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Forest Remedies: Plant-based Health Practices of the Siddi Tribal in Karnataka

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Abstract: This study investigates the ethnobotanical knowledge of the Siddi tribal community inhabiting the Western Ghats region of Karnataka, India, a distinct Afro-Indian group with ancestral roots in East Africa. Field documentation across four settlements such as Kerehosalli, Bilki, Hunsemane and Kotemane in Yellapur taluk were conducted. Data were collected from 28 families using semi-structured interviews, participatory observations and focus group discussions. This resulted in the identification of 60 plant species, of which 56 were used for medicinal purposes and 11 as food. The leaves are the most commonly utilized plant part, with pastes, decoctions and juices being the primary methods of preparation. Remedies were administered either orally or externally, based on the type of ailment. The Siddi community exhibits a practical, non-ritualistic approach to healing, with knowledge widely shared and passed down orally. Many plants serve dual functions as food and medicine, illustrating a holistic understanding of health where diet and treatment are interconnected. This practice underscores a sustainable relationship with the surrounding forest ecosystem, promoting both biodiversity conservation and cultural resilience. However, threats such as environmental degradation, habitat loss and cultural assimilation pose risks to the preservation of this traditional knowledge. The study highlights the urgency of documenting and protecting such indigenous knowledge systems through collaborative efforts, ethical research practices and policy interventions guided by frameworks like the Nagoya Protocol. Overall, research underscores the significance of traditional ethnomedicinal and ethnofood practices in ensuring sustainable development, public health and the continuity of tribal heritage.

Keywords: Ethnobotany, Ethnofood, Siddi tribe, Plant-Based Healthcare and Karnataka

The Afro-Indian community, referred to as the Siddis, represents a distinctive diasporic group in India with ancestral origins tracing back to East Africa. As per 1981 Census, the Siddi population in India is estimated at approximately 54,291 individuals (Karmwar and Srivastava 2025). Historical accounts document the establishment of two prominent Siddi kingdoms along the western coast of India-Janjira and Jaffrabad-around the 12th century A.D. Over time, descendants of African origin settled across various Indian states including Karnataka, Gujarat, Maharashtra, Andhra Pradesh and Telangana. They have come to be known by different appellations such as Siddi, Sidi, Siddi Badshah and Habshi. Today, many members of this community are largely assimilated into the broader Indian population in terms of language, appearance and cultural practices (de Silva Jayasuriya 2015). Despite this integration, limited research has explored the influence of India's pluralistic medical systems particularly Ayurveda and biomedicine on the traditional ethnomedicinal practices of the Siddis.

In Karnataka, the Siddis are primarily concentrated in the districts of Uttara Kannada, Dharwad and Belagavi, where they have historically settled in forested and hilly regions. Linguistically, they communicate in a mix of Konkani, Kannada and Siddi dialects and largely adapted to the regional socio-cultural context. The community continues to preserve unique elements of African heritage, particularly in their music, dance (notably the *Dhamal*) and spiritual healing practices. Traditional medicinal knowledge remains integral to their healthcare system, with a strong reliance on plant-based remedies and indigenous health beliefs passed down through generations. The forested landscapes of the Western Ghats have played a pivotal role in shaping the Siddis' ethnobotanical knowledge, as they depend on the local flora for treating a range of ailments including fever, gastrointestinal disorders and respiratory disorders.

In a progressive move to support the documentation and study of such traditional knowledge systems, the Government of India granted Ms. Seema Solanki of the University of Kent, United Kingdom, access in 2021 to the ethno-medicinal knowledge of the Siddi community in Gujarat (Karmwar and Srivastava 2025). The Karnataka Siddis are similarly recognized for their extensive and longstanding ethnomedicinal practices. In Haliyal Taluk, Uttara Kannada, Makanur et al. (2024) documented the use of medicinal plants by the Siddis in addressing a wide range of ailments such as diabetes, kidney stones, snakebites, dengue fever, piles, gastric disorders, fever, skin problems and wounds. These traditional remedies continue to serve as

an essential part of community health management, even as their transmission to younger generations shows signs of decline. Such documentation is crucial not only for cultural preservation but also for contributing to pharmacological research. This initiative aligns with the principles of the Nagoya Protocol, an international agreement under the Convention on Biological Diversity, which seeks to ensure the fair and equitable sharing of benefits arising from the utilization of genetic resources. It promotes transparency and safeguards against the unauthorized appropriation of traditional knowledge for intellectual property rights (IPR) without proper acknowledgment or benefit-sharing with the originating communities.

This development underscores a growing international commitment to the protection of indigenous rights and the promotion of collaborative, ethical research. It also positions the Siddi community including those in Karnataka as vital stakeholders in preserving and advancing traditional knowledge systems and promoting cultural resilience in the face of modernization. Therefore, the present study was undertaken to document the ethnobotanical knowledge including ethnofood practices of the Siddi tribal community inhabiting the Western Ghats region of Karnataka, India.

MATERIAL AND METHODS

Description of the study area: The present study was carried out among the Siddi tribal community residing in the Western Ghats region of Karnataka, India. The Siddis are primarily concentrated in the districts of Uttara Kannada with notable settlements in Yellapur taluk at four tribal settlements namely Kerehosalli**,** Bilki**,** Hunsemane and Kotemane. This region is part of the ecologically sensitive Western Ghats, recognized as one of the eight biodiversity hotspots" of biological diversity in the world (Miltenberger et al., 2018). The geographical coordinates of the study area range approximately between 14°38′N to 15°01′N latitude and 74°25′E to 75°25′E longitude. Situated at an elevation of approximately 500–900 meters above sea level, the area is characterized by dense tropical evergreen and semi-evergreen forests, hilly terrain and high annual rainfall, especially during the monsoon season (June to September). Temperatures in the region typically range between 15°C in winter and 32°C in summer, with high humidity levels prevailing through most of the year.

The Siddi settlements are generally located near forest fringes, agricultural lands and water bodies, where they engage in subsistence farming, wage labour and collection of non-timber forest products (NTFPs). The flora-rich landscape provides a wide array of ethnomedicinal plants used traditionally for treating various ailments. The Siddi people have inherited rich traditional ecological knowledge (TEK), particularly in herbal medicine, dietary practices and healing rituals, derived from centuries of interaction with their forest environment.

Data collection and methodology: Prior to the commencement of fieldwork, formal approval was obtained from leaders and village elders of the Siddi settlements. The purpose and scope of the study were explained in detail to gain their trust and voluntary participation. All data collection was carried out with the informed consent of the participants, adhering strictly to ethical standards for working with indigenous communities.

The field study was conducted across four selected villages**,** with seven families surveyed in each (total 28 families). The informants were selected using a combination of randomized household interviews, purposive sampling and the snowball method**,** which allowed the identification of key knowledge holders within the community (Thakur et al., 2025). These included traditional healers, elders, homemakers and community members with intergenerational knowledge of medicinal and edible plants. Data collection was carried out using semi-structured interviews, supplemented with focus group discussions, participatory observations and informal conversations. A semi-structured questionnaire was designed to explore the ethnobotanical knowledge of the Siddi community, specifically focusing on plant usage for the categories, such as medicinal purposes, food, cultural practices and architecture. Certain core questions were posed uniformly to all respondents, others were asked spontaneously, depending on the direction of the conversation and the respondent's area of knowledge. This approach provided a more flexible and in-depth understanding of traditional plant use. Ethnobotanical information such as plants used as medicine and plants consumed as food were documented.

For each plant, detailed data were recorded, including the local name, scientific name, plant family, plant part used, method of preparation, mode of application, and ailment or use. Plant specimens cited by informants were collected directly from the field with their assistance, labelled with local names, and photographed to ensure accurate documentation. These specimens were processed into herbarium samples for preservation and further study. The scientific names and families were carefully verified and documented, with taxonomic identification carried out using authoritative botanical references such as The Flora of British India (Hooker 1890), Flora of India (Singh et al., 2000), The Flora of the Presidency of Bombay (Cooke 1903), Flora of Karnataka (Karnataka Biodiversity Board 2019) and other regional floras published by the Botanical Survey of India.

RESULTS AND DISCUSSION

The comprehensive ethnobotanical survey among the Siddi tribes of Karnataka revealed the use of 60 plant species distributed across 33 families, primarily for medicinal and dietary purposes (Fig. 1). The highest number of species were recorded from fabaceae, lamiaceae and apocynaceae. Among the plants documented, the most frequently used parts were leaves (43.43%), followed by roots, seeds, bark and fruits (8.08%). The most common methods of preparation included paste (29.29%), kashaya/decoction (25.25%) and juice (24.24%), while powder, raw consumption and oil application were also reported. The primary route of administration was oral (61.62%), followed by external application.

Ethnomedicinal practices among the Siddi community: The Siddi community residing in the forested regions of Uttara Kannada district continues to rely extensively on traditional ethnomedicinal knowledge for the maintenance of health and the treatment of diverse ailments. This knowledge system, shaped through generations of lived experience and close interaction with the local ecology, is rooted in the use of both wild and cultivated plant species. Unlike the ritualistic healing practices observed among certain other tribal groups, the Siddis of Karnataka follow a pragmatic, plant-based medical tradition in which knowledge is shared collectively within the community, particularly among elders and women, rather than being confined to specialized healers (Karmwar and Srivastava 2025). Bhandary et al. (1995) documented a total of 98 medicinal preparations derived from 69 plant species used by the Siddis of Uttara Kannada and this included 40 novel medicinal applications of already known species. Among these, the use of *Calamus thwaitesii* stem sap as an antifertility remedy, the flowers of *Ichnocarpus frutescens* and the rhizome of *Hedychium coronarium* in the management of diabetes stand out as particularly noteworthy practices. The ethnobotanical repertoire of the Siddis was also distinct from that of neighbouring tribes such as the Gowlis, underscoring the uniqueness of their medical heritage.

The most frequently used plant parts were leaves, followed by roots, barks, seeds and fruits. Leaves were predominantly utilized due to their ease of collection, rapid preparation and multipurpose therapeutic benefits. Az-Zahra et al. (2021) confirmed that leaves are predominantly utilized in traditional medicine therapy. Preparation methods included juices, decoctions (kashayas), pastes, powders, oils and raw consumption. Applications varied based on the condition being treated, with oral ingestion commonly used for internal ailments such as fever, diabetes, gastric problems and anemia, while external application (e.g., pastes, oils) was employed for skin diseases, wounds, bone fractures and joint pains.

Several plants with multiple applications were recorded (Table 1). Survey conducted to document the medicinal plants utilized by the Siddhi community of Haliyal taluka in

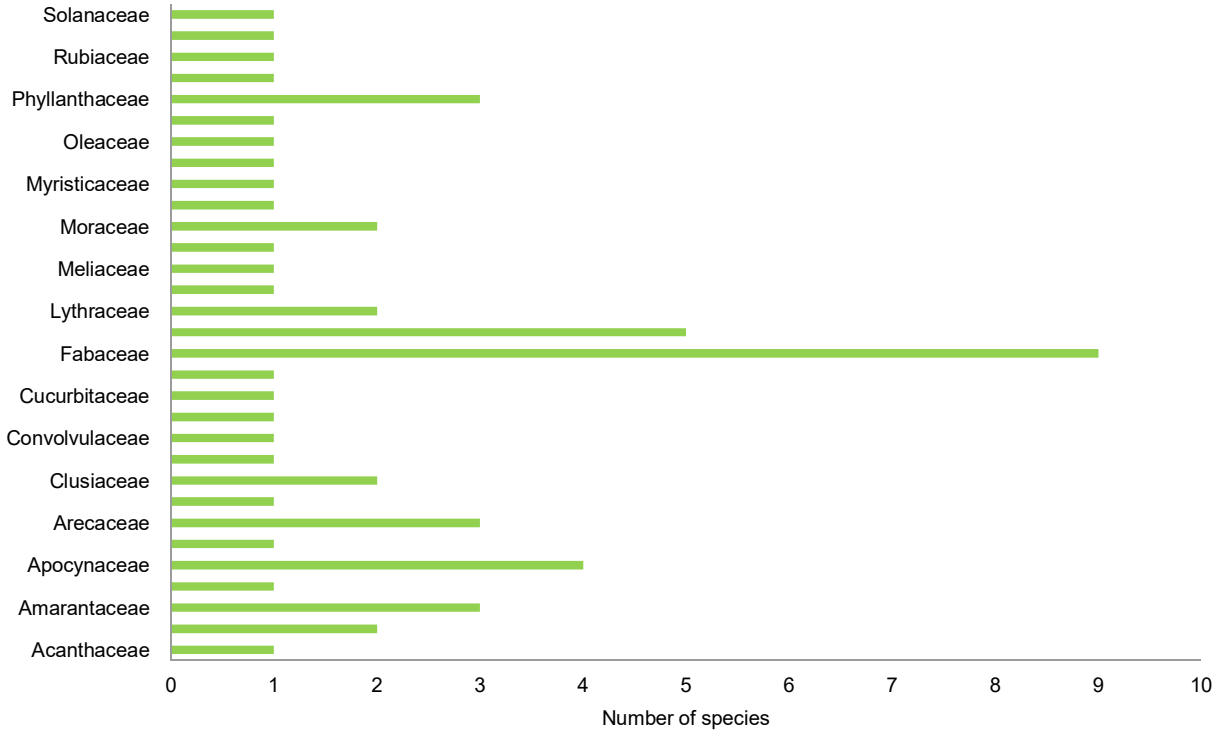

Fig. 1. Distribution of medicinal plant species across different families used by Siddi tribes

Table 1. List of medicinal plants used to treat different ailments by Siddi tribes

Scientific name	Family	Local name	Parts used	Preparation method	Mode of application	Ailment treated
Abrus precatorius	Fabaceae	Bili gulaganji	Leaves	Juice	Orally	Anaemia
Achyranthes aspera	Amarantaceae	Uttarani gida	Leaves	Paste with buttermilk	Orally	To avoid heavy bleeding
Acorus calamus	Acoraceae	Baje	Root	Chewing of root	Orally	Toothache
Adina cordifolia	Rubiaceae	Heddi	Leaves	Paste	Externally	Gangrin
Alstonia scholaris	Apocynaceae	Haalmara, Maddale	Bark	Bark squash	Orally	Stomach pain and worms
Amaranthus cruentus	Amarantaceae	Kemparive soppu	Seeds	Paste	Externally	Furuncle
Amaranthus viridis	Amarantaceae	Arive soppu	Leaves	Curry	Externally	For vitamins
Azadirachta indica	Meliaceae	Kahibevu	Leaves	Kashaya	Orally	For good health, Stomach pain
Caesalpinia bonduc	Fabaceae	Gajjaga	Seeds	Paste	Externally	Cold in children
Calycopteris floribunda	Combretaceae	Kumsanballi	Leaves	Juice	Orally	Asthma and cough, cold
Caryota urens	Arecaceae	Baine mara	Root	Lotion	Externally	Rheumatic swellings, snake bites
Cassia fistula	Fabaceae	Keppate soppu	Leaves	Lotion	Externally	Toothache
Cassia fistula	Fabaceae	Keppate soppu	Leaves	Paste	Externally	Mumps
Cassia tora	Fabaceae	Thogate soppu	Leaves	Curry	Orally	Furuncle
Cocos nucifera	Arecaceae	Tengu	Ambu	Raw	Externally	To stop bleeding from wound
Cocos nucifera	Arecaceae	Tengu	Shell	Lotion	Externally	Ring worms
Cocos nucifera	Arecaceae	Tengu	Bark	Oil	Externally	Ear pain
Cocos nucifera	Arecaceae	Tengu	Fruit	Oil	Externally	Wounds
Colocasia esculenta	Arecaceae	Kesu	Leaves and stem	Curry	Orally	Body pain and digestion
Costus igneus	Costaceae	Naladagadde	Rhizome	Juice	Orally	Gastric and stomach pain
Diospyros kaki	Ebenaceae	Kaaki hannu	Root	Kashaya	Orally	Stomach pain and gastric
Embelia ribes	Primulaceae	Vaivadang	Root	Juice	Orally	Cough
Entada scandens	Fabaceae	Ganapekayi	Seed	Paste	Applied to hair	Prevents greying hair
Evolvulus alsinoides	Convolvulaceae	Nelahatthi gida	Root	Raw	Externally	Headache
Ficus asperrima	Moraceae	Garagatti mara	Bark	Juice	Orally	Fever
Ficus glomerata	Moraceae	Hatthimara	Root	Fluid extract	Orally	Act as coolant
Garcinia indica	Clusiaceae	Muragalu	Fruit	Juice	Orally	Dizziness
Garcinia indica	Clusiaceae	Muragalu	Rind	Tablet	Orally	Chest pain
Garcinia indica	Clusiaceae	Muragalu	Seeds	Oil	Externally	Piles
Hemidesmus indicus	Apocynaceae	Doodwala	Root	Juice	Orally	Diabetes, act as coolant
Jasminum malabaricum	Oleaceae	Kaadu mallige	Flower	Soaked overnight	Externally	Cataract, eye problems
Justicia adhatoda	Acanthaceae	Belisalaga	Leaves	Warming of leaves	Externally	Backpain
Justicia adhatoda	Acanthaceae	Belisalaga	Leaves	Kashaya	Orally	Fever and cold
Lawsonia inermis	Lythraceae	Madarangi	Leaves	Decoction	Externally	Sterility
Lawsonia inermis	Lythraceae	Madarangi	Leaves	Paste	Externally	Gangrin
Leucas aspera	Lamiaceae	Totlu tumbe	Leaves	Paste	Orally	Cough, asthma
Millettia pinnata	Fabaceae	Karanji	Stem fibers	Raw	Externally	Fever
Mimosa pudica	Fabaceae	Naachike mullu	Leaves	Lotion	Externally	Wounds
Mimosa pudica	Fabaceae	Naachike mullu	leaves	paste	Externally	Bone fracture, Toothache
Mimosa pudica	Fabaceae	Naachike mullu	Root	Paste	Orally	Sterility

Cont...

Table 1. List of medicinal plants used to treat different ailments by Siddi tribes

Scientific name	Family	Local name	Parts used	Preparation method	Mode of application	Ailment treated
Momordica charantia	Cucurbitaceae	Hagalkayi	Leaves	Juice	Orally	Stomach worms in children, Constipation
Momordica charantia	Cucurbitaceae	Hagalkayi	Raw fruit	Paste	Externally	Itching
Musa paradisiaca	Musaceae	Baale	Unripened banana	Unripened banana	Orally	Kidney stone
Myristica fragrans	Myristicaceae	Jaakayi	Seed	Paste	Apply on wounds	Pain kill, Declotting
Ocimum gratissimum	Lamiaceae	Rama tulsi	Leaves	Oil	Externally	Ear pain
Ocimum tenuiflorum	Lamiaceae	Bili tulsi	Leaves	Kashaya	Orally	Cold and cough
Ocimum sanctum	Lamiaceae	Tulasi	seed	Juice	Orally	Acidity
Parthenium hysterophorus	Asteraceae	Parthenium	Leaves	Raw leaves	Externally	To stop bleeding from wound
Phyllanthus acidus	Phyllanthaceae	Avalaar mara	Bark	Paste	Externally	Ring worms
Phyllanthus emblica	Phyllanthaceae	Nellikayi	fruit	Dried and powdered	Orally	Stomach pain
Phyllanthus niruri	Phyllanthaceae	Nelada nellikayi	Leaves	Kashaya	Orally	Asthma, cough and cold
Pistia stratiotes	Araceae	Antharagange	leaves	juice	Orally	Cold and cough
Plectranthus amboinicus	Lamiaceae	Pathregida	Leaves	Decoction	Orally	Stomach pain, body pain, digestion and cough in children
Psidium guajava	Myrtaceae	Perle	Leaves	Juice	Orally	Stomach pain
Psidium guajava	Myrtaceae	Perle	Leaves	Paste	Orally	For lice
Pterocarpus marsupium	Fabaceae	Honge mara	Bark	Kashaya	Orally	Fever
Punica granatum	Lythraceae	Dalimbe	Peel	Powder	Externally	Remove pimple and good skin
Rauwolfia serpentina	Apocynaceae	Gadapathal	Root	Lotion	Externally	Ring worm
Rhynchostylis retusa	Orchidaceae	Seethe hoovu	Fleshy Leaves	Fluid extract	Externally	Ear pain
Rosa sinensis	Malvaceae	Daswala	Leaves and flowers	Paste and juice	Externally	Act as coolant
Sapindus emarginatus	Sapindaceae	Antwala	Pulp	Paste	Applied to hair	Prevents greying hair
Semecarpus anacardium	Anacardiaceae	Guddegerannu	Seed	Lotion	Externally	Wounds
Solanum virginianum	Solanaceae	Haladi badanekayi	seeds	Steam	Externally	Cavities
Solanum virginianum	Solanaceae	Mullubadane	Root	paste	Externally	Ring worms, dermatitis
Tabernaemontana divaricata	Apocynaceae	Nanjatle	Leaves	Kashaya	Orally	Throat pain
Tabernaemontana divaricata	Apocynaceae	Nanjatle	Root	Lotion	Externally	Wounds
Tabernaemontana divaricata	Apocynaceae	Nanjatle	Root	Kashaya	Orally	Cold and cough
Tabernaemontana divaricata	Apocynaceae	Nanjatle	Root	paste	Externally	Poisonous snakebite
Tinospora cordifolia	Menispermaceae	Amruthaballi	Leaves	Decoction	Orally	For good health, diabetes, body pain and fever
Trigonella foenum-graecum	Fabaceae	Menthya	Seeds	Kashaya	Orally	Diabetes

Uttara Kannada district, Karnataka, revealed 45 medicinal plant species representing 29 families, being employed as remedies for 38 distinct ailments. Among the recorded families, apocynaceae contributed the highest number of species, followed by fabaceae, lamiaceae and rutaceae, highlighting their central role in the Siddhi ethnopharmacopoeia (Makanur et al., 2024). In the same way, this investigation recognized fabaceae as the most commonly cited flora family. For example, *Alstonia scholaris* bark was used to treat stomach pain and intestinal worms, while *Mimosa pudica* had diverse applications, including treatment for wounds, toothache, sterility and bone fractures. The versatility of certain species like *Azadirachta indica* (Neem) and *Tinospora cordifolia* (Amruthaballi), known for their immune-boosting and preventive properties, indicates the community's awareness of both curative and prophylactic health strategies. Some of these plant-derived compounds serve as natural defence mechanisms, that acts as toxins to deter herbivores and predators, while others exhibit pharmacologically active properties that are beneficial to human health and form the basis of traditional medicinal practices (Amsalu et al., 2018). Such utilization patterns have also been reported by local communities in protected areas from Himalayas, another biodiversity hotspot (Thakur et al., 2011, 2017, Kumari Monika et al., 2024).

This ethnomedicinal tradition aligns with similar studies across the Western Ghats, highlighting the broader regional dependency on local flora for primary healthcare. The ethnomedicine combines herbal remedies (dava) and spiritual healing (dua), reflecting both local influences and African roots (Solanki 2020). Furthermore, the integration of medicinal plants into daily life demonstrates the community's adaptive strategies to limited biomedical access, reinforcing the resilience and self-sufficiency of traditional knowledge systems. These communities have cultivated a sustainable and symbiotic relationship with their surrounding ecosystems, drawing on a wide range of locally available plant species for medicinal purposes while simultaneously upholding ecological integrity and biodiversity conservation (Turner et al., 2022).

Ethnofood practices and nutritional knowledge: Parallel to their medicinal use of plants, the Siddis also depend on a diverse range of wild and semi-domesticated plants for food. The study documented 11 food plant species across 9 families and 10 genera, primarily comprising leafy vegetables, fruits and seeds. Leafy greens such as *Amaranthus cruentus* and *Amaranthus viridis* are especially important for their iron and vitamin content and are widely consumed in traditional dishes like curries and dumplings (Table 2).

The consumption of *Cassia tora* (Thogate soppu) with its bitter and detoxifying nature indicates an indigenous understanding of its therapeutic value in daily diet, especially for purging toxins. Similarly, *Moringa oleifera* (Nuggekayi), a globally recognized superfood, is commonly used, reflecting a convergence of traditional and contemporary health values. Many of the food plants also serve medicinal purposes. For instance, *Colocasia esculenta* (Kesu) is used not only for nutrition but also for managing body pain and digestion. *Momordica charantia* (Hagalakayi), used as both food and medicine, is indicative of the dual-purpose application of flora in Siddi lifeways, emphasizing a holistic approach to health where the boundary between food and medicine is fluid.

Their food system is further supplemented by wild foraging, subsistence agriculture and consumption of forest-based non-vegetarian resources (e.g., fish, crabs and wild meats), indicating a diversified diet adapted to ecological

Table 2. Plants used as food by Siddhi tribes

Scientific name	Local name	Family	Parts used
Amaranthus cruentus	Kempu arive	Amaranthaceae	Leaves
Amaranthus viridis	Arive soppu	Amaranthaceae	Leaves
Artocarpus heterophyllus	Halasu	Moraceae	Fruit
Basella alba	Basale soppu	Basellaceae	Leaves
Caryota urens	Baine mara	Arecaceae	Seeds
Cassia tora	Thogate soppu	Fabaceae	Leaves
Colocasia esculenta	Kesu	Araceae	Leaves
Cucurbita moschata	Kumbalakayi	Cucurbitaceae	Leaves
Justicia adhatoda	Beli salaga	Acanthaceae	Leaves
Momordica charantia	Hagala kayi	Cucurbitaceae	Leaves, Fruit
Moringa oleifera	Nuggekayi	Moringaceae	Leaves, Fruit

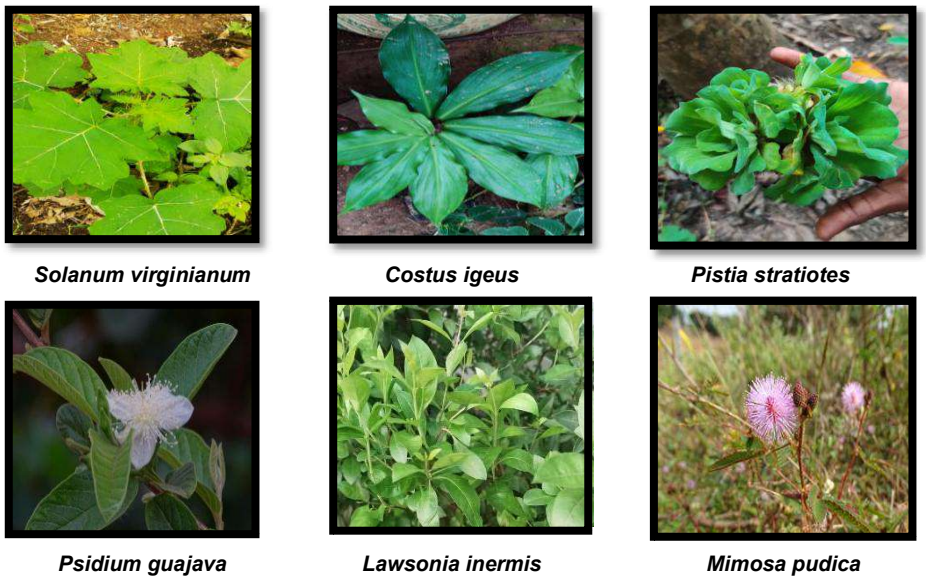

Plate 1. Representative plant species documented during field survey

availability and seasonal abundance. The sustainable gathering and use of these resources underline a deep ecological knowledge and cultural continuity**.** However, increasing anthropogenic pressures, habitat degradation and climate change pose significant threats to these ecosystems, potentially disrupting this delicate balance and the traditional knowledge associated with it (Bisht et al., 2020).

The growth and transformation of indigenous therapeutic knowledge within tribal communities have been profoundly shaped by the complex interplay of cultural, environmental and spiritual systems (Hamzah et al., 2023, Haq et al., 2023). These communities regard traditional medicine not merely as a utilitarian practice, but as a vital cultural heritage intrinsically woven into their social and ancestral fabric (National Research Council 2002). The present findings underscore the urgent need to preserve and promote such traditional knowledge, not only as a means of safeguarding cultural identity, but also as a foundational element in advancing sustainable development. Indeed, the preservation of ethnomedicinal wisdom is essential for ensuring the continuity and resilience of tribal cultures in the face of rapid modernization and socio-ecological change (Reddy et al., 2023).

In response, a range of stakeholders, including researchers, local communities and cultural institutions, are actively engaging in collaborative efforts to protect endangered indigenous healing practices. These initiatives encompass systematic documentation, intergenerational transmission of knowledge, training programs for both practitioners and emerging scholars and the development of adaptive frameworks that support the long-term evolution and revitalization of this invaluable knowledge system.

CONCLUSION

The present study highlights the rich ethnobotanical heritage of the Siddi tribal community in Yellapur taluk of Uttara Kannada district, Karnataka, revealing their deep reliance on forest biodiversity for both medicinal and nutritional needs. A total of 54 medicinal and 11 food plant species were documented, showcasing a practical and experience based system of traditional medicine that is widely shared among community members, especially elders and women. The frequent use of leaves, along with versatile preparation methods such as decoctions, pastes and juices, reflects the community's intimate knowledge of plant properties and their adaptability in the face of limited biomedical access. Many plants serve dual purposes as both food and medicine, exemplifying the Siddis' holistic approach to health and sustainable resource use. Despite their assimilation into the broader Indian socio-cultural landscape, the Siddis have retained significant elements of their traditional knowledge, passed down orally through generations. However, increasing threats from habitat degradation, climate change and cultural erosion underline the urgency of documenting and preserving this knowledge system.

AUTHORS' CONTRIBUTIONS

Bindu Shree M Y conducted the field investigations and contributed to species identification. Nandhakumar S and Sushma C Meti conceptualized the study and drafted the

initial manuscript. Anusha Sanjay Revankar performed species identification and assisted in data interpretation and manuscript preparation. Clara Manasa P A revised and refined the manuscript. The study was carried out under the overall supervision and guidance of Suryanarayana V.

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