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Posted Date: 1 April 2024

doi: 10.20944/preprints202404.0104.v1

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Review

The Ethnobotanical Knowledge of Tribal Communities in Kerala: A Comprehensive Review

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Abstract: The review addresses a critical research gap in ethnobotanical knowledge within Kerala's tribal communities. A scarcity of studies hampers our understanding of their traditional practices, risking cultural erosion and knowledge loss. Synthesizing existing documentation, it aims to provide a comprehensive overview, emphasizing the urgent need for further research to impact sustainable resource management, biodiversity conservation, and tribal empowerment.

Keywords: tribes; medicinal; cultural; ethnobotany; indigenous knowledge

Introduction

Human fascination with plants originated from the fundamental need for sustenance and shelter. As our ancestors led nomadic lives, the quest for remedies within the plant kingdom became imperative to address injuries and ailments (Remesh *et al.*, 2016). The Rig Veda attests those ancient humans discerned edible plants from toxic ones by keenly observing the behaviours of animals (Manilal, 1989). The indigenous communities possess a profound understanding of medicinal plants that has evolved over generations through courageous experimentation using trial and error methods (Sahai, 2003). This reservoir of knowledge has been transmitted orally without relying on written documentation and continues to be preserved within these communities (Perumalsamy and Ignacimuthu, 2000). Indigenous groups harbour distinctive cultural and religious practices, dietary habits and an extensive repository of traditional medicinal knowledge (Anuradha *et al*., 1986). The World Health Organization (WHO) recognizes 21,000 plant species globally for their medicinal properties. In India alone, around 2,500 plant species are utilized for medicinal purposes by traditional healers (Ayyanar and Ignacimuthu, 2009). The invaluable traditional knowledge encompassing plant usage within indigenous cultures not only contributes to the conservation of cultural traditions but also proves instrumental in community healthcare and future drug development (Gazzaw *et al*., 2005).

Materials and Methods

A systematic literature search was conducted using Google Scholar with the keywords 'ethnobotany,' 'knowledge,' 'tribes,' and 'Kerala.' A total of 15 scientific papers were identified, focusing exclusively on the ethnobotanical knowledge of tribal communities in Kerala. To ensure relevance, only studies specific to Kerala and tribal populations were included. 21 distinct tribal groups were identified from the selected studies, including *Kattunaikkar*, *Paniyar*, *Kurumar*, *Eravallans*, *Irulas*, *Kadar*, *Kurumbar*, *Malamalasaras*, *Malasars*, *Mudugars*, *Muthuvans*, *Malamuthans*, *Kani*, *Kurichyar*, *Mullu Kuruma*, *Koraga*, *Arnatans*, *Manan*, *Malaiaraian* and *Ooralys*. Rigorous cross-referencing and verification processes, prioritizing information from established sources, bolstered the reliability of our findings. This synthesis aimed to provide a concise overview of ethnobotanical practices deeply embedded in the cultural fabric of Kerala's tribal communities. Despite acknowledging limitations due to scarce scientific studies, the imperative need for additional research was emphasized, unveiling the traditional healing practices among Kerala's diverse tribal groups.

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Results

Systematic data extraction yielded a comprehensive inventory, encompassing botanical and vernacular names, useful parts, preparation methods, documented therapeutic uses, and the tribes utilizing them. This information, now presented in Table 1, includes 54 medicinal plants.

Table 1.

S.no.	Botanical name	Local name	Parts	Therapeutic uses	Tribes
1.	*Abrus precatorius*	Kunnikkuru	Leaf	Leaves are boiled with coconut oil and massaged in the scalp to reduce hair loss	Kuruma
2.	*Adenia hondala*	Karimuthuk	Tuber	Eating boiled tuber reduces hernia	Kuruma
3.	*Justicia adhatoda*	Adalodakam	Leaf	Dried leaves powder for cough	Kattunaikkar
4.	*Zingiber officinale*	Inji	Rhizome	Rhizome mixed with water and taken internally to cure ashtma	Kattunaikkar, Paniya
5.	*Ageratum conyzoides*	Appa	Leaf	The leaf paste is applied to heal external wounds	Kuruma, Kattunaikar, Paniya
6.	*Amorphophallus paeoniifolius*	Kattuchena	Corm	Dried corm is mixed with curd and taken internally to cure jaundice	Kattunaikar
7.	*Briedelia scandens*	Nendravalli	Bark, Leaf	The juice from the bark is taken internally to heal the abdominal ache. The juice of the tender leaves is used to prepare medicine for eczema, scabies, and wound	Kattunaikkar
8.	*Cymbopogon flexuosus*	Chayappullu	Whole Plant	Decoction is prepared and	Koraga

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				taken 10ml trice to cure fever	
9.	*Adhatoda vasica*	Adalodakam	Leaves	Fresh leaves roasted with pepper and cumin to relieve cough	Koraga
10.	*Aegle marmelos*	Bilwapathram	Leaves	Fresh leaves for diabetics and vomiting	Koraga
11.	*Aloe vera*	Kumari	Leaves	Leaf juice is mixed with cow milk taken twice to cure diarrhea	Koraga
12.	*Anacardium occidentale*	Kasumavu	Seed, Stem bark	Oral ulcers, prevent bleeding through pus, relief from crack foot	Koraga
13.	*Cocculus hirsutus*	Pathalagaruda	Root	Snake poison	Koraga
14.	*Maranta arundinacea*	Koovai	Rhizome	Dried powder taken with sugar for osteoporosis	Koraga
15.	*Naravelia zeylanica*	Soodravalli	Tender leaves	Drops in nose to treat migraine	Koraga
16.	*Scoparia dulcis*	Kallurukki	Whole plant	Decoction mixed with cow milk and taken in empty stomach to cure urinary calculi	Koraga
17.	*Tamarindus indica*	Puli	Seeds	To treat urinary calculi	Koraga
18.	*Azadirachta indica*	Arya veppu	Leaf, seeds	Chicken pox	Mullu Kuruma
19.	*Boerhavia diffusa*	Thazhuthama	Leaf	Jaundice, anemia	Mullu kuruma
20.	*Annona squamosa*	Aatha	Leaf, fruit	Inflammation, tuberculosis	Mullu kuruma
21.	*Bacopa monnieri*	Brahmi	Whole plant	Ashtma and epilepsy	Mullu kuruma
22.	*Bombax ceiba*	Ilavu	Leaf	Snake poison	Mullu kuruma
23.	*Nelumbo nucifera*	Thamara	Flower	Dried flower powder is mixed	Mullu kuruma

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				with ghee for piles	
24.	*Vitex altissimia*	Mayila	Bark	Rheumatic swellings, chest pain	Malamalasar
25.	*Nicotiana tabacum*	Pokala	Leaves	Toothache	Malamalsar
26.	*Ocimum americanum*	Kattuthulasi	Leaves	Insect bite	Malamalsar
27.	*Butea monosperma*	Chamatha	Bark, leaves	Diarrhea, cold and cough, ulcers	Malamalsar
28.	*Cassia tora*	Thakara	Leaves	Skin disease, ring worms, cuts and wounds	Malamalsar
29.	*Clitoria ternatea*	-	Roots	Antidote for poisonous bites	Arnatans
30.	*Cymbopogon travancorensis*	-	Leaves	Against pains	Arnatans
31.	*Plantago erosa*	-	Leaves	Treatment of varicose veins	Arnatans
32.	*Toddalia asiatica*	-	Leaves	Cough and cold in children	Arnatans
33.	*Viscum articulatum*	-	Whole plant	Cuts and wounds	Arnatans
34.	*Bauhinia purpurea*	-	Seeds, leaf	Flower juice good for health	Arnatans
35.	*Biophytum sensitivum*	Nilapushpam	Leaf	Equal part of leaf and coconut oil together and externally applied on inflammation	Mudhuvan, Mannan, Malaiaraian and Ooralys
36.	*Calotropis gigantean*	Erukan	Leaf, Latex	Leaf smoke inhaled for Asthma and Latex externally applied on wounds	Mudhuvan, Mannan, Malaiaraian and Ooralys
37.	*Catharanthus roseus*	Nithiyakalyani	Leaf	Intestinal ulcers, wounds	Mudhuvan, Mannan, Malaiaraian and Ooralys

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38.	*Coccinia grandis*	Kovalam	Fruit	Diabetics	Mudhuvan, Mannan, Malaiaraian and Ooralys
39.	*Costus speciosus*	Kostum	Leaf	Treated for menstrual disorders	Mudhuvan, Mannan, Malaiaraian and Ooralys
40.	*Cuscuta reflexa*	Ottuchedi	Whole plant	Jaundice	Mudhuvan, Mannan, Malaiaraian and Ooralys
41.	*Curculigo orchioides*	Nilappana	Tuber	Asthma, diabetics	Kani and Kurichiyar
42.	*Musa paradisiaca*	Vazha	Juice extracted of leaf sheath	First aid for snake bite	Kani and Kurichiyar
43.	*Emilia sonchifolia*	Mutal cheviyan	Whole plant	Wound healing and chest pain	Kani and Kurichiyar
44.	*Acacia nilotica*	Karivelam	Flowers	Cuts and wounds	Kani and Kurichiyar
45.	*Alstonia venenata*	-	Bark, fruit	Snake antivenom, fruit used as skin diseases, leprosy, cobra and other venomous bites, epilepsy, fatigue, fever, syphilis, insanity, helminthiasis as remedy for impure blood.	Malamuthans
46.	*Alternanthera brasiliana*	-	Leaves	Cough, diarrhea, inflammation, wounds	Malamuthans
47.	*Antidesma montanum*	-	Leaves, fruits	antidote to the sting of cobra.	Malamuthans
48.	*Aristolochia acuminata*	-	Root, leaves	To treat malaria, typhus fever,	Malamuthans

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				small pox and pneumonia.	
49.	*Begonia malabarica*	-	Leaves	Treatment of respiratory infections, diarrhoea, blood cancer and skin diseases	Malamuthans
50.	*Mussaenda frondosa*	Vellilam	Leaves, stem	Hair wash	Paniya
51.	*Watakaka volubilis*	kaimavalli	Whole plant	Urinary trouble	Kattunaikar, Paniya
52.	*Leucas aspera*	Thumba	Whole plant	Gas trouble	Kattunaikar, Paniya
53.	*Achyranthes aspera*	Kadalady	Leaves, stem, root	Toothache	Kuruma
54.	*Vernonia cinerea*	Poovamkurunnel	Whole plant	Headache and joint pain	Kuruma

In the ethnobotanical context of Kerala's tribal communities, a pie chart illustrates the distribution of plant parts usage. Notably, leaves dominate at 32%, emphasizing their substantial role in traditional knowledge. Whole plants (9%), bark (5%), roots (5%), and seeds (4%) contribute significantly, showcasing ethnobotanical diversity. Stems (3%), tubers (2%), rhizomes (2%), flowers (2%), and fruits (4%) represent varied botanical resources. The utilization of latex (1%) and corms (1%) underscores the holistic reliance on diverse plant parts in the cultural and medicinal practices of these tribes.

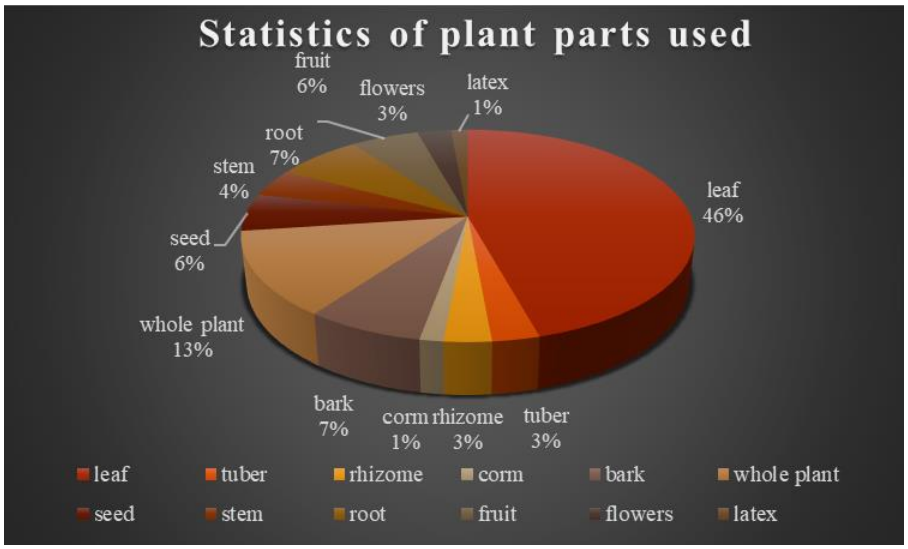

Figure 1.

In the ethnobotanical review, an analysis of plant habits across 54 instances revealed distinct patterns. Herbs emerged prominently, constituting 23 occurrences and indicating their prevalence in

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local ethnobotanical knowledge. Shrubbery and trees exhibited equal representation, each observed 10 times, reflecting a balanced presence. Climbing plants were documented 8 times, while creepers, the least frequent habit, contributed to diversity with 3 instances. This examination provides insights into the varied plant habits, emphasizing the dominance of herbs and contributing to a nuanced understanding of ecological and functional roles in the studied ethnobotanical context.

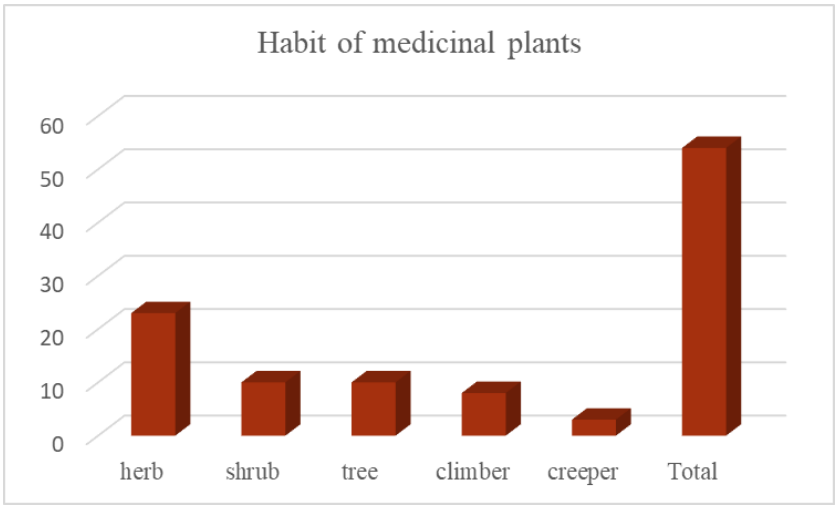

Figure 2.

Discussion

The review underscores a significant research gap in understanding the ethnobotanical knowledge of Kerala's tribal communities, emphasizing the dearth of studies on traditional practices vital for cultural preservation and community healthcare. The therapeutic purposes highlight the relevance of indigenous knowledge in addressing contemporary health challenges. The oral tradition's continuity suggests a deep-rooted connection between tribes and their environment, emphasizing the need for both cultural conservation and scientific research (Anuradha et al., 1986). The ethnobotanical knowledge of tribal communities in Kerala necessitates exploring legal aspects. The intricate relationship between indigenous communities and their natural surroundings raises concerns about intellectual property rights (IPR), access and benefit-sharing (ABS), protection against biopiracy and safeguarding traditional knowledge. Indigenous communities' medicinal plant knowledge represents a collective heritage developed over generations, but existing legal frameworks may inadequately protect against exploitation. Unauthorized commercial use, especially by external entities, poses a significant concern, underscoring the need for legal mechanisms acknowledging and safeguarding the intellectual property rights of indigenous communities.

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