Research Article

# Indigenous Knowledge on Medicinal Flora Utilized by the Traditional Healers in Mappillaiyurani Village, Tuticorin District, Tamil Nadu, India

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Submission Date: 16-10-2021; Revision Date: 04-11-2021; Accepted Date: 01-12-2021.

## ABSTRACT

**Objectives:** The purpose of this study is to document the indigenous knowledge of medicinal flora utilized by the traditional healers of Mappillaiyurani, Tuticorin district to establish the relative importance, consensus and scope of all medicinal flora used. **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 42 medicinal plant species from 26 families were documented. The leaves were the most commonly used plant part, and herbal remedies were mostly prepared in the form of a decoction or paste and consumed internally. Respiratory diseases 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.

**Key words:** Indigenous knowledge, Mappillaiyurani, Medicinal flora, Traditional healers, Tuticorin.

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## INTRODUCTION

Plants are utilized in traditional medicine for several thousand years. During the last few decades, there has been an increasing interest in the study of medicinal plants and their traditional use in several parts of the world. Documenting indigenous knowledge through botanical studies is important for the conservation and utilization of biological resources. According to the World Health Organization (WHO), as many as 80% of the world's people depend on traditional medicine and in India, 65% of the population in the rural areas use Ayurveda and medicinal plants to meet their primary healthcare needs.[1]

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DOI: 10.5530/ajbls.2021.10.87

There are considerable economic benefits within the development of indigenous medicines and therefore the use of medicinal plants for the treatment of various diseases. In a recent report published by the World Bank, Lambert *et al.*[2] found out that preserving and enhancing the plant knowledge and their use was similar to 'rescuing a worldwide heritage'. Due to less communication, poverty, ignorance and unavailability of modern health facilities, most people especially rural people are still forced to practice traditional medicines for their common day ailments. Vast information on how to use the plants against different ailments can be expected to have accrued in regions in which the usage of plants is still of terrific importance.

India is a veritable emporium of medicinal and aromatic plants. Different religions and communities of India have their traditions, beliefs, and rituals. Thousands of plants are used by rural communities to make crude drugs to cure various ailments. The majority of the rural people in India use the plants as it is or their parts

which are found in and around their locality as primary health care. The present-day traditional healers are very old people. Due to a lack of interest among the younger generation as well as their tendency to migrate to cities for lucrative jobs, the wealth of knowledge in this area is declining.[3] Because of the above-said importance of medicinal plants, in the present study, we select Mappillaiyurani village for our medicinal plant's survey. So far, no systematic botanical survey has been made in this region and this is the primary document at the medicinal flora utilized by the local traditional healers of Mappillaiyurani village. The objective of this study was to have interaction with local traditional healers of Mappillaiyurani and document their knowledge on medicinal plants, their utilization and the kinds of illnesses dealt with etc.

## MATERIALS AND METHODS

### Description of the Study Area

Mappillaiyurani is a village panchayat located in the Ottaipidaram Taluk, Tuticorin district of Tamil Nadu state, India. The latitude 8.836211N and longitude 78.15501E are the geo-coordinate of the Mappillaiyurani. Mappillaiyurani village has a population of 40,000 of which 19,853 are males while 20,182 are females as according to Population Census 2011. Traditional healing systems are even so famous in this village.

### Methodology

The study was conducted from December 2019 to March 2020. From this village, we have collected information concerning the use of medicinal plants to be had in that region for treating numerous illnesses and diseases. Information was gathered directly by contacting traditional healers (Vaidya's) through a Questionnaire.

Plants/parts of plants were collected from this village traditional healers/Vaidya's and were identified by using the standard literature such as Floras of Madras Presidency;[4] Further Illustrations on the Flora of the Tamil Nadu and Carnatic;[5-7] Flora of Tamil Nadu, India[8-10] and Legumes of India.[11] Using The Plant List[12] and the newly launched Plants of the World Online[13] correct accepted botanical names for the species identified were reviewed. A herbarium was also prepared for all the plants/plant parts and has been deposited in the PG and Research Department of Botany, V.O. Chidambaram College, Tuticorin.

## RESULTS

Natural product drugs, or botanical drugs, are drugs composed of natural substances which have constituents with health-enhancing or medicinal activities.[14] In the present survey, we have collected information about 42 medicinal plants which were used by the Mappillaiyurani village traditional healers to treat various ailments. The information about the medicinal plant's botanical name, local name (in Tamil), family name, parts of the plant used to treat aliment and name of the disease treated by using medicinal plants were shown in Table 1.

From the collected information we have categorized the medicinal plants into their respective classes, sub-classes and families. The data on class, sub-class and family-wise distribution of the collected plants were shown in Tables 2 and 3. Among the 42 medicinal plants, 33 medicinal plants belonged to the class Dicotyledons and 9 medicinal plants were belonging to the class Monocotyledons. Among the 33 Dicotyledons medicinal plants, 18 medicinal plants belonged to the sub-class polypetalae, 8 medicinal plants have belonged to the sub-class gamopetalae and 7 medicinal plants belonged to Monochlamydeae.

In the present study, habit wise distribution of the medicinal plants used by the Mappillaiyurani village traditional healers were shown in Figure 1. Among the 42 medicinal plants used by the Mappillaiyurani village traditional healers, 18 (43%) medicinal plants came under the habit herbs, 10 (24%) medicinal plants came under the habit trees, 9 (21%) medicinal plants came undershrub and 5 (12%) medicinal plants came under climbers. In the present survey, the traditional healers of the Mappillaiyurani village used mostly herbs to treat various illnesses of the people.

The traditional healers of Mappillaiyurani village used 11 medicinal plants leaves, 8 medicinal plants rhizomes, 8 medicinal plants fruits, 7 whole medicinal plants, 3 medicinal plants flowers, 3 medicinal plants seeds, 2 medicinal plants seeds, 2 medicinal plants stem, 1 medicinal plants bulb and 1 medicinal plants corm to treat various ailments of the village peoples (Figure 2).

## DISCUSSION

This study area recorded traditional knowledge of 42 medicinal plant species belonging to 41 genera and 26 families (Table 3) to various ailments such as inflammation, diabetes, indigestion, dandruff, bloodshot eyes, vomiting, blood pressure, acne, itches, boils, albinism, dysentery, constipation, piles, cold, cough, diarrhoea, ulcer, fever, intestinal worm infestations, arthritis, earache, stomach pain, wounds, headache, jaundice, menstrual cramps, toothache, urinary

**Table 1: Medicinal flora used by the traditional healers of Mappillaiyurani village to treat various ailments.**

| Sl. No | Botanical Name | Local Name | Family | Useful Part | Disease treated |
|---|---|---|---|---|---|
| 1 | *Abutilon indicum* (L.) Sweet | Thuthii | Malvaceae | Whole plant | Constipation |
| 2 | *Acalypha indica* L. | Kuppaimeni | Euphorbiaceae | Whole plant | Inflammation, Diabetes |
| 3 | *Acorus calamus* L. | Vasambu | Acoraceae | Rhizome | Indigestion, Dandruff |
| 4 | *Aegle marmelos* (L.) Correa | Vilvum | Rutaceae | Leaves | Bloodshot eyes and Vomiting |
| 5 | *Allium sativum* L. | Poondu | Liliaceae | Bulb | Diabetes, Blood pressure |
| 6 | *Aloe vera* (L.) Burm.f. | Katraalai | Liliaceae | Leaves | Acne, Itches and Boils |
| 7 | *Amaranthus polygonoides* L. | Araikeerai | Amaranthaceae | Leaves | Albinism, Dysentery, Constipation |
| 8 | *Amorphophallus campanulatus* Decne. | Karunai Kilangu | Araceae | Corm | Piles, Indigestion and Cold |
| 9 | *Anisochilus carnosus* (L.f.) Wall. | Karpooravalli | Lamiaceae | Leaf | Cold and Cough |
| 10 | *Asparagus racemosus* Willd. | Thanner Vittan Kizhangu | Asparagaceae | Leaf | Diarrhoea, Cough and Ulcer |
| 11 | *Azadirachta indica* A. Juss. | Vembu | Meliaceae | Whole plant | Fever, intestinal worm infestations |
| 12 | *Brassica juncea* (L.) Czern. | Kadugu | Brassicaceae | Seed | Cold, Arthritis and Earache |
| 13 | *Calotropis gigantea* (L.) W. T. Aiton | Yeruku | Apocynaceae | Flower | Fever, Earache. |
| 14 | *Carica papaya* L. | Pappali | Caricaceae | Fruit | Stomach pain. |
| 15 | *Senna auriculata* (L.) Roxb. | Aavarai | Fabaceae | Flower | Constipation |
| 16 | *Centella asiatica* (L.) Urb. | Vallarai | Apiaceae | Leaf | Inflammations |
| 17 | *Cissus quadrangularis* L. | Pirandai | Vitaceae | Stem | Stomach ache |
| 18 | *Citrus limon* (L.) Osbeck | Elumichai | Rutaceae | Fruit | Dandruff, Nausea |
| 19 | *Curcuma longa* L. | Manjal | Zingiberaceae | Rhizome | Wounds |
| 20 | *Cynodon dactylon* (L.) Pers. | Arukampul | Poaceae | Whole plant | Headache, Wounds |
| 21 | *Datura metal* L. | Oomathai | Solanaceae | Whole plant | Cold, Cough |
| 22 | *Syzygium cumini* (L.) Skeels | Naaval | Myrtaceae | Fruits | Diabetes |
| 23 | *Hibiscus rosa-sinensis* L. | Sembaruthii | Malvaceae | Flower | Cough |
| 24 | *Justicia adhatoda* L. | Adathottai | Acanthaceae | Leaf | Cough, Diarrhoea |
| 25 | *Mentha arvensis* L. | Pudhina | Lamiaceae | Leaf | Jaundice |
| 26 | *Momordica charantia* L. | Pakarkaai | Cucurbitaceae | Fruits | Intestinal Worm Infestation |
| 27 | *Moringa oleifera* Lam. | Murungaii | Moringaceae | Leaf | Stomach Pain and constipation |
| 28 | *Murraya koenjii* (L.) Spreng. | Kariveppillai | Rutaceae | Leaf | Dysentery |
| 29 | *Ocimum tenuiflorum* L. | Thulasi | Lamiaceae | Leaf | Indigestion, Menstrual Cramps |
| 30 | *Phyllanthus emblica* L. | Nelli | Phyllanthaceae | Fruit | Indigestion, Diabetes |
| 31 | *Phyllanthus niruri* L. | Keelanelli | Euphorbiaceae | Whole plant | Jaundice |
| 32 | *Piper longum* L. | Thippilii | Piperaceae | Fruit | Cough |
| 33 | *Piper nigrum* L. | Milagu | Piperaceae | Seeds | Bronchitis, Diarrhoea |
| 34 | *Psidium gujava* L. | Koyya | Myrtaceae | Leaves | Toothache |
| 35 | *Punica granatum* L. | Maadhulai | Lythraceae | Fruit | Cough |
| 36 | *Riccinus communis* L. | Aamanakuu | Euphorbiaceae | Seed | Arthritis |
| 37 | *Saccharum officinarum* L. | Karumbu | Poaceae | Stem | Acnes, Urinary Disorders |
| 38 | *Sesbania grandiflora* (L.) Pers. | Agathii | Fabaceae | Whole Plant | Ulcers, Indigestion and Wounds |
| 39 | *Solanum nigrum* L. | Manathakkali | Solanaceae | Leaf | Aczema. Asthma |
| 40 | *Solanum trilobatum* L. | Thoothuvalai | Solanaceae | Leaf | Asthma |
| 41 | *Tamarindus indica* L. | Puli | Fabaceae | Fruit | Gingivitis, Inflammations |
| 42 | *Zingiber officinale* Roscoe. | Ingii | Zingiberaceae | Rhizome | Indigestion, Cough |

**Table 2: Family wise distribution of enumerated medicinal plants.**

| Sl. No | Family | Total No. of Genera | Total No. of species |
|---|---|---|---|
| **I. Dicotyledons** | | | |
| **Polypetalae** | | | |
| 1 | Brassicaceae | 1 | 1 |
| 2 | Caricaceae | 1 | 1 |
| 3 | Malvaceae | 2 | 2 |
| 4 | Rutaceae | 3 | 3 |
| 5 | Meliaceae | 1 | 1 |
| 6 | Fabaceae | 3 | 3 |
| 7 | Apiaceae | 1 | 1 |
| 8 | Myrtaceae | 2 | 2 |
| 9 | Cucurbitaceae | 1 | 1 |
| 10 | Moringaceae | 1 | 1 |
| 11 | Vitaceae | 1 | 1 |
| 12 | Lythraceae | 1 | 1 |
| **Gamopetalae** | | | |
| 13 | Lamiaceae | 3 | 3 |
| 14 | Apocynaceae | 1 | 1 |
| 15 | Solanaceae | 2 | 3 |
| 16 | Acanthaceae | 1 | 1 |
| **Monochlamydeae** | | | |
| 17 | Amaranthaceae | 1 | 1 |
| 18 | Euphorbiaceae | 3 | 3 |
| 19 | Phyllanthaceae | 1 | 1 |
| 20 | Piperaceae | 1 | 2 |
| **II Monocotyledons** | | | |
| 21 | Araceae | 1 | 1 |
| 22 | Acoraceae | 1 | 1 |
| 23 | Liliaceae | 2 | 2 |
| 24 | Asparagaceae | 1 | 1 |
| 25 | Zingiberaceae | 2 | 2 |
| 26 | Poaceae | 2 | 2 |

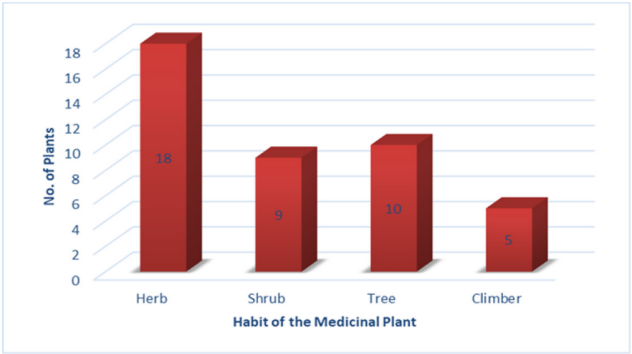


**Figure 1: Habit wise distribution of medicinal plants.**

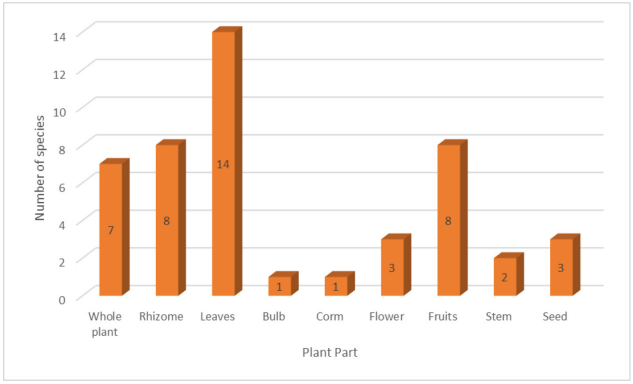


**Figure 2: Plant parts used for the preparation of medicine.**

**Table 3: Floristic group of medicinal plants recorded from the study area.**

| Floristic Group | Class | Family | Genus | Species |
|---|---|---|---|---|
| Angiosperms | | | | |
| Dicotyledons | | 20 | 32 | 33 |
| | Polypetalae | 12 | 18 | 18 |
| | Gamopetalae | 4 | 7 | 8 |
| | Monochlamydeae | 4 | 6 | 7 |
| Monocotyledons | | 6 | 9 | 9 |

disorders, asthma and gingivitis. Respiratory diseases are the most common diseases reported by traditional healers in the study area. It is because Tuticorin is an industrial area.

In this study, four plants were utilized by the traditional healers of Mappillaiyurani village to cure diabetes: *Syzygium cumini*, *Acalypha indica*, *Allium sativum*, and *Phyllanthus emblica*. In the previous investigations, the *Syzygium cumini* seed extract comprises a chemical called mycominase[15] and the fruits of *Phyllanthus emblica* contains a phytochemical known as quercetin[16] that had anti-diabetic properties. Likewise, methanolic extract of *Acalypha indica*[17] and ethanolic extract of *Allium sativum*[18] have been reported to hold anti-diabetic properties.

In the present study, *Acalypha indica*, *Centella asiatica* and *Tamarindus indica* were used by the traditional healers of Mappillaiyurani village to treat inflammations. Earlier studies on *Acalypha indica*,[19] *Centella asiatica*,[20,21] and *Tamarindus indica*[22,23] had confirmed the anti-inflammatory properties.

Among all plant parts of the medicinal plants, leaves were predominantly used to treat various illnesses by the traditional healers of the Mappillaiyurani village

and this report was in agreement with other botanical researchers.[24,25] The collection of leaves is higher, it does not pose a great danger to the existence of an individual plant and is easily accessible as compared to the other parts especially underground plant parts like tuber, roots and rhizome. The collection of underground plant parts and the whole plant is a critical result both ecological as well as survival point of view of the species[26] and they are active in photosynthesis and production of metabolites.[27] Leaves remain green and available in plenty for most months of the year. Fresh plant parts were commonly used for medicine preparation. When fresh plant parts are not available, dried parts are also used.

Indigenous knowledge of the traditional healers on medicinal flora in Mappillaiyurani village remains intact despite modernization and progression. The results of the present study provide evidence that medicinal plants continue to play an important role in their healthcare system.

## CONCLUSION

Presently, developing nations, such as India, have an imperative need to systematically document the traditional knowledge on the use of medicinal plants in all communities, many of which are still largely unexplored. Such documentation is necessary because older people are the only custodians of such information and the fast disappearance of traditional cultures and natural resources arising from urbanization and industrialization of such areas suggest that unrecorded information may be lost forever. Documentation of plant materials used in traditional medicine could well benefit general health care. Such medicinal plants could be incorporated into primary health care, as people generally feel safer with indigenous cures and also the costs of medicine would be much lesser than modern drugs.

## ACKNOWLEDGEMENT

We wish to express our heartfelt thanks to all the traditional healers of the study region during the data collection. We also extend our acknowledgements to all those who contributed to the realization of this work.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

## ABBREVIATIONS

**PG:** Post Graduate; **WHO:** World Health Organization.

## SUMMARY

In the present study, indigenous knowledge of medicinal flora utilized by the traditional healers of Mappillaiyurani village, Tuticorin district, Tami Nadu, were documented. A total of 42 medicinal plant species from 26 families were documented. Respiratory diseases are the most common diseases reported by traditional healers in the study area.

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**Cite this article:** Girija M, Priyadharshana M, Smitha V, Badhsheeba AM, Vadivel V. Indigenous Knowledge on Medicinal Flora Utilized by the Traditional Healers in Mappillaiyurani Village, Tuticorin District, Tamil Nadu, India. Asian J Biol Life Sci. 2021;10(3):656-61.