

# Medicinal Plants Used by the Traditional Healers of Thimmarajapuram Village, Tirunelveli District, Tamil Nadu, India

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Submission Date: 14-09-2022; Revision Date: 20-10-2022; Accepted Date: 05-11-2022.

## ABSTRACT

**Objectives:** The purpose of this study is to document the indigenous/traditional knowledge of medicinal flora utilized by the traditional healers of Thimmarajapuram village, Tirunelveli district to establish the relative importance, consensus and scope of all medicinal flora used. **Materials and Methods:** Indigenous knowledge of medicinal plants was executed through a questionnaire with traditional healers who are custodians of the knowledge about herbal medicine. Local floras of the state had been systematically followed to identify the plants. **Results:** A total of 45 medicinal plant species from 27 families were documented. The leaves were the most commonly used plant part, and herbal remedies were mostly prepared in the form of a juice or paste. Gastrointestinal problems (GIA) are the most common diseases reported by traditional healers in the study area. **Conclusion:** This documented report indicated that indigenous medicinal plants are a good source of plant-based safe drugs. Moreover, additional pharmacological tests are required to establish the efficacy and potency of the plants as medicine.

**Keywords:** Herbal remedies, Indigenous medicinal plants, Plant-based safe drugs, Traditional healers.

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## INTRODUCTION

Plants have been used as a source of medicines for both humans and animals since time immemorial in crude forms such as decoctions, syrups, powders, infusions and ointments.<sup>[1]</sup> Herbal medicine in primary health care is still practised in both developed and developing countries.<sup>[2]</sup> Traditional medicine is considered as a total sum of all practices, measures and procedures which have from time immemorial enabled Indians to guard against disease.

The interim data in the WHO Global Report on Traditional and Complementary Medicine (T and CM) shows that 87% of all the WHO Member States formally acknowledge the use of T and CM; 100 Member States have a national policy on T and CM, and 124 Member States have national regulation of herbal medicines. This shows a consistent upward trend in the number of Member States formally engaging with T and CM.<sup>[3]</sup> Traditional medicines are becoming more popular as a low-cost alternative to, or complement to, modern medicine.<sup>[4]</sup> Medicinal plant knowledge has been acquired over many years based on several medicinal systems such as Ayurveda, Unani, and Siddha. Traditional healers in India are said to use 2500 plant species, with 100 species serving as regular sources of medication.<sup>[5]</sup>

Much of the knowledge on the use of medicinal plants is possessed by traditional healers. The abundance of information in traditional medicine is dwindling due to

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DOI: 10.5530/ajbls.2022.11.105

a lack of enthusiasm among the younger generation and their tendency to travel to cities in search of attractive careers. This study aimed to meet the local traditional healers in Thimmarajapuram village, Tirunelveli district, Tamil Nadu and document their knowledge of medicinal plants, their uses, and the types of diseases they treat, among other things. This is the first report on the medicinal plants utilised by the traditional healers of Thimmarajapuram village, as no systematic survey has been conducted in this village.

## MATERIALS AND METHODS

### Study Area

Thimmarajapuram is an outskirts village of Tirunelveli District located in Tamil Nadu. It has a population of 1,50,000 people, according to the 2011 census. It is situated in the district's north-eastern corner and is one of the most heavily populated areas. Thimmarajapuram village is located at 8.736721 latitudes and 77.752357 longitudes with the GPS coordinates of 8° 44' 12.1956" N and 77° 45' 8.4852" E.

### Data Collection

Field trips were carried out from December 2021 to April 2022. The traditional healers from the village who had practical knowledge of medicinal plants were interviewed. The interviews were conducted after obtaining verbal prior informed consent from the participants. Between the ages of 45 and 75, a total of 35 informants, 17 men and 13 women, were chosen. Informants were chosen based on their knowledge of medicinal plants, which they might use for self-treatment or help others. Data collection was based on structured interviews and the responses were recorded. The interviews were conducted in the participants' local language (Tamil) since most were not formally educated. The first section of the questionnaire confined demographic information from participants. The second section confined local names of plant species used, plant part(s) used, modes of preparation and disease treated. The species entries were complemented along with data on taxonomic position (family) and life form. The life form was categorized into herbs, shrubs, climbers and trees according to the Indian Biodiversity Portal.<sup>[6]</sup> Plant specimens used in herbal recipes were collected with the aid of respondents and authenticated using their local names and standard text.<sup>[7-14]</sup> Voucher specimens were collected, processed and deposited at the V.O. Chidambaram College Herbarium in Thoothukudi. The correctness of scientific names was checked in the database of the International Plant Names Index

(IPNI),<sup>[15]</sup> Indian Biodiversity Portal,<sup>[6]</sup> The Plant List,<sup>[16]</sup> Plants of the World Online<sup>[17]</sup> and GRIN Taxonomy site,<sup>[18]</sup> while that of families follow A.P.G. system IV.<sup>[19]</sup>

## Quantitative Analysis of Data

### Use Value

The results obtained through the investigation were quantitatively analysed using one of the indices, use value. The use value of species (UV), demonstrates the relative importance of medicinal plants.<sup>[20]</sup> It is calculated by the formula

$$UV = \sum U_i / N$$

Where,  $U_i$  is the number of users who reported the particular plant and  $N$  is the total number of informants interviewed for a given plant species.

### Informant Consensus Factor (ICF)

The informant consensus factor (ICF) was calculated to evaluate if there was a consensus in the knowledge of plants used in the ailment group between healers in the study area. The ICF was calculated using the following formula.<sup>[21]</sup>

$$ICF = \frac{N_{ur} - N_t}{N_{ur} - 1}$$

Where,  $N_{ur}$  is the number of use citations in each ailment category and  $N_t$  is the number of species used in the given category. The value of this product can be anywhere between 0 and 1. A high value (close to 1) indicates that relatively few taxa (usually species) are used by a large proportion of people, while a low value indicates that the informants disagree on the taxa to be used in the treatment within a category of illness.

### Ailment categories

In the present study, grouped the therapeutic indications into 14 based on the International Classification of Diseases and Related Problems (ICD-10).<sup>[22]</sup> The ailment categories were Animal/Poisonous Bites (PB), Cardiovascular Problems (CP), Cooling Agent (CA), Dental and Oral Care (DOC), Dermatological Diseases (DD), Ear, Nose, Throat (ENT), Endocrinal Disorders (ED), Fever (Fvr), Gastrointestinal Ailments (GIA), Genito-urinary Ailments (GUA), Hair Problems (HP), Liver Problems (LP), Respiratory Problems (RP) and Skeleto-muscular system disorders (SMSD).

## RESULTS

### Diversity of Traditional Medicinal Plants

Plant species, which are used in traditional medicine, are enumerated alphabetically according to their binomial names, followed by family names (Table 1). The present

Table 1: Medicinal plants used by the traditional healers of Thimmarajapuram.

Sl. No.	Botanical Name	Vernacular Name	Family	Part Used	Growth Form	Preparation Form	Ailment Treated	UR (Out of 35)	UV
1	<i>Abrus precatorius</i> L.	Gundamani	Fabaceae	Root	Climber	Decoction	Cough	17	0.48
2	<i>Abutilon indicum</i> (L.) Sweet	Thuthi	Malvaceae	Leaf	Shrub	Infusion	Cough	12	0.34
3	<i>Acalypha indica</i> L.	Kuppaimeni	Euphorbiaceae	Leaf	Herb	Paste	Psoriasis	23	0.65
4	<i>Acorus calamus</i> L.	Vasambu	Acoraceae	Rhizome	Herb	Paste	Indigestion	25	0.71
5	<i>Allium sativum</i> L.	Vellaiipoodu	Amaryllidaceae	Bulb	Herb	Paste	Gastric Problems	14	0.40
6	<i>Aloe vera</i> (L.) Burm.f.	Chotthu Kathalai	Xanthorrhoeaceae	Leaf	Herb	Raw Form	Dandruff	26	0.74
7	<i>Andrographis paniculata</i> (Burm.f.) Nees	Nila vaambu	Acanthaceae	Leaf	Herb	Decoction	Snakebite	11	0.31
8	<i>Asparagus racemosus</i> Willd.	Thaneervitaan Kizhangu	Asparagaceae	Tuber	Herb	Decoction	Intestinal ulcer	13	0.37
9	<i>Azadirachta indica</i> A. Juss.	Vembu	Meliaceae	Stem Bark	Tree	Decoction	Fever	21	0.60
10	<i>Blepharis maderaspatensis</i> (L.) Heyne ex Roth	Vettukaya Patchilai	Acanthaceae	Leaf	Herb	Paste	Bleeding Wounds	10	0.28
11	<i>Cardiospermum halicacabum</i> L.	Mudakattan	Sapindaceae	Leaf	Climber	Paste	Rheumatism	12	0.34
12	<i>Centella asiatica</i> (L.) Urb.	Vallarai	Apiaceae	Leaf	Herb	Juice	Memory power	11	0.31
13	<i>Cleome viscosa</i> L.	Naikadugu	Cleomaceae	Leaf	Herb	Juice	Ear pain	11	0.31
14	<i>Coccinia grandis</i> (L.) Voigt	Kovai	Cucurbitaceae	Leaf	Climber	Juice	Jaundice	17	0.48
15	<i>Cynodon dactylon</i> (L.) Pers.	Arugam Pillu	Poaceae	Leaf	Herb	Juice	Diabetes	14	0.40
16	<i>Eclipta prostrata</i> (L.) L.	Karisilankanni	Asteraceae	Whole Plant	Herb	Juice	Jaundice	28	0.80
17	<i>Ferula assa-foetida</i> L.	Perungayam	Apiaceae	Root Latex	Herb	Powder	Indigestion	27	0.77
18	<i>Justicia adhatoda</i> L.	Adatoda	Acanthaceae	Leaf	Shrub	Paste	Asthma	28	0.80
19	<i>Leucas aspera</i> (Willd.) Link	Thumbai	Lamiaceae	Leaf	Herb	Steam Inhalation	Cold	17	0.48
20	<i>Melia azedarach</i> L.	Malaivembu	Meliaceae	Leaf	Tree	Juice	Psoriasis	16	0.45
21	<i>Moringa oleifera</i> Lam.	Moringa	Moringaceae	Leaf	Tree	Juice	Jaundice	29	0.82
22	<i>Nigella sativa</i> L.	Karuncheeragam	Ranunculaceae	Seeds	Herb	Powder	Fever	22	0.62
23	<i>Ocimum canum</i> Sims.	Naithulasi	Lamiaceae	Whole Plant	Shrub	Paste	Insect Bites	16	0.45
24	<i>Ocimum tenuiflorum</i> L.	Nalathulasi	Lamiaceae	Leaf	Shrub	Juice	Cold	25	0.71
25	<i>Phyllanthus amarus</i> Schumach. & Thonn.	Kizhaanelli	Phyllanthaceae	Whole Plant	Herb	Juice	Jaundice	12	0.34
26	<i>Piper betle</i> L.	Vettrilai	Piperaceae	Leaf	Climber	Juice	Indigestion	22	0.62
27	<i>Piper longum</i> L.	Tippili	Piperaceae	Seeds	Climber	Powder	Cough	14	0.40

Continued...

Table 1: Cont'd.

Sl. No.	Botanical Name	Vernacular Name	Family	Part Used	Growth Form	Preparation Form	Ailment Treated	UR (Out of 35)	UV
28	<i>Piper nigrum</i> L.	Milaku	Piperaceae	Seeds	Climber	Powder	Indigestion	29	0.82
29	<i>Polygala arvensis</i> Willd.	Chitaninankai	Polygalaceae	Root	Herb	Paste	Cough	9	0.25
30	<i>Punica granatum</i> L.	Madulai	Lythraceae	Fruit Peel	Shrub	Powder	Diabetes	12	0.34
31	<i>Ricinus communis</i> L.	Amanaku	Euphorbiaceae	Seed	Shrub	Oil	Vermifuge	24	0.68
32	<i>Senna alexandrina</i> Mill.	Nilavarai	Fabaceae	Leaf	Shrub	Powder	Throat Pain	14	0.40
33	<i>Solanum nigrum</i> L.	Manatakkali	Solanaceae	Leaf	Herb	Decoction	Stomach Pain	19	0.54
34	<i>Solanum virginianum</i> L.	Kandankathiri	Solanaceae	Leaf	Herb	Decoction	Cough	16	0.45
35	<i>Solanum trilobatum</i> L.	Tuduvalai	Solanaceae	Leaf	Herb	Decoction	Cough	11	0.31
36	<i>Solanum torvum</i> Sw.	Sundaikkai	Solanaceae	Leaf	Shrub	Paste	Bleeding Wounds	14	0.40
37	<i>Syzygium aromaticum</i> (L.) Merr. & Perry	Kirambu	Myrtaceae	Flower bud	Tree	Powder	Toothache	14	0.40
38	<i>Syzygium cumini</i> (L.) Skeels	Naval	Myrtaceae	Seed	Tree	Powder	Diabetes	19	0.54
39	<i>Tephrosia purpurea</i> (L.) Pers.	Kattukolingi	Fabaceae	Root	Herb	Paste	Stomach Pain	21	0.60
40	<i>Terminalia chebula</i> Retz.	Kadukkai	Combretaceae	Fruit	Tree	Powder	Intestinal Ulcer	13	0.37
41	<i>Trachyspermum ammi</i> (L.) Sprague ex Turill	Omum	Apiaceae	Seed	Herb	Powder	Indigestion	22	0.63
42	<i>Tribulus terrestris</i> L.	Nerinji	Zygophyllaceae	Leaf	Herb	Juice	Kidney Stones	11	0.31
43	<i>Trigonella foenum graecum</i> L.	Venthayam	Fabaceae	Seed	Herb	Paste	Body Heat	11	0.31
44	<i>Vitex negundo</i> L.	Nocchi	Lamiaceae	Leaf	Herb	Steam Inhalation	Cold	24	0.68
45	<i>Zingiber officinale</i> Roscoe	Inji	Zingiberaceae	Rhizome	Herb	Juice	Vomiting Problems	13	0.37

investigation comprises about 45 traditional medicinal plants belonging to 27 families. The most dominant families reported in the present study were Fabaceae, Lamiaceae and Solanaceae (4 species each) (Table 2).

**Growth form used for the preparation of medicine**

In the present study, the various growth forms used as medicines were herbs, shrubs, climbers and trees. In the present study, the majority of the growth form of the medicinal plants belongs to herbs (56%) followed by shrubs (18%) (Figure 1).

**Plant part used for the preparation of medicine**

In the present study, the various plant parts used as medicine were root (3), leaf (23), Rhizome (2), bulb (1), tuber (1), stem bark (1), whole plant (3), root latex (1), seed (7) fruit peel (1), flower bud (1) and fruit (1). Among the different plant parts, the leaves (23 species)

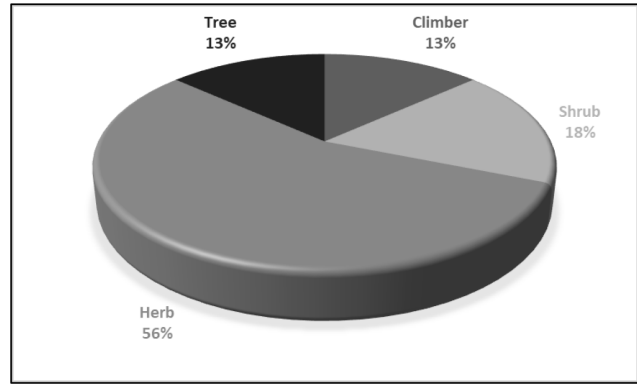


Figure 1: Percentage of life-forms identified to have medicinal importance.

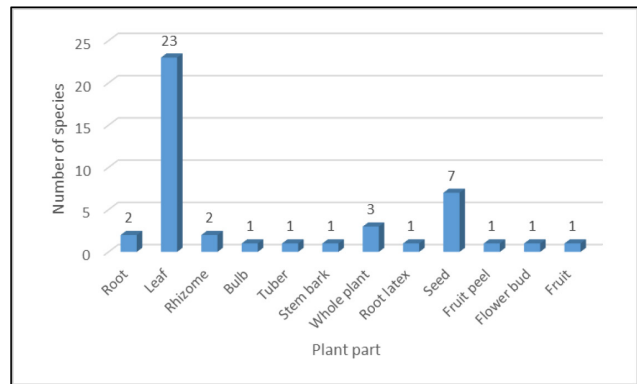


Figure 2: Plant parts used for the preparation of medicine.

**Table 2: Families with number of genera and species.**

Sl.No.	Family	No of genera	No of species
1.	Fabaceae	4	4
2.	Malvaceae	1	1
3.	Euphorbiaceae	2	2
4.	Acoraceae	1	1
5.	Acanthaceae	3	3
6.	Amaryllidaceae	1	1
7.	Xanthorrhoeaceae	1	1
8.	Asparagaceae	1	1
9.	Meliaceae	2	2
10.	Sapindaceae	1	1
11.	Apiaceae	3	3
12.	Cleomaceae	1	1
13.	Cucurbitaceae	1	1
14.	Poaceae	1	1
15.	Asteraceae	1	1
16.	Lamiaceae	3	4
17.	Moringaceae	1	1
18.	Ranunculaceae	1	1
19.	Phyllanthaceae	1	1
20.	Piperaceae	1	3
21.	Polygalaceae	1	1
22.	Lythraceae	1	1
23.	Solanaceae	1	4
24.	Myrtaceae	1	2
25.	Combretaceae	1	1
26.	Zygophyllaceae	1	1
27.	Zingiberaceae	1	1
	Total	38	45

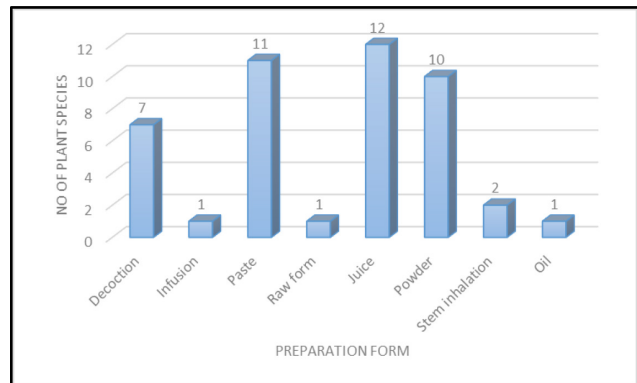


Figure 3: Preparation forms used by the traditional healers.

were most frequently used for the treatment of diseases followed by seed (7 species) (Figure 2).

**Mode of use and mode of application**

Most of the medicinal plants were collected from wild habitats. Most of the plant medicines were taken orally. In the present study, the plant parts were made into a decoction (7), infusion (1), paste (11), raw form (1), juice (12), powder (10), steam inhalation (2) and oil (1). Making juice and paste were the most common method of preparation of medicine (Figure 3).

### Medicinal importance of plant species

The 45 medicinal plants used by the traditional healers of the present study village have been used to treat 22 illnesses. The traditional healers use these plants to cure diseases related to cough, psoriasis, indigestion, gastric problems, dandruff, snakebite, intestinal ulcer, fever, bleeding wounds, rheumatism, memory power, ear pain, jaundice, diabetes, asthma, colds, insect bites, toothache, stomach pain, kidney stones, body heat, and vomiting problems (Table 1).

The 22 various illnesses against which the traditional medicinal treatments have been recorded in the study village were grouped into 14 major ailment categories of symptomatically and organ-system-related diseases. Consequently, 2 plants were used to treat Animal/Poisonous Bites (PB), 1 plant was used for Cardiovascular Problems (CP), 1 plant was used as Cooling Agent (CA), 1 plant was used for Dental and Oral Care (DOC), 4 plants were used for Dermatological Diseases (DD), 2 plants were used to treat Ear, Nose, Throat (ENT) infections, 3 plants were used for Endocrinal Disorders (ED), 2 plants were used for Fever (Fvr), 12 plants were used to treat Gastrointestinal Ailments (GIA), 1 plant was used for Genito-urinary Ailments (GUA), 1 plant was used to treat Hair Problems (HP), 4 plants were used for Liver Problems (LP), 10 plants were used to treat Respiratory Problems (RP) and 1 plant is used

to treat Skeleton-muscular system disorders (SMSD) (Table 3).

### Quantitative analysis of traditional medicinal information

Use-report values (UR) provide information on the total number of reported uses for each species. To evaluate the relative importance of the reported medicinal plant, the use-value (UV) was calculated based on the informants' citations for specific study plants, its value ranged from 0.25 to 0.82 (Table 1).

An analysis of the Informant Consensus Factor (ICF) for 14 broad treatment categories ranged between 0.95 and 1.0 (Table 4) which indicates the greater agreement among the informants regarding the uses of medicinal plants for treating different ailments.

### DISCUSSION

The outcome of the present study is comparable with that of earlier studies conducted on medicinal plant knowledge and practices of Tamil Nadu. In the present study, the best-represented families in terms of the number of species are Fabaceae, Lamiaceae and Solanaceae. This mostly agrees with another study carried out in Subramaniapuram village, Tirunelveli district, Tamil Nadu, in which Fabaceae registered the highest number of medicinally used plant species.<sup>[23]</sup>

**Table 3: Ailment categories, related diseases and the number of plants used to treat the ailment.**

Ailment categories	Related diseases	No of the plants used to treat the ailment
Animal/Poisonous Bits (PB)	Snakebite, Dog bite and Bee sting	2
Cardiovascular Problems (CP)	Blood purifier, Strengthening of heart, Blood pressure and Memory power	1
Cooling Agents (CA)	Body heat	1
Dental and Oral Care (DOC)	Mouth ulcer, Canker sores, Tooth pain, Worms in tooth	1
Dermatological Diseases (DD)	Bleeding wounds, Heat burns, Red scars left after fire burns, Cracks in legs, Cuts, General skin care, Psoriasis, Seborrheic dermatitis, Eczema, Clearing scars left after chicken box, Stop bleeding, Sunburn, Acne and Thorn-induced wound	4
Ear, Nose, Throat (ENT)	Ear pain, Sour throat, Tearing, Redness in the eye, Watering, Epidemic parotitis and Throat pain	2
Endocrinal Disorders (ED)	Diabetes	3
Fever (Fvr)	Chicken box and Fever	2
Gastrointestinal Ailments (GIA)	Intestinal ulcers, Acidity, Stomach pain, Vomiting, Constipation, Indigestion, Dysentery, Piles, Gastric problems and Kill worms in the stomach	12
Genito-urinary Ailments (GUA)	Kidney stones, Swelling testicles, Problems of menopause and infertility in male	1
Hair Problems (HP)	Hair growth, Greying of hair, Dandruff, Head lice, General hair care and hair loss	1
Liver Problems (LP)	Jaundice and Remove excess bile content in the body	4
Respiratory Problems (RP)	Cold, Cough, Asthma and Bronchitis	10
Skeleton-muscular system disorders (SMSD)	Headache, Giddiness, Leg pain, Back pain, Rheumatism, Arthritis and Bursitis	1

**Table 4: Informant consensus factor (ICF) and medicinal importance (MI) by categories of ailments.**

Ailment category	Use citation	Per cent of all use citation	No of Species	Per cent all use species	ICF	MI
Animal/Poisonous Bites (PB)	27	3.42	2	4.4	0.95	13.5
Cardiovascular Problems (CP)	11	1.39	1	2.22	1.00	11.0
Cooling Agent (CA)	11	1.39	1	2.22	1.00	11.0
Dental and Oral Care (DOC)	14	1.77	1	2.22	1.00	14.0
Dermatological Diseases (DD)	63	7.98	4	8.89	0.95	15.8
Ear, Nose, Throat (ENT)	25	3.17	2	4.44	0.96	12.5
Endocrinal Disorders (ED)	45	5.70	3	6.67	0.95	15.0
Fever (Fvr)	43	5.45	2	4.44	0.98	21.5
Gastrointestinal Ailments (GIA)	242	30.67	12	26.67	0.95	20.2
Genito-urinary Ailments(GUA)	11	1.39	1	2.22	1.00	11.0
Hair Problems (HP)	26	3.30	1	2.22	1.00	26.0
Liver Problems (LP)	86	10.90	4	8.89	0.96	21.5
Respiratory Problems (RP)	173	21.93	10	22.22	0.95	17.3
Skeleton-muscular system disorders (SMSD)	12	1.52	1	2.22	1.00	12.0

\*Medicinal Importance (MI) =  $N_u/N_t$

The Fabaceae group of plants is one of the most evaluated groups, both from a chemical and a pharmacological point of view.<sup>[24]</sup> Important chemical components are derived from this family such as flavonoids, alkaloids, and coumarins, among other metabolites,<sup>[24]</sup> which treat and/or cure various ailments. Species of the family Lamiaceae have enjoyed a rich tradition of use for flavouring, food preservation, and medicinal purposes, due to their curative and preventive properties.<sup>[25]</sup> The Solanaceae family is extensively used by humans. The plants of the Solanaceae family are an important source of food, spice and medicine.<sup>[26]</sup>

The present study elucidates that herbs are the major growth form used in the study area for treating human ailments. This current finding agrees with the general pattern of dominance of herbs seen in most medicinal plant inventories<sup>[27-30]</sup> conducted somewhere else in India and other countries.

Healers mostly used fresh specimens from commonly available plants<sup>[31]</sup> to prepare remedies for their patients; this might be mostly due to the effectiveness of fresh medicinal plant parts in treatment since the contents are not lost before use compared to the dried ones.<sup>[32]</sup> As also referred by many authors, traditional healers have harvested/collected leaves, roots, barks, seeds, fruits, stems, flowers, barks, seeds, or latex of medicinal plants to prepare their traditional medicines for their patient treatments. As depicted in Figure 2, most remedies were prepared from the leaf (23 species) and seed (7 species) parts of the medicinal plants to treat the diseases compared to the other parts of them. This finding is in line with the findings of the majority of authors'

papers.<sup>[33-35]</sup> The main reason that many traditional medicine practitioners used the leaf parts compared to others for remedial preparation is due to their accessibility and to prevent them from extinction.<sup>[31]</sup>

Results of the use-value depicted that *Moringa oleifera* and *Piper nigrum* are the medicinal plants with the highest use value (0.82) and the plant species, *Polygala arvensis* has the lowest use value (0.25). The plant with the highest UV is regarded as the most important plant by the traditional healers of Thimmarajapuram village. Plant with low use value is not inherently unimportant, but their low use value suggests that traditional knowledge about them is at risk of being lost or gradually vanishing, or that plant species are becoming scarce. In previous studies, Rani *et al.*<sup>[23]</sup> recorded a use value ranging from 0 to 1 and Usman *et al.*<sup>[36]</sup> reported that the use value (UV) ranged from 0.032 to 0.58. UV is high when there are many useful reports for a plant and low when they are few.<sup>[37]</sup>

The data on Informant Consensus Factor (ICF) revealed high homogeneity as per local people for all treatments. The Cardiovascular Problems (CP), Cooling Agent (CA), Dental and Oral Care (DOC), Genito-urinary Ailments (GUA), Hair Problems (HP) and Skeleton-muscular system disorders (SMSD) categories were assigned the highest value 1 due to the presence of only one taxon in the particular category. The lowest ICF of 0.95 was obtained for Animal/Poisonous Bites (PB), Dermatological Diseases (DD), Endocrinal Disorders (ED), Gastrointestinal Ailments (GIA), and Respiratory Problems (RP). In earlier studies, Rani *et al.*<sup>[23]</sup> reported the ICF value for different disease categories ranges from 0.71 to 1 and Usman *et al.*<sup>[36]</sup> documented the ICF

value ranged from 0.60 to 0.87. High ICF values (1.00) are obtained when only one or a few plant species are reported to be used by a high proportion of informants for treating a particular ailment category, whereas low ICF values indicate that informants disagree over which plant to use.<sup>[21]</sup>

The gastrointestinal ailments (GIA) comprised 242 use reports from the total categories with a medicinal importance index value of 20.2 (Table 4). Some most sought species in this category were *Piper nigrum*, *Ferula assa-foetida*, *Acorus calamus* and *Ricinus communis*. In the category of respiratory problems (RP), 10 species were used with 173 numbers of use-reports and medical importance of 17.3. The species indicated with the highest number of use reports were *Justicia adhatoda*, *Ocimum tenuiflorum* and *Vitex negundo*. Although the hair problems category is comprised of only 1 taxon, it has a medicinal importance index value of 26.0, which is the highest of all the categories since this plant species used under the category was in regular usage.

## CONCLUSION

The present paper has shown data corresponding to 45 medicinal plant species documented in the Thimmarajapuram village of Tirunelveli district, Tamil Nadu, India. Among the plants documented, Fabaceae, Lamiaceae and Solanaceae and *Solanum* were the botanical families and genera most represented. The plant parts most times used were the leaves and seeds, and herbal preparations that entailed some sort of aqueous extraction (juice) were the most common. Altogether, 789 medicinal use reports were obtained from these 45 species.

It was interesting to note that nearly 60% of this village population still use the prescription of traditional healers for common ailments, although the traditional healers were having an age of > 50 years. The young generation of this village is not interested to take up this profession given the minimal profit. It is shocking to note that there has been a continued decline in traditional medicinal plant knowledge in the present studied village because of upcoming modern allopathic-based health care services. This possesses a significant challenge to the continuity of the traditional herbal cure system. The impoverishment of such knowledge may lead to an enormous loss to the scientific community. Hence, the traditional medicinal plant knowledge and information provided in this study are of significant value for scientific validation, product development, conservation, and policy planners for the sustainable management of medicinal plants.

## ACKNOWLEDGEMENT

We wish to express our sincere thanks to all the traditional healers from the study region who supported the entire study.

## CONFLICT OF INTEREST

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## ABBREVIATIONS

**WHO:** World Health Organization; **UV:** Use value; **T** and **CM:** Traditional and Complementary Medicine.

## SUMMARY

In the present study, indigenous knowledge of medicinal flora utilized by the traditional healers of Thimmarajapuram village, Tirunelveli district, Tamil Nadu, were documented. A total of 45 medicinal plant species from 27 families were documented. Among the plants documented, Fabaceae, Lamiaceae and Solanaceae and *Solanum* were the botanical families and genera most represented. Altogether, 789 medicinal use reports were obtained from these 45 species. The gastrointestinal ailments (GIA) comprised 242 use reports from the total categories with a medicinal importance index value of 20.2.

## Author Contributions

VV designed, and conceived the study and critically reviewed the manuscript. MP and MG gathered relevant literature and analysed the data. BMA also helped in the data analysis.

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**Cite this article:** Priyadharshana M, Girija M, Smitha V, Badhsheeba MA, Vadivel V. Medicinal Plants used by the Traditional Healers of Thimmarajapuram Village, Tirunelveli District, Tamil Nadu, India. Asian J Biol Life Sci. 2022;11(3):785-93.