eyes as a result of elevated bilirubin levels. In order to control and treat the ailment using locally accessible herbs, the tribal groups of Idukki rely on their long-standing ethnobotanical knowledge, even when modern medicine offers pharmaceutical therapies. These treatments, which are made from a range of medicinal plants, are a crucial component of conventional healthcare systems because of their reputation for efficacy, low risk of adverse effects and affordability. Since these plants are recognized for their hepatoprotective, anti-inflammatory and detoxifying qualities, the tribal healers of Idukki, who are frequently considered to be the keepers of traditional medicine, use a variety of herbal combinations to cure jaundice. These herbs are used in a variety of ways, such as decoctions, powders and fresh extracts. To increase their therapeutic effects, they are frequently mixed with other organic components like honey, buttermilk or tender coconut water. These tribal communities are noted for their holistic approach, which centers on improving immunity and liver function in addition to treating jaundice symptoms. Indigenous medicinal wisdom is perpetuated by the oral transmission of knowledge about these natural remedies from elders to younger generations. Thus, a study was conducted to explore the herbal formulations used by tribal communities like Mannan, Malampandaram and Mala Araya communities in Idukki district. A total of 17 herbal remedies commonly used for treating jaundice among the tribal communities are recorded. Thus, the traditional herbal remedies practiced by Idukki's tribal communities not only offer a glimpse into ancient healing methods but also highlight the potential of nature-based solutions in contemporary medicine.

Keywords: Ethnobotany; Hepatoprotective; Jaundice; Traditional Herbal Remedies; Tribal Healers.

One of the most valuable sources of ethnobotanical knowledge is the Indian subcontinent where the relevance of indigenous knowledge in biodiversity conservation and sustainable use is emphasized by the Convention on Biological Diversity[1,2]. Approximately 80% of people in underdeveloped nations rely on conventional medicines for their basic medical requirements[3,4]. Many indigenous communities still use traditional herbal preparations which are transferred over centuries, even while modern medicine has pharmaceutical therapies for liver-

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related conditions[5]. A complex condition, jaundice is characterized by yellowing of the skin, sclera and mucous membranes as a result of bilirubin synthesis, metabolism and excretion defects with an array of pathognomonic features[6-8]. From the Ayurvedic treatment to the Chinese, European and other traditional medical systems, the use of natural treatments to treat liver disorders has a long history[9,10]. The 21st century has seen a paradigm shift towards the therapeutic evaluation of herbal products in liver diseases by carefully fusing the benefits of traditional medical systems with the modern concepts of evidence-based medicinal evaluation, standardization of herbal products, and randomized placebo controlled clinical trials to support clinical efficacy.

The indigenous communities of Idukki, Kerala, still rely heavily on plant-based formulations for various ailments, especially jaundice. These tribes use their long-standing knowledge of the healing properties of numerous plants to develop natural treatments for liver disorders. Their comprehensive approach improves liver function and immunity in addition to curing jaundice symptoms. Idukki's rich vegetation and deep forests support a wide variety of medicinal plants that have long been used in traditional medical methods, adding to the region's enormous biodiversity. Tribal healers, often seen as the caretakers of indigenous medicine, maintain and use herbal knowledge. They locate and collect specific plants with hepatoprotective properties. To boost their power, these herbs are commonly combined with natural substances like honey, buttermilk and coconut water and are prepared as decoctions, fresh extracts and powders. Substances like honey, buttermilk or coconut water are used in Ayurveda along with herbal medicines to heal a variety of illnesses quickly and effectively[11,12]. The purifying, anti-inflammatory and antioxidant properties of herbal medicines for liver disorders are responsible for their efficacy in promoting bile flow, reducing inflammation and cleansing the liver during treatment[13]. Thus, the study is an attempt to explore the traditional herbal remedies practiced by Idukki's tribal communities for treating jaundice which not only offer a glimpse into ancient healing methods but also highlight the potential of nature-based solutions in contemporary medicine.

MATERIALS AND METHODS

An ethnobotanical study was carried out among the indigenous communities in Idukki district who rely heavily on natural resources for their medicinal needs. They have developed an extensive pharmacopeia of plant-based treatments for various ailments, especially ailments like jaundice. Major tribal communities like Mannan, Malampandaram and Mala Araya communities was selected for the present study. Ethnobotanical information was collected with discussions and surveys with standard structured questionnaire[14,15]. Herbal combinations used for jaundice was investigated and documented. The ethnobotanical survey employed simple random sampling across the district (4 locations - Kannarnpady, Vanchivayal, Kumily and Purakkayam) which included 74 informers residing in Idukki. Field studies for gathering ethnopharmacological information was carried out by using standard recommendations[16].

RESULTS

A total of 17 herbal remedies commonly used for treating jaundice among the tribal communities (Mannan, Malampandaram and Mala Araya) are recorded. The study identified various medicinal plants used by tribal communities in Idukki for the treatment of jaundice. These remedies are prepared using different plant parts, including leaves, roots, stems, bark, seeds and whole plants. The methods of administration involve making decoctions, pastes, powders and infusions, often mixed with milk, honey, jaggery or goat's milk to enhance effectiveness. The remedies are usually taken on an empty stomach in the morning or multiple times a day for a prescribed period. The findings of the investigation are given in Table 1. The results highlight that these remedies are widely used among tribal communities due to their effectiveness, accessibility and cultural significance. The study suggests that further scientific validation of these treatments can provide insights into their hepatoprotective properties, potentially integrating them into mainstream healthcare. Additionally, conservation efforts for these medicinal plants are crucial to ensure the sustainability of these traditional remedies.

Table 1. List of herbal remedies recorded

No.	Local name (Malayalam)	Scientific name	Part used	Administration
Remedy I				
1.	Kizharnelli	*Phyllanthus amarus*	Whole plant	• The whole plant of *Phyllanthus amarus* is made into a paste and make a tablet at the size of a gooseberry. Give it in milk in early morning in empty stomach. • *Phyllanthus amarus*, Ricinus and cumin crush and take in milk for three days in the morning
2.	Avanakku	*Ricinus communis*	Tender leaf	
3.	Jeeraka	*Cuminum cyminum*	Seeds	
Remedy II				
1.	Jeerakam	*Cuminum cyminum*	Seeds	• Grind the ingredients and take once a day for seven days at the size of gooseberry
2.	Kizharnelli	*Phyllanthus amarus*	Whole plant	
Remedy III				
1.	Avanakku	*Ricinus communis*	Tender leaf	• Grind the ingredients and take it in milk
2.	Jeerakam	*Cuminum cyminum*	Seeds	
3.	Kizharnelli	*Phyllanthus amarus*	Whole plant	
Remedy IV				
1.	Atthi	*Ficus racemosa*	Tender roots and leaves	• 5-6 grams of powdered tender roots and leaves are taken daily for five days • Goats's milk is boiled with tender roots and taken daily for one week
Remedy V				
1.	Chethi	*Ixora coccinea*	Roots	• Powdered mass of fresh roots (10-15gm) in cold water is given for 7 days (thrice daily) to treat jaundice • 10-15 grams of fresh roots crushed in cold water taken three times a day for one week
Remedy VI				
1.	Erattimadhuram	*Glycyrrhza glabra*	Stem bark	• *Glycyrrhza glabra* bark powder with an equal amount of sugar, taken orally along with two ounces of *Adhatoda vasica* leaf juice and honey
2.	Adalodakam	*Adhatoda vasica*	Tender leaf	
Remedy VII				
1.	Mayilanchi	*Lawsonia intermis*	Leaf	• *Lawsonia intermis, Ricinus communis*, and *Centella asiatica* leaves are crushed into paste, combined with rice husk and jaggery. At sunrise, three ghooseberry-sized balls of this paste are taken orally. Drinking boiled rice without any additional ingredients are recommended. On second day a salty broth is given, but they must avoid taking salt for the next week. A bath with coconut oil is recommended as soon as colourless urine is seen
2.	Avanakku	*Ricinus communis*	Leaf	
3.	Kodakan	*Centella asiatica*	Leaf	
Remedy VIII				
1.	Naruneendi	*Hemidesmus indicus*	Root	• Root boiled in water and drink three times daily

Remedy IX				
1.	Nilam paranda	*Desmodium triflorum*	Leaf	• Grinded, mixed with milk and taken in daily
Remedy X				
1.	Kayyunnyam	*Eclipta alba*	Whole plant	• Extract the juice of *Eclipta alba* whole plant. Give two grams twice dailv.
2.	Thumba	*Leucas aspera*	Inflorescence	• Crush *Leucas aspera* Inflorescence and extract the juice and administer it with 3 gm of Camphor and Jaggery in the morning
Remedy XI				
1.	Thazhuthama	*Boerhavia diffusa*	Root	• Grind the root in freshly collected cow milk and drink • About 30-40gm root paste mixed with small amount of garlic paste; administer about 5g daily orally at morning for one week
Remedy XII				
1.	Cherula	*Aewa lanata*	Root	• Roots grinded with milk and drink in the morning
2.	Pitchi	*Jasminum grandiflorum*	Root	
Remedy XIII				
1.	Ginger	*Zingiber ofticinale*	Rhizome	• *Zingiber ofticinale* with *Cuminum cyminum* seeds in milk along with porridge made out of the decoction of *Sida rhombifolia*
2.	Jeerakam	*Cuminum cyminum*	Seeds	
3.	Kurumthotti	*Sida rhombifolia*	Root	
Remedy XIV				
1.	Yekshippala	*Alstonia scholaris*	Bark	• Bark infusion daily about 20-30 ml, at afternoon before taking meals
Remedy XV				
1.	SanguPushpam	*Clitoria ternatea*	Leaf	• About 20 ml leaf juice daily at morning for one week
Remedy XVI				
1.	Chittamruthu	*Tinospora cordifolia*		• In the morning, stem pieces are soaked in water and consumed with honey
Remedy XVII				
1.	Thottavaadi	*Mimosa pudica*		• *Mimosa pudica* whole plant is roasted with duck eggs chopped with *Phyllanthus niruri*. • For 15 days, consume the chopped *Phyllanthus niruri* in coconut milk

Traditional therapeutic methods have been preserved through the oral transmission of knowledge about these herbal remedies from one generation to the next. Traditional herbal medicine is becoming less popular, though, as younger tribal members are turning to allopathic remedies. Furthermore, the sustainability of these treatments is further threatened by the quick extinction of medicinal plant species brought on by environmental deterioration. Because they offer a chance for scientific research that could result in the development of novel plant-based treatments for liver diseases, it is crucial to comprehend and preserve the traditional herbal cures for jaundice used by the tribal groups of Idukki. Lastly, acknowledging and honouring the work of indigenous healers promotes biodiversity conservation and cultural preservation. Therefore, in addition to providing a window into old treatment techniques, the traditional herbal remedies used by the tribal groups of Idukki also demonstrate the promise of nature-based remedies in modern medicine and the study is an attempt along these lines.

DISCUSSION

The tribals of Idukki have a long history of using herbal treatments to treat jaundice, which reflects their profound understanding of medicinal plants and their therapeutic qualities. These natural therapies provide an alternative to contemporary treatments, having been established over decades of observation and experience. The results of this study demonstrate the variety of plant species used, the various plant sections used and the various preparation and administration techniques. The widespread usage of these therapeutic plants points to a shared awareness of their hepatoprotective qualities. To improve absorption and effectiveness, the formulations combine leaves, roots, seeds and barks and are frequently combined with milk, honey or jaggery. These customs demonstrate both the medicinal value of these plants and the contribution of cultural beliefs to healing. The use of natural components emphasizes how easily and affordably these medicines can be obtained in tribal areas, where access to traditional medical facilities are limited. The preparation techniques, which include decoctions, pastes and fresh extracts, show a methodical approach to herbal treatment that has been improved over time. While some treatments concentrate on detoxification, others aim to improve immunity and liver function in general. A common indigenous knowledge base that has resisted outside influences and modernization is indicated by the observed uniformity in some plant selections across various therapies.

Similar findings about traditional remedies for jaundice from Tamil Nadu (Coimbatore) and Kerala (Palghat) were previously recorded[17]. The use of *Phyllanthus amarus* and *Alstonia scholaris* (Cholanaikkan community); *Curculigo orchioides* (Kattunaikkan community) and *Indigofera tinctoria* (Paniyan community) for the treatment of jaundice was also well documented[18]. However, it has also been reported that the indigenous people of Visakhapatnam district, Andhra Pradesh, employ 66 plant species comprising 61 genera and 40 families to treat jaundice[19]. With five species, the dominant family is Euphorbiaceae, followed by Asclepiadaceae (four species) and other families. With 31 species, herbs predominate, followed by trees. Another study by Asha and Pushpangadan describes the usage of 15 different plant species as a single plant treatment to treat liver diseases tribals of Waynadu, Malappuram and Palghat Districts of Kerala[20]. The use of medicinal plants like *Coccinia grandis* along with *Azadirachta indica, Phyllanthus amarus, Ocimum sanctum, Piper nigrum* and *P. betle* in milk and honey; *Phyllanthus amarus Andrographis paniculata, Piper nigrum* and *Piper betle* in milk by Irula tribes of Walayar valley of Southern Western Ghats, India was already recorded[21].

Even though these treatments are still being used, more and more research is required to determine their safety and effectiveness. Standardized herbal remedies for jaundice can be developed as a result of ethnobotanical and pharmacological research that helps to close the gap between traditional knowledge and contemporary therapy. Analyzing these plants' biochemical characteristics is necessary to comprehend their modes of action, optimize dosage and identify any potential adverse consequences. Preserving traditional medical knowledge and encouraging biodiversity conservation also depend on the documentation of these herbal treatments. The findings of the study provide a basis for future research on the efficacy and sustainability of herbal remedies for jaundice which is time tested and regularly used among the tribal populations. For new treatments to be widely accepted, it is crucial to comprehend how they stack up against traditional treatments in terms of accessibility, safety and efficacy. To guarantee that these priceless traditional therapeutic methods continue to help both indigenous groups and the larger medical community, future studies can concentrate on clinical trials, phytochemical analysis and conservation tactics.

Indigenous knowledge, which has been passed down through the generations, is primarily responsible for the current therapeutic use of medicinal plants. Similarly, herbalists and traditional healers have long used their knowledge of locally available herbs to treat a variety of diseases where this knowledge base accumulated over thousands of years, serves as the foundation for many modern treatments[22-26]. This information is gradually being included into the official health systems due to the growing interest in natural products and phytotherapy around the world. It should be noted that the endeavour to

integrate indigenous knowledge with current scientific understanding both presents tremendous opportunities and obstacles. In addition, several ethnobotanical studies expose the critical role of medicinal plants in the primary healthcare system[27-29].

Understanding the cultural significance of medicinal plants, where cooperation with indigenous tribes and ethical considerations are essential, can lead to a more comprehensive and culturally acceptable approach to healthcare. If indigenous knowledge is valued and indigenous populations are included in the research process, indigenous herbal treatment has the potential to fundamentally alter our understanding of the therapeutic benefits of herbal medicine, making it more inclusive and culturally sensitive. The potential of indigenous knowledge systems to create herbal treatments that are both culturally relevant and long-term health promoters can be unlocked by combining ecological understanding, cultural awareness and cutting-edge research.

CONCLUSION

Traditional medicine, the knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures, used in the maintenance of health and in the prevention, diagnosis, improvement or treatment of physical and mental illness are time tested and still the mainstay of health among many communities. Trial and error were the first method used to give ethnomedicines, but with careful selection, experimentation and the use of plants for human medicine, significant advancements were eventually made. Thus, the traditional herbal remedies for jaundice among the tribal communities of Idukki reflect a deep and time-tested knowledge of medicinal plants. These remedies, which were developed over many generations of hands-on learning, show how well nature-based healing works to treat liver-related illnesses like jaundice. The application of herbal remedies by the ethnic people in Idukki demonstrates a well-established knowledge of hepatoprotective qualities, detoxifying techniques and immune-boosting tactics. The range of preparation methods, including as pastes, infusions, powders and decoctions, further demonstrates the complexity of traditional medicinal procedures. For many tribal groups, these treatments remain accessible and cost-effective options despite the expanding influence of modern medicine, especially in isolated locations with few access points to modern medical facilities. The risk of losing these valuable healing methods underscores the need for documentation, conservation and scientific validation. However, clinical trials and pharmacological research are a requisite to determine the safety, effectiveness and dosage of these herbal remedies. The study's findings underline the value of conventional herbal treatments for treating jaundice as well as their prospective benefits for contemporary medicine.

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Conflict of Interest

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Data Availability Statement

This statement does not apply to this article.

Ethics Statement

This research did not involve human participants, animal subjects or any material that requires ethical approval and only ethnobotanical surveys were conducted.

Informed Consent Statement

This study involves human participants and therefore, informed consent was obtained which confirms to the standards and the privacy rights of human subjects surveyed are protected.

Clinical Trial Registration

This research does not involve any clinical trials.

Author Contribution

The sole author was responsible for the conceptualization, methodology, data collection, analysis, writing and final approval of the manuscript.

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