Preserving indigenous wisdom: An ethnomedicinal survey and quantitative analysis of the medicinal flora in Thattagarai and Oosimalai

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Research

Abstract

Background: Medicinal plants are the most important source for our medical systems. Due to the modernization of the world, the knowledge of indigenous medicinal plants was disappearing. The main objective of this study focuses on identifying and recording the medicinal plants used by the indigenous tribal communities living in the Thattagarai and Oosimalai regions of Erode.

Methods: This ethnobotanical survey carried a total of a total 78 informants, and traditional healers were interviewed; a result of 49 medicinal plant species belonging to 33 families are reported.

Results: Overall, Fabaceae (10.20%) was the dominant family, followed by Combretaceae (8.16%), Solanaceae, and Euphorbiaceae (6.12%). Life form analysis shows trees (40.82%), followed by herbs (28.57%), shrubs (18.37%), and climbers (12.24%). The Use Value (UV) and Relative Frequency of Citation (RFC) results range from0.04 to 0.87, with several plants, such as *Terminalia chebula*, *Mimosa pudica*, *Butea monosperma*, *Hemidesmus indicus*, and *Withania somnifera*. The Informant Consensus Factor (ICF) values ranged from 0.94 to 1.00. High ICF values were indicated for skin diseases, wounds, joint pain, diabetes, immunity boosting, digestive disorders, and snake bites.

Conclusion: This research concluded with the documentation of ethnomedicinal knowledge, which conserves the natural biodiversity and transformation of knowledge through roots.

Keywords: Medicinal plants, ethnobotanical survey, documentation, Use Value, and Relative Frequency of Citation.

Background

About 85% of the world depends on plants as primary healthcare medicine (Sankaranarayanan *et al.* 2010). Plants are the natural healers. Traditional Indian systems of medicine include Ayurveda, Siddha, Unani, and various folk medicines (Silambarasan *et al.* 2017). Siddha and Ayurvedic medicine are the oldest medical systems, characterized by extensive knowledge of natural remedies and rooted in ancient folk medicinal practice (Sankaranarayanan *et al.* 2010). Siddha medicine,

associated with the Dravidian culture of medicine, reached full development starting during the Indus Valley Civilization and is regarded as a significant achievement in Tamil culture, particularly in Tamil Nadu (Ignacimuthu *et al.* 2006). The Unani system of medicine is practiced in Egypt, Iran, Iraq, China, India, and several other Eastern countries (Silambarasan *et al.* 2017). Folk system medicine plays a vital role in the healthcare of ethnic communities, especially those reliant on forest resources (Silambarasan *et al.* 2017).

Traditionally, plant knowledge will be transferred by orally from one generation to another generation (Samy *et al.* 2008). This unique system of medicinal knowledge developed about plant wealth by the trial-and-error method. India has a rich culture, traditions, and natural biodiversity and gives more valuable insights for drug discovery (Sankaranarayanan *et al.* 2010). Indian folk medicine contains many herbal prescriptions for therapeutic purposes, which may be as varied as wound healing, treating inflammation due to infection, skin issues, diarrhea, cold and cough, heart problems, ulcer, and snake bites (Samy *et al.* 1998). In India, around 427 tribal communities are present (Kala 2005). In recent years, traditional medicine research in India has been continuously increasing, and many ethnobotanical studies have been reported to explore the knowledge from either tribes or indigenous peoples (Ayyanar & Ignacimuthu 2005, Ignacimuthu *et al.* 1998, Ignacimuthu *et al.* 2008). Using ethnobotanical information in medicinal plant research has given lot of attention in various scientific communities (Silambarasan *et al.* 2017). Unsustainable harvesting practices by herb gatherers, often driven by commercial interests, have led to depletion of numerous medicinal plants in forests (Tardío & Pardo-de-Santayana2008). Due to urbanization lack of knowledge sharing of the younger generation will decrease. It is crucial to conserve this knowledge. In recent times, people avoid allopathic medicine because of side effects (Pandikumar *et al.* 2011). In alternative herbal plant-formulated medicine intake will increase (Radha *et al.* 2025;Mootoosamy & Mahomoodally,.2014). Medicinal drugs formulated by traditional plants are considered much safer compared to other medicine (Waheed & Asrshad 2026).

The main motive of this study was assisting the abundance of ethnobotanical and ethnomedicinal indigenous plants used by the tribes of the Thattagarai and Oosimalai ranges in Erode District Forest area and documenting their medicinal formulations used to treat various diseases. The documentation of this ethnomedicinal knowledge of tribes provides a valuable source of conservation of biological plant resources for their sustainable development.

Materials and Methods

Area of Study

This study involves intensive filed work in the Thattakarai Range of Erode District. It is one of the parts of the Thanthai Periyar Wildlife Sanctuary. It covers a total area of approximately 800 sq. km. It is located at a latitude of 11.8448678 N and a Longitude of 77.5295764 E. It serves the vital corridor linking to Nilgiris Biosphere Reserve. The average rainfall of this region is approximately 600-850 mm. The peak rainfall occurs in October to November, typically an average of 100-180 mm. The lowest rainfall flow in the period of January and February often sees as little as 5-10 mm. Temperature generally differs between 20^{o}C to 40^{o}C. The warmest period was March to May; this period, the temperature reaches 37^{o}C to 45^{o}C. The coolest season was November to January. The average daytime temperature is around 29^{o}C to 31^{o}C and nighttime drops to 20^{o}C. The filedwork includes plant collection and ethnobotanical investigation among the indigenous people of that range, followed by the identification and characterization of plants and analysis of the data's collected from the range. (Fig. 1 & Fig. 2).

Field surveys, plant collection, and identification

Ethnobotanical fieldwork was carried out between November 2025 to March 2026 in the selected areas located in the Thattakarai forest range of Thanthai Periyar Wildlife Sanctuary, Erode District. The primary sites include the villages of Thattakarai and Oosimalai, with additional villages of that range. The following selected areas are rich in ecology and floral diversity and strong traditional medicinal knowledge. The objective of the field survey was to document the wild medicinal plants used by the local indigenous people's population. The fresh specimens were collected in the field during the flowering or fruiting period for correct identification. Collected specimens were pressed and preserved by following herbarium techniques. Initial identifications were carried from regional botanical references, including Flora of Madras, Flora of Western Ghats and verified using cross-checking with international databases such as Plants of the World Online (https://powo.science.kew.org/).

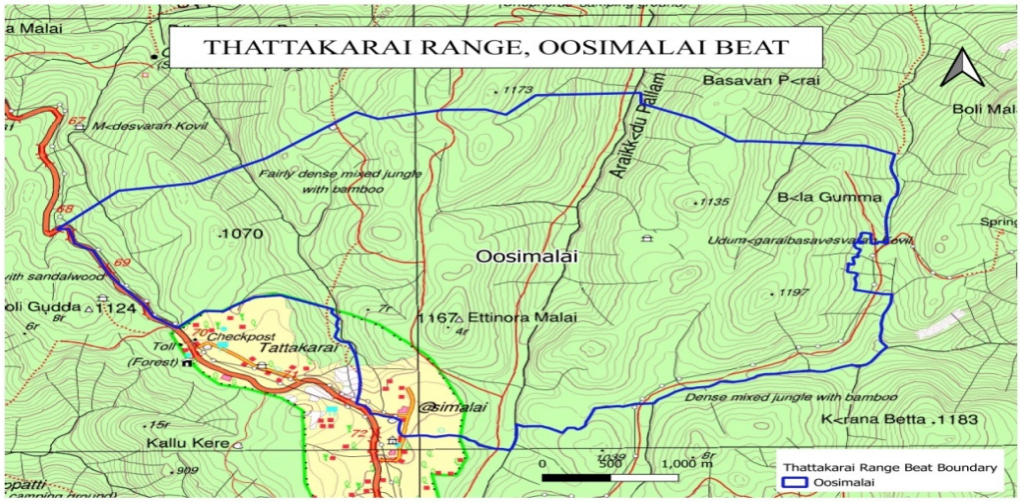


Figure 1. Field map of Thattakarai Range, Erode Division.

Figure 2. Field map of Oosimalai beat, Thattagarai Range, Erode Division.

Ethnobotanical interviews and data collection

This ethnobotanical information was collected from the semi-structured interview, regular field visit, regular interaction among the local people and group discussion involving 78 informants selected through convenience sampling. This approach helps the researchers to engage with more knowledgeable informants, who are locally available. Informants aged between 35 to 80 years; this includes a diverse range of local healers, farmers, housewives and herbalists. A field tested questionnaire was used to collect information on plant species, part used, preparation, mode of administration, mode of action and specific ailments used for treatment. Local names, preparation details, harvesting details, and beliefs related to plant use are also documented as possible. In this present study, juice refers to the plant material crushed or ground and filtered liquid; paste refers to plant material crushed or ground and mixed with a small amount of water before the tropical application; and direct administration denotes the use of raw plant consumed or applied. Responses were documented in field notes and photographs to ensure authenticity and precision.

Data analysis

Quantitative analysis of ethnobotanical data collection was done by selected indices to measure the relative importance and cultural significance of medicinal plant sciences.

Relative Frequency of Citation (RFC)

The percentage of informants citing each plant species was determined using the Relative Frequency of Citation (RFC), which indicates the plant's popularity and importance in regional medicine (Dey &.De 2012, Giday *et al.* 2010, Long &.Li 2003, Shah *et al.* 2015, Sarwar *et al.* 2025).

$$RFC = FC/N \ (0 < RFC < 1)$$

Where FC is the number of informants who mentioned the use of a particular species,
N is the total number of informants participating in the survey.

Use Value (UV)

The Use Value (UV) index was utilized to evaluate the overall utility of a specific species based on the range of uses reported by informants (Dey &.De 2012, Giday *et al.* 2010, Long &.Li 2003, Shah *et al.* 2015, Sarwar *et al.* 2025). The significance of different plant species is determined by their usage value (UV) according to the formula;

$$UV = \sum Ui/N$$

UV= usage value of specific species,
Ui = number of uses that were recorded by informants,
N = total number of informants who reported that species.

Informant consensus factor (ICF) Informant consensus factor (ICF) for several types of diseases was calculated to assess the homogeneity or consistency of informants knowledge concerning a particular remedy for a given ailment (Dey &.De 2012, Giday *et al.* 2010, Long &.Li 2003, Shah *et al.* 2015, Sarwar *et al.* 2025). It is used to highlight culturally significant plants and the widespread use of medicinal plants to treat illnesses.

$$ICF = N_{ur} - N_t/N_{ur} - 1$$

N_{ur}= total number of uses reported for a specific category of disease
N_t= number of taxa reported for a specific category of disease
The range of the ICF value is 0 to 1.If the value is near 1, it shows that the respondents are highly concordant in the use of taxa within a disease category.

Results and Discussion

Demographic profile of respondents

This ethnobotanical information was collected from a total of 78 informants, including 33 men (42.31%) and 45 women (57.69%). On average, men respondents mentioned 25 medicinal plant species; on the other hand, women respondents mentioned a minimum of 30 species of plants. Most of the informants are married (75.08%), while others are unmarried (24.92%). Regarding age distribution, more informants come under the 30 to 50 (47.44%) age group, followed by the 50 -75 (32.05%) age group, 18-30 (16.67%) age group, and those above 75-90 (3.85%) age group. This age group reflects the significant knowledge of both younger and elder people. This proves the knowledge transformation from elder to younger will be significant. Many of the members had no formal education. At ages of 18-30, some have middle school education; the upcoming generation has education for all. Plants are playing a vital role not only in the day-to-day livelihood of human beings but also in economic development and health management systems, especially among the tribal and ethnic communities (Arunachalam *et al.* 2023). The demographic details of the respondents are given in Table 1.

Table 1. Demographic profile of respondents

Socio-demographic parameters	Category	No of Informants (78 Informants)	Percentage (%)
Gender	Men	33	42.31 %
	Women	45	57.69 %

Marital Status	Married Unmarried	59 19	75.08 % 24.92 %
Age Group	18 - 30 Years 30 - 50 Years 50 - 75 Years 75 - 90 Years	13 37 25 3	16.67 % 47.44 % 32.05 % 3.84 %
Education	No Formal Education Middle School	0 7	92.31 % 7.69 %
Occupation	Farmer Housewife Daily labor Others	27 15 33 3	34.61% 19.23 % 42.30 % 3.86 %

Medicinal plant diversity

A total of 49 medicinal species were documented for this study area, distributed across 33 families. Fabaceae was the dominant family across all the families, having 10.22% of plant species, followed by Combretaceae and Euphorbiaceae, having 8.16%,.Malvaceae, Solanaceae, and Lamiaceae have 6.12%, Myrtaceae and Acanthaceae contain 4.08%; and others have 2.04%, which includes Piperaceae, Verbenaceae, Phyllanthaceae, Acanthaceae, Amaranthaceae, and Rutaceae, among others (Figure 4). Among 49 ethnobotanical plant species, trees are dominant, having 20 plant species (40.82%). Herbs are second on the list, comprising 14 species (28.57%). Shrubs contain 9 species (18.37%). The least amount were climbers, with 6 plant species (12.24%) (Figure 3). The medicinal plant species details are shown in Table 2.

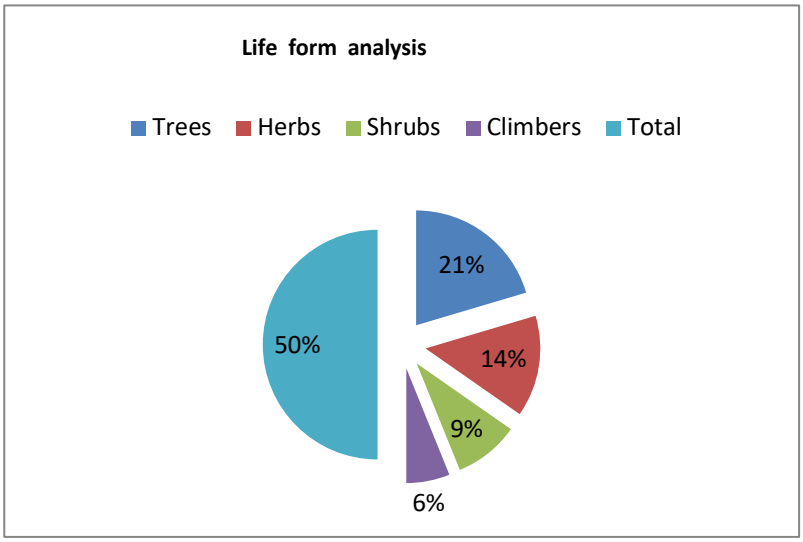


Figure 3. Life form analysis of documented Ethnobotanical plant species.

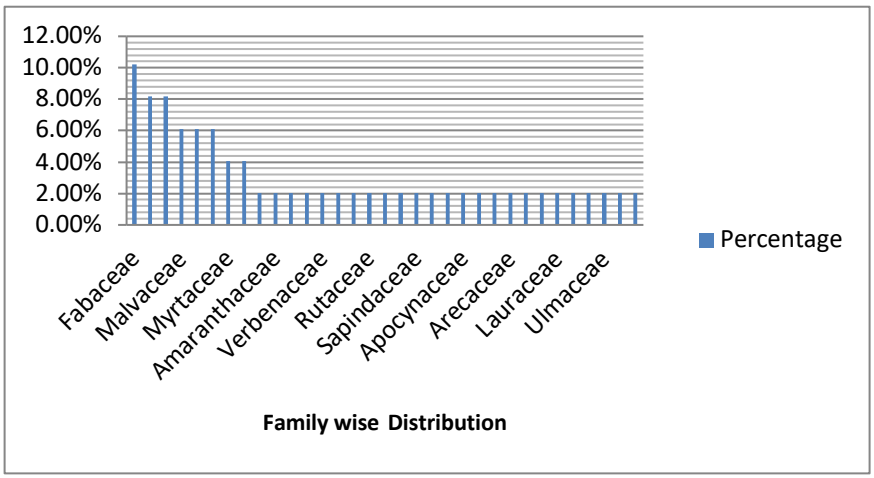


Figure 4. Family wise Distribution of documented Ethnobotanical plant species.

Table 2. Documented medicinal plant species and their traditional uses

Family	Voucher No.	Botanical name	Vernacular (tamil)	Life form	Parts used	Mode of preparation	Ailments treated	Traditional application (dosage)
Acanthaceae	TBWL 12	*Andrographis paniculata* (Burm.f.) Nees	Siriyanangai	Herb	Leaf	Paste	Skin diseases	Leaf paste can be applied topically to treat skin diseases and wounds
Acanthaceae	TBWL 13	*Andrographi salata* (Vahl) Nees	Periyanangai	Herb	Leaf	Juice	Snake bite, diarrhea	The juice of fresh leaves is taken to treat diarrhea and snake bite.
Amaranthaceae	TBWL 21	*Achyranthes aspera* L.	Nayuruvi	Herb	Leaf	Paste	Wound healing	Apply the leaf paste helps heal wounds
Apiaceae	TBWL 49	*Centella asiatica* (L.) Urb.	Kudukaledithalai	Herb	Leaf	Paste	Skin and hair care	Fresh leaves are ground into a paste for use on skin condition and reduce dandruff.
Apocynaceae	TBWL 29	*Hemidesmus indicus* (L.) R.Br. ex Schult.	Nannari	Climber	Root	Decoction	Body coolant	Drinking Nannari water (water infused with the roots) is prevent heat strokes.
Arecaceae	TBWL 38	*Cocos nucifera* L.	Thennaikuruthu	Tree	Tender shoot	Decoction	Immunity boosting	Eaten raw naikuruthu helps to promote immunity
Asparagaceae	TBWL 2	*Asparagus racemosus* Willd.	Thaneervittankilangu	Climber	Root	Powder	Reproductive disorders	Dried roots are ground into a fine powder and consume 3-6 grams of powder daily with water or honey.
Asphodelaceae	TBWL 22	*Aloe vera* (L.) Burm.f.	Sothukathalai	Herb	Leaf gel	Gel/juice	Insect bites and skin problems	Applying fresh gel to an insect bite site can help reduce burning sensation and localized swelling. Also used for skin treatment.
Bignoniaceae	TBWL 45	*Pajanelia longifolia* (Willd.) K.Schum.	Paiyeraan	Tree	Bark	Decoction	Joint pain, wounds, insect bites	3-6g of bark is powdered and add in hot water. The drink taken twice daily for joint complaints. Fresh leaves are crushed and pinch of turmeric applied to minor wounds, insect bites
Combretaceae	TBWL 4	*Anogeissus latifolia* (Roxb. ex DC.) Wall. ex Guill. & Perr.	Vellainamai	Tree	Leaf	Paste	Wounds	Leaf paste applies directly to wounds and leaves for 20-30 minutes.
Combretaceae	TBWL 15	*Terminalia bellirica* (Gaertn.) Roxb.	Thandrikkai	Tree	Fruit	Decoction	Cough, asthma	The fruit rind decoction used to treat coughs, asthma
Combretaceae	TBWL 31	*Terminalia chebula* Retz.	Kadukkai	Tree	Fruit	Powder	Dental care	Using kadukkai powder as a tooth powder to strengthens the gums

Combretaceae	TBWL 47	*Terminalia arjuna* (Roxb. ex DC.) Wight.& Arn.	Mothipattai	Tree	Bark	Powder	Heart disorders	Mix 1-2 teaspoons of powder with warm water or milk, once or twice daily after food.
Convolvulaceae	TBWL 36	*Ipomoea staphylina* Roem. & Schult.	Oonangkodi	Climber	Leaf	Paste	Joint pain, wounds, skin inflammation.	Fresh leaves are ground into a paste for external application on joint pain, wounds, and skin inflammation.
Cornaceae	TBWL 20	*Alangium salvifolium* (L.f.) Wangerin	Alinjal	Tree	Bark	Paste	Snake bite	15g of bark ground with 10-12 black peppers are curing snakebite.
Cucurbitaceae	TBWL 14	*Momordica charantia* L.	Pagarkaai	Climber	Fruit	Juice	Liver disorders	10-20 ml of fresh fruit juice on an empty stomach to cure liver problem
Euphorbiaceae	TBWL 10	*Phyllanthus niruri* L.	Keezhanelli	Herb	Whole plant	Paste	Jaundice	Gooseberry-sized ball of crushed whole plant mixed with goat milk, taken on an empty stomach for seven days to treat jaundice
Euphorbiaceae	TBWL 28	*Acalypha indica* L.	Kuppaimeni	Herb	Leaf	Paste/juice	Skin problems, cough	A paste of the leaves mixed with salt is applied to treat skin problem. The leaf juice is used to treat coughs.
Euphorbiaceae	TBWL 48	*Euphorbia heterophylla* L.	Paalperukki	Herb	Leaf	Powder	Digestive issues	Mix 1-2 teaspoons of powder with warm water used for digestive health and detoxification.
Fabaceae	TBWL 5	*Pterocarpus marsupium* Roxb.	Rasa vengai	Tree	Bark	Powder/ decoction	Diabetes, joint pain	Dried bark or heartwood is pulverized into a fine powder. 3-6 grams of powder taken once or twice daily with warm water or honey.
Fabaceae	TBWL 7	*Butea monosperma* (Lam.) Taub.	Purasumaram	Tree	Flower	Decoction	Headache	Boil flowers in water for 5 minutes, strain, and drink to heat-related headaches.
Fabaceae	TBWL 8	*Albizia amara* (Roxb.) Boivin	Arappu	Tree	Leaf, flower	Paste	Skin problems	The leaves and flowers paste are used for treatment of · skin diseases
Fabaceae	TBWL 9	*Mimosa pudica* L.	Thottalsurungi	Herb	Leaf	Paste	Wounds, skin treatments	Paste of crushed leaves is applied to minor cuts, wounds, and skin infections
Fabaceae	TBWL 35	*Cassia fistula* L.	Sarakondrai	Tree	Leaf	Paste	Skin diseases	Leaf and root pastes are used to treat skin problems
Hypoxidaceae	TBWL 3	*Curculigo orchioides* Gaertn.	Nilappanai	Herb	Rhizome	Decoction	Jaundice, urinary issues	10-15g of sliced rhizome boiled in 200ml water and reduced to 60ml. Used for respiratory issues, jaundice, and urinary disorders.

Lamiaceae	TBWL 26	*Vitex negundo* L.	Nochi	Shrub	Leaf	Decoction	Cold, respiratory issues.	Boiling the leaves in water and inhaling the steam is used as remedy for common colds and respiratory blocks
Lamiaceae	TBWL 37	*Leucas aspera* (Willd.) Link	Thumbai	Herb	Flower	Juice	Detoxification, liver issues.	5g of powder boiled in 100ml water, taken twice daily before meals for detoxification and liver-related issues.
Lauraceae	TBWL 44	*Cinnamomum verum* J.Presl	Siruvanapattai	Tree	Bark	Powder	Indigestion	Mix 1/2 tsp of powder with warm water twice daily to enhance digestion and reduce bloating
Lythraceae	TBWL 27	*Lawsonia inermis* L.	Maruthani	Shrub	Leaf	Paste	Headache, body heat	Applying henna leaf paste in palms and feet help to reduce internal heat
Malvaceae	TBWL 11	*Abutilon indicum* (L.) Sweet	Thuthi	Shrub	Leaf	Paste	Wounds	Crushed leaves or leaf paste are applied to cure minor wounds.
Malvaceae	TBWL 24	*Hibiscus rosa-sinensis* L.	Semparuthi	Shrub	Leaf, flower	Paste/decoction	Hair fall, dandruff	Apply the paste of leaves and flower in hair and wait 5 to 10 min. And wash. It reduces hair fall and dandruff
Moraceae	TBWL 43	*Ficus racemosa* L.	Athi	Tree	Bark, leaf	Paste	Skin diseases	The bark and leaves paste are used to treat skin ailments
Moringaceae	TBWL 39	*Moringa oleifera* Lam.	Murungai	Tree	Leaf, flower	Paste/decoction	Boost immunity	Dried leaf powder (1-2 teaspoons, twice daily) mixed with water helps to promote immunity
Myrtaceae	TBWL 32	*Syzygium cumini* (L.) Skeels	Naval	Tree	Seed	Powder	Diabetes	3-5 grams of the powder with a glass of water or buttermilk and drink it
Myrtaceae	TBWL 40	*Eucalyptus globulus* Labill.	Thailamaram	Tree	Leaf	Steam	Cold, sinusitis	Fresh leaves or a few drops of oil are added to hot water for inhaling steam is cure cold and sinusitis
Phyllanthaceae	TBWL 17	*Phyllanthus indofischeri* Bennet	Wild nelli	Tree	Fruit	Juice	Hair & skin health	10-20 ml of wild amla juice is used for skin and hair health.
Piperaceae	TBWL 19	*Piper nigrum* L.	Kurumilagu	Climber	Fruit	Paste	Snake bite	15g of *Alangium salvifolium* bark ground with 10-12 black peppers are curing snakebite.
Piperaceae	TBWL 41	*Piper betle* L.	Vetrilai	Climber	Leaf	Paste	Wounds	Fresh leaf paste is applied to treat wounds
Poaceae	TBWL 25	*Chrysopogon zizanioides* (L.) Roberty	Vettiver	Herb	Root	Infusion	Body heat	Drinking vetiver water (water infused with the roots) is prevent heat strokes, ulcers, and urinary infections
Putranjivaceae	TBWL 16	*Putranjiva roxburghii* Wall.	Karupaalai	Tree	Leaf, bark	Paste	Joint pain	A paste made from the leaves or bark is applied topically to reduce swelling and joint pain
Rhamnaceae	TBWL 30	*Ziziphus mauritiana* Lam.	Elanthai	Tree	Fruit	Raw	Digestive issues	Eating fresh fruits are improve appetite and treating constipation, bloating, indigestion, and diarrhea

Rubiaceae	TBWL 46	*Tarenna asiatica* (L.) Kuntze	Tharanipattai	Shrub	Fruit	Juice	Eye infection	**Fruit juice** is applied on the eyelids to arrest infection.
Rutaceae	TBWL 18	*Atalantia monophylla* (L.) DC.	Kattuelumichai	Shrub	Root	Paste	Snake bite	The paste is applied directly onto the bite site to help neutralize toxins and reduce pain or swelling.
Sapindaceae	TBWL 23	*Cardiospermum halicacabum* L.	Mudakathan	Climber	Whole plant	Cooked/decoction	Arthritis	Cooked whole plant for regular consumption helps reduce stiffness and improves joint mobility.
Solanaceae	TBWL 1	*Withania somnifera* (L.) Dunal	Amukkara	Shrub	Root	Powder	Immunity Boosting	Dried roots are pulverized into a fine powder. Consume 3-5 grams of powder daily mixed with warm milk/ honey improve energy and immunity.
Solanaceae	TBWL 33	*Datura metel* L.	Karuumathai	Shrub	Leaf	Paste	Skin diseases	Leaf paste is applied to treat skin infections.
Solanaceae	TBWL 34	*Datura stramonium* L.	Vella umathai	Herb	Leaf	Paste/oil	Joint pain	Applying leaf paste is used to treat joint pain.
Ulmaceae	TBWL 42	*Holoptelea integrifolia* (Roxb.) Planch.	Ayi	Tree	Bark	Decoction	Diabetes	50-60 ml of the bark decoction used for diabetes.
Verbenaceae	TBWL 6	*Lantana camara* L.	Unnichedi	Shrub	Leaf	Paste	Wound healing	Fresh leaves are crushed into a paste and applied topically to the skin to promote wound healing, reduce swelling.

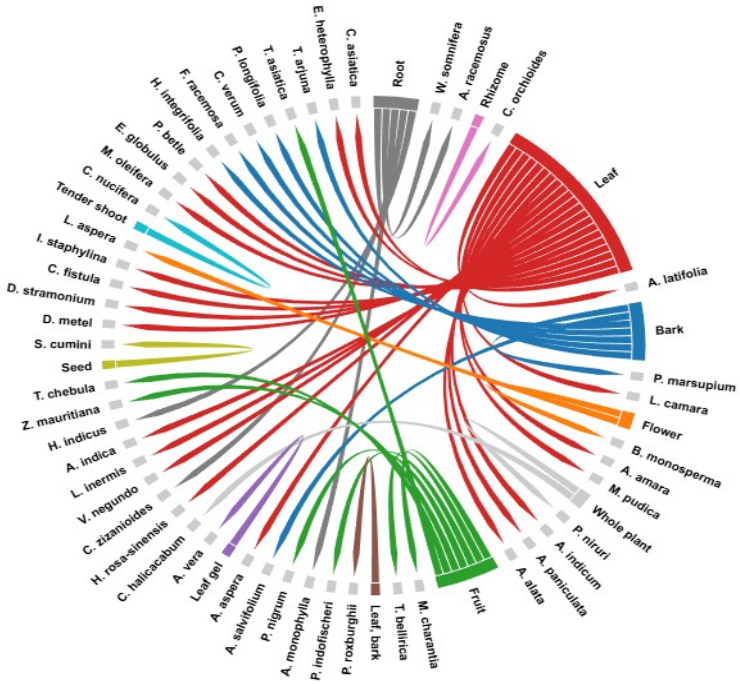
Modes of preparation and therapeutic applications of medicinal plants

The study area proves the diverse set of traditional knowledge of medicinal plants and their preparation, administration, and therapeutic remedies. Among 49 plant species, paste formation was the most used by ethnic peoples of this area, employing 23 plant species (41.82%) as paste remedies. Decoction is the second in order, with 12 medicinal plant species (21.82) used in that category. Powder formation possesses 8 plant species (14.55%), juice holds 7 medicinal plants (12.73%), and others have 5 plants (9.08%), including the infusion, raw, steam, and oil formations (Figure 5). In principal component analysis, the two components explained 71.12% of the total variance. It suggests a strong pattern in the dataset. Principal Component 1 (44.33%) differentiated between internal preparations like infusion and decoction and external applications like topical, paste, and oil. Principal component 2 defines the liquid-involved methods such as cooking, gel, and steam preparations (Figure 6). The cluster pattern of the PCA evinces traditional knowledge, where preparation methods are strongly from therapeutic application. It indicates the distinct ethnobotanical difference between modes of administration. Tropical and infusion treatments showed clear and specific procedures.

The ethnobotanical flora of the Thattakarai range consists of a wide range of therapeutic applications, with depth of indigenous knowledge and community reliance. A total of 49 documented medicinal plant species is used to cure 15 distinct diseases, with many of the species. Some medicinal plant species have multi-functional curing potential. In this region skin diseases are the dominant ailment category, treated by 15 plant species. Though 15 species are documented for skin diseases, the ICF value (0.96) indicates that many informants mention these medicinal plants of a small core group of valued species. These diseases spread because of poor sanitation and water contamination. Some species of skin ailments are *Centella asiatica* (L.) Urb., *Ficus racemosa* L., *Ipomoea staphylina* Roem. &.Schult., *Cassia fistula* L., and others mentioned in plant data table. Diabetes, Respiratory, and Digestive disorders are second on the list, with a total of 9 species used for curing ailments. The plants are *Euphorbia heterophylla* L., *Holoptelea integrifolia* (Roxb.) Planch., *Syzygium cumini* (L.) Skeels., and *Vitex negundo* L. Other ailments include the liver disorders (2), joint related diseases (5), jaundice (2), immunity boosting (3), reproductive-related issues (1), snake bites or insect bites (3), body coolant (3), dental (1), eye infection (1), and headache (2). Many plants are poly-therapeutic in nature.

The plants are rich in active ingredients; thus, knowledge on plant diversity of an area and knowledge on medicinal uses of those plants by local people are of prime importance for the development of those species considered effective in the treatment of various diseases (Gumisiriza *et al.* 2019, Kayani *et al.* 2015,Bekoe *et al.* 2020, Rajakumar & Shivanna 2009).

A



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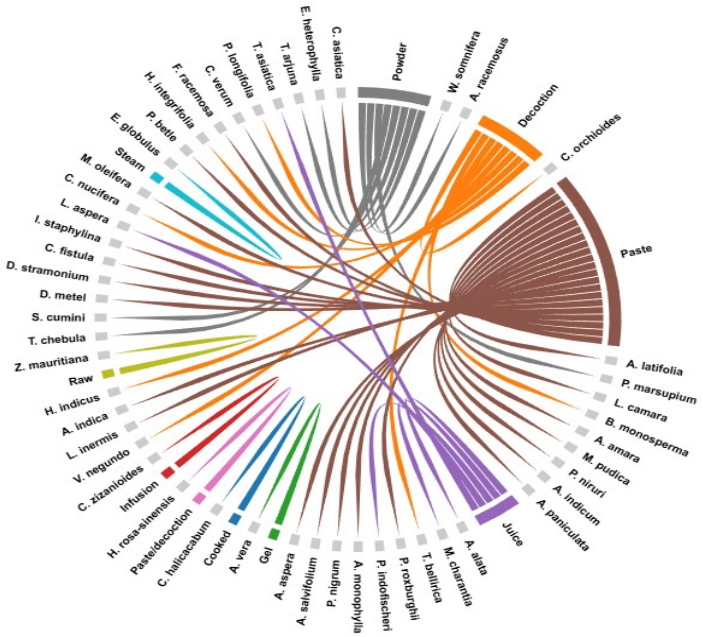

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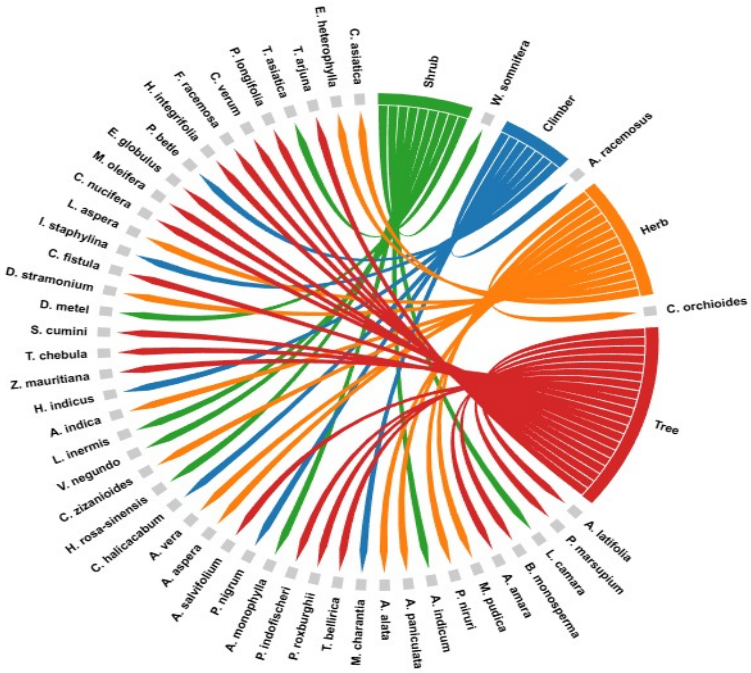

Figure 5. Chord diagram illustrating the relationship between the medicinal plant species and their A. Plant parts used, B. Mode of preparation, C. Their growth forms.

Nowadays, the traditional knowledge and practices are disappearing and losing their intrinsic values at an alarming rate due to several reasons in most of the countries of the world (Ayyanar & Ignacimuthu 2011, Ignacimuthu *et al.* 2006). Some reasons for the vanishing of such invaluable knowledge/wealth are said to be shrinkage of forest areas and disappearance of indigenous culture and practices and the adoption of modem lifestyles (Sivasankari *et al.* 2014; Namsa *et al.* 2011; Tuttolomondo *et al.* 2014; Harun *et al.* 2025; Boutlelis *et al.* 2025; Kareti *et al.* 2022)

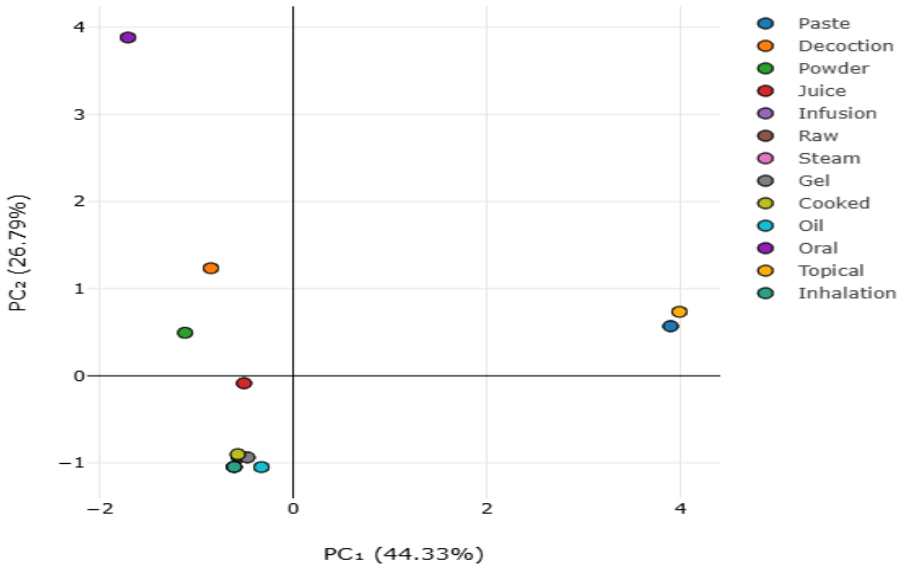

Figure 6. Principal component analysis of Variation in Modes of Preparation and Application of Medicinal Plants

Use value (UV) and frequency of citation of species (FC)

The relationship between use value and frequency of citation has provided a valuable insight into the cultural and medicinal importance of medicinal plant species. More cited plant species by the informants prove the positive linear relationship; this information has higher use values and proves the strong ethnobotanical values and relevance. This relationship highlights the species' broader and more effective therapeutic applications. Several species showing the high UV and FC values demonstrate their predominance of local ethnomedicine. *Terminalia chebula* (UV = 0.87, FC = 68), *Mimosa pudica* (UV = 0.85, FC = 66), *Butea monosperma* (UV = 0.77, FC = 60), and *Hemidesmus indicus* (UV = 0.77, FC = 60) were among the most significant species. These plants are not only frequently cited but also associated with multiple therapeutic uses, including wound healing, digestive problems, and general health improvements (Mootoosa & Mahomoodally 2014; Sarware *et al.* 2025). Other important species such as *Lantana camara* (UV=0.74, FC=58), Withania somnifera (UV=0.71, FC=55), and Acalypha indica (UV=0.71, FC=55) also show high relevance. Their relatively high UV values indicate versatile applications and strong dependence on local communities. The data values are given in table 2.

Some species exhibit moderate to high UV compared to lower FC values, such as *Atalantaia monophylla (UV=0.54,* FC=42) *and Phyllanthus niruri* (UV=0.54, FC=42), which are particularly used for curing jaundice and liver disorders. Conversely, species such as *Termanalia bellirica* (UV=0.04, FC=3) and *Tarenna asiatica (UV=0.06,* FC=5) exhibit low UV and FC values, but the species have more specific applications. Due to lack of awareness, these species have lower chances. Figure 7 explains the significance of UV-RFC.

Informant consensus factor (ICF) and use reports (UR)

ICF analysis across the 20 ailment categories revealed varying degrees of arrangement among informants regarding the use of medicinal plants. Many categories show the high ICF values. Diarrhea, dental care, eye infection, heart disorder, reproductive disorders, urinary disorders, and detoxification showed a high ICF value of 1.00. Following body heat (0.98), immunity boosting (0.97), digestive disorders (0.97), diabetes (0.96), and skin diseases (0.96), these were showing that strong knowledge in these categories is widely shared and culturally embedded. Moderately high ICF values are shown in wound healing (0.94), snake bites, and liver disorders (0.94). It suggests a use of a broader range of species among the informants.

Use reports (UR) helped the further findings of categories, such as skin diseases (Nur=256), joint pain/arthritis (Nur=137), and wound healing (121), which recorded the high number of use reports. This indicates their prevalence in the study area and heavy reliance on herbal medicinal treatment. Eye infections (Nur=14) and heart disorders (Nur=16) give lower use reports due to fewer specialized remedies. All the data of ICF values are given in Table 3.

The relationship between the number of taxa and use reports suggests the categories with both high use reports and high ICF values, such as skin diseases, diabetes, wound healing, and digestive disorders, play a crucial role in the ethnobotanical system of this Thattakarai region. These findings prove the depth of indigenous knowledge and primary healthcare needs. Figure 8 shows the assessment of UV-ICF.

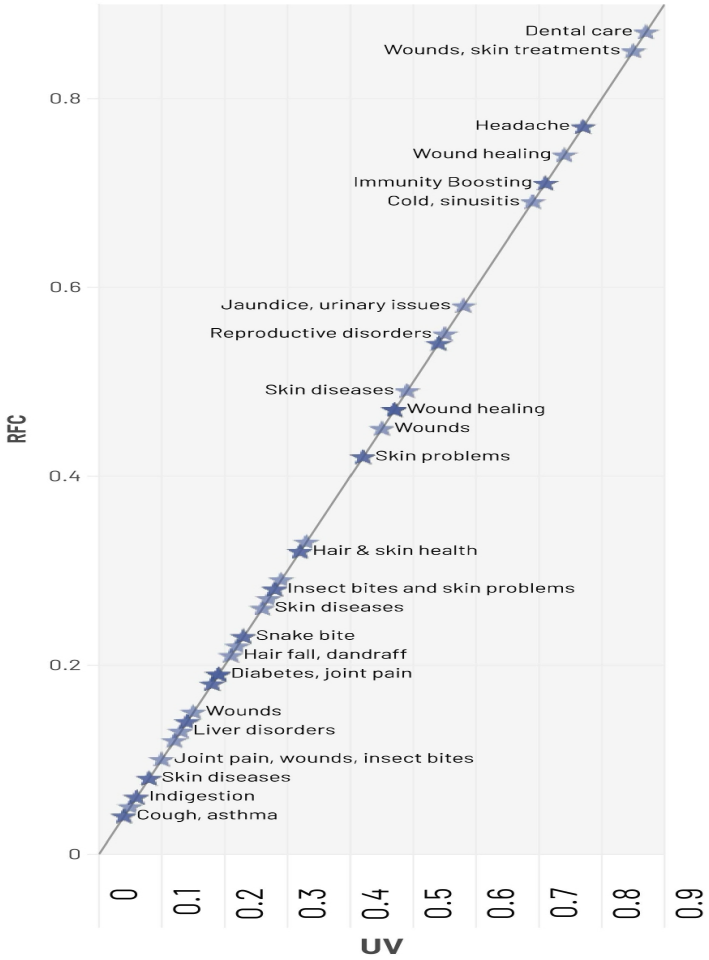

Figure 7. Assessment of Ethnomedicinal Significance Using UV-RFC Correlation Analysis

Table 2. Data table of Use value (UV) and frequency of citation of species (FC)

Botanical name	Informants (Ui)	N	UV	FC	RFC
Abutilon indicum	35	78	0.45	35	0.45
Acalypha indica	55	78	0.71	55	0.71
Achyranthes aspera	37	78	0.47	37	0.47
Alangium salvifolium	18	78	0.23	18	0.23
Albizia amara	33	78	0.42	33	0.42
Aloe vera	22	78	0.28	22	0.28
Andrographis alata	11	78	0.14	11	0.14
Andrographis paniculata	38	78	0.49	38	0.49
Anogeissus latifolia	12	78	0.15	12	0.15
Asparagus racemosus	43	78	0.55	43	0.55
Atalantia monophylla	42	78	0.54	42	0.54
Butea monosperma	60	78	0.77	60	0.77
Cardiospermum halicacabum	15	78	0.19	15	0.19
Cassia fistula	20	78	0.26	20	0.26
Centella asiatica	17	78	0.22	17	0.22
Chrysopogon zizanioides	3	78	0.04	3	0.04

Cinnamomum verum	5	78	0.06	5	0.06
Cocos nucifera	37	78	0.47	37	0.47
Curculigo orchioides	45	78	0.58	45	0.58
Datura metel	6	78	0.08	6	0.08
Datura stramonium	14	78	0.18	14	0.18
Eucalyptus globulus	54	78	0.69	54	0.69
Euphorbia heterophylla	6	78	0.08	6	0.08
Ficu sracemosa	14	78	0.18	14	0.18
Hemidesmus indicus	60	78	0.77	60	0.77
Hibiscus rosa-sinensis	16	78	0.21	16	0.21
Holoptelea integrifolia	26	78	0.33	26	0.33
Ipomoea staphylina	25	78	0.32	25	0.32
Lantana camara	58	78	0.74	58	0.74
Lawsonia inermis	4	78	0.05	4	0.05
Leucas aspera	18	78	0.23	18	0.23
Mimosa pudica	66	78	0.85	66	0.85
Momordica charantia	10	78	0.13	10	0.13
Moringa oleifera	15	78	0.19	15	0.19
Pajanelia longifolia	8	78	0.10	8	0.10
Phyllanthus indofischeri	25	78	0.32	25	0.32
Phyllanthus niruri	42	78	0.54	42	0.54
Piper betle	33	78	0.42	33	0.42
Piper nigrum	11	78	0.14	11	0.14
Pterocarpus marsupium	15	78	0.19	15	0.19
Putranjiva roxburghii	9	78	0.12	9	0.12
Syzygium cumini	37	78	0.47	37	0.47
Tarenna asiatica	5	78	0.06	5	0.06
Terminalia arjuna	23	78	0.29	23	0.29
Terminalia bellirica	3	78	0.04	3	0.04
Terminalia chebula	68	78	0.87	68	0.87
Vitex negundo	21	78	0.27	21	0.27
Withania somnifera	55	78	0.71	55	0.71
Ziziphus mauritiana	22	78	0.28	22	0.28

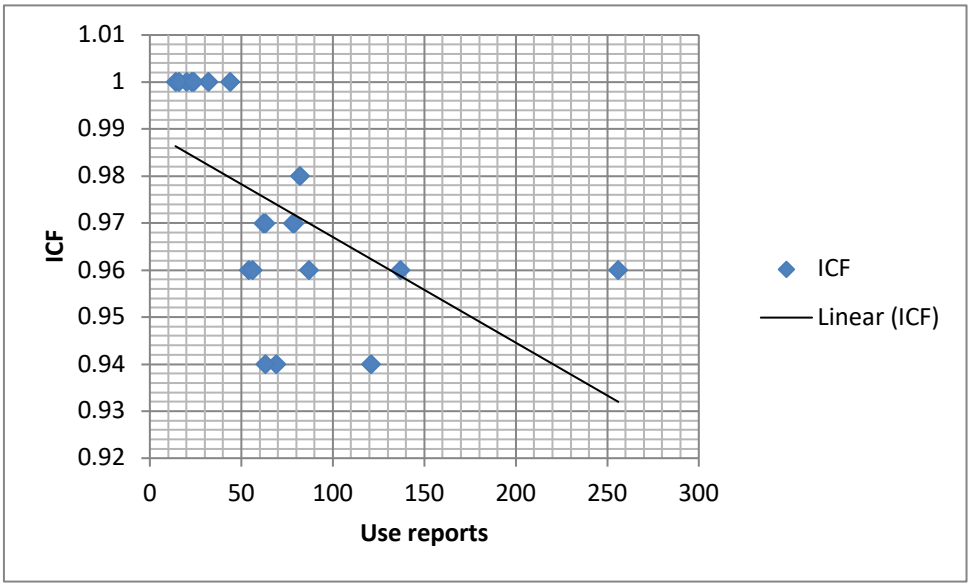

Figure 8. Assessment of Ethnomedicinal Significance Using UV-ICF Correlation Analysis

Table 3. Assessment table of Informant consensus factor (ICF) and use reports (UR)

Ailment category	Nur	Nt	ICF
Body heat / coolant	82	3	0.98
Dental care	23	1	1.00
Detoxification	24	1	1.00
Diabetes	87	4	0.96
Diarrhea	32	1	1.00
Digestive disorders	62	3	0.97
Eye infection	14	1	1.00
Hair & scalp care	56	3	0.96
Headache	79	2	0.97
Heart disorders	16	1	1.00
Immunity boosting	78	3	0.97
Insect bites	63	3	0.97
Jaundice & liver disorders	69	4	0.94
Joint pain / arthritis	137	6	0.96
Reproductive disorders	44	1	1.00
Respiratory disorders (cough, asthma, cold, sinusitis)	54	3	0.96
Skin diseases / skin problems	256	10	0.96
Snake bite	63	5	0.94
Urinary disorders	20	1	1.00
Wounds & wound healing	121	8	0.94

Conclusion

The present study reveals the medicinal plant diversity of the Thattakarai region of Erode District. These studies prove the traditional medicines were still in common use by the peoples for their primary healthcare systems. Thus, our work would be useful in preventing the loss of ethnobotanical knowledge of the plants and their medicinal properties held by the community. This study gives a lot of new insights, but still much can be learned from investigating herbs available in the forest. Fidelity values and use values of this present study indicate the occurrence of significant phytochemical compounds and new potential drugs for treating various ailments. The safety and efficacy of all the reported ethnic plants need to be evaluated for their medicinal potential; the high informant consensus factor, use values, fidelity ratio, and relative importance are important for carrying out the bioassay and toxicity studies. *Terminalia chebula*, *Mimosa pudica*, *Butea monosperma,* and *Hemidesmus indicus* are the most significant species. These plants are not only frequently cited but also associated with multiple therapeutic uses, including wound healing, digestive problems, and general health improvements. These plants can also be used for further analysis and their associated pharmacological studies.

Declarations

List of abbreviations: Not applicable

Ethics approval and consent to participate: The study followed the ethical and legal guidelines for the development of research on traditional knowledge. The participation of healers was subject to the acceptance of the Free and Informed Consent.

Consent for publication: Not applicable

Availability of data and materials: Not applicable

Competing interests: the authors declare no competing interests

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Author contributions: All authors contributed to the research, concept discussion and approved the final manuscript.

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