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Ethno-botanical Examination of Medicinal Plants Diversity in Molamalai, Karur District, Tamil Nadu

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Abstract

Objective: The ethno-botanical assessment aims to explore and gather the medicinally aromatic foliages used by local traditional healers at Molamalai Hill, Karur district of Tamil Nadu, India. **Materials and Methods:** With the assist of medicine-men, elderly people and local traditional healers, the field investigation was conceded out through semi-structured interviews. The knowledge on potent plants and their local names, parts of the plant used in the preparation of medicine and mode of administration on a variety of diseases were recognized. **Results:** The survey has explored a total of 81 vital angiospermic medicinally aromatic plants belonging to 37 families. Analysis of surveyed plants showed that a greater number of dicotyledons (79 species) belong to a variety of families and 2 monocotyledons belong to Liliaceae and Commelinaceae. Within the dicotyledons, polypetalous shows 37 species, gamopetalous shows 30 species and 12 are monochlamydeae. The majority of the families were represented by Fabaceae and Convolvulaceae (8 species). The 81 diverse ethnic medicinal plants are used to treat skin illness, rheumatism, diabetes, diarrhoea, indigestion, and gonorrhoea. **Conclusion:** The cram suggested that the present information on the aromatic medicinal use of plants may be helpful for botanical and pharmacological research in the future for the discovery of novel sources of drugs.

Keywords: Ethno-botany, Karur Medicinal Plants, Molamalai Hill

1. Introduction

The world of plants and even entirely natural resources is a virtually unexploited reservoir of novel drugs. The presence of bioactive compounds has been systematically studied from 5-15% of superior plant species. There is a dire need to broaden nature exploration as a basis of novel dynamic agents that may serve as the leads and scaffolds for the enlargement of effective drugs that are desperately needed for multiple indications of illness. Nature is the prime source of new active chemotypes for the development of effective medicines. A large portion of nature is yet to be explored, and many new bioactive chemotypes are expected to be discovered from both terrestrial and marine sources[1]. Traditional medicinal plants in several developing countries are still the mainstay of health care as defined by World Health Organization[2].

World's population especially three-quarters depends primarily on plants and plant extracts for wellbeing. More than 30% of all plant species at one time or another has been used for medicinal purposes (National Health Portal)[3]. Therefore, the documentation of plants as a resource of medicine has become further imperative in the context of the current world trade scenario, where the expenditure of allopathic medicinal products may be out to reach of the common man. In such time, it is highly needed that more folklore of our indigenous knowledge of medicine should be explored and the availability of such plants is surveyed in each quarter of the state. The hopeful and growth-friendly environmental system like

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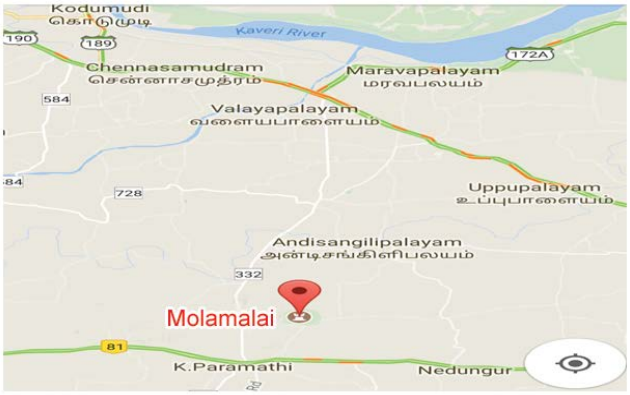
propagation and conservation of these plant species must be determined to plan for the future. Hence, the valuable groups of plants are threatened with extinction, because of overexploitation and habitat destruction. With the above background, the present examination was carried out in Molamalai hill, Karur district, to make people aware of the potential of medicinal plants from all angles, so that these life-saving plants can be protected from destruction.

2. Materials and Methods

2.1 The Portrayal of the Study Area

Molamalai is a segment of the Western Ghats of Tamil Nadu. It is situated at Pallapatti, 250 km away from Erode district and comes under Aravakurichi taluk in Karur district (Map 1). The hill stands at a height of 300 m above MSL. Its terrain condition is characterized by undulating regions intersected with small furrows and steep rocks. The total area of the hill is about 400 hectares. The temperature of the hill remains pleasant though it experienced dryness in the summer months. The study area has an average annual temperature of 29°C. The hill received northeast and southwest monsoon with the mean annual rainfall of 110mm due to failure of monsoon. The population of the surrounding hill area is approximately 1500 males and females (Plate 1).



Map 1. Showing the location of the study area

Plate 1. Panoramic view of Molamalai Hill sector - east view Interview with local people.

2.2 Anthology and Substantiation of Therapeutic Plants

The field survey was conducted in December. The information collected on plant species was mainly gathered through semi-structured interviews with the help of medicine-men, elderly people and traditional local healers. The information on plants and their local names, plant parts used in the preparation of drugs and mode of administration in a variety of diseases was recognized in the field investigation and confirmed by cross-referencing with the existing literature. The collected plants were identified with the assist of existing Floras viz., Flora of the Presidency of Madras[4] and Matthew[5] and the identity were authenticated with type specimens available in the herbarium of Botanical Survey of India, Southern Circle, TNAU Campus, Coimbatore, Tamil Nadu. According to Bentham and Hooker's[6] system of classification, the plants were enumerated orderly.

3. Results and Discussion

The present study has documented a total of 81 angiospermic therapeutic plants curing a mixture of human ailments. Among the 81 angiosperms, 79 species are dicotyledons and 2 monocotyledons. Within the Dicotyledons, 37 species are Polypetalae, 30 species are Gamopetalae and 12 species are Monochlamydeae. The family-wise analysis revealed the presence of more species in the Fabaceae (8 species) family followed by Mimosaceae (5 species), Caesalpiniaceae, Compositae, Amaranthaceae, Euphorbiaceae (4 species), Verbenaceae, Lamiaceae (3 species), Menispermaceae, Capparidaceae, Malvaceae, Meliaceae, Rhamnaceae, Sapindaceae, Salvadoraceae, Apocynaceae, Asclepiadaceae, Boraginaceae, Pedaliaceae and Moraceae (2 species). The remaining families are represented by a single species. Status wise analysis indicated that 53 plants are presently safe, 1 plant is in the threatened state, 27 plants are in the sporadic state and 9 species under presently safe, 6 species under sporadic status are cultivated.

Habit-wise analysis (Figure 1) showed the predominance of herbs (33.33%) followed by trees (28.39%), climbers, creepers and twinners (23.45%) and shrubs (14.81%). The part wise use analysis (Figure 2)

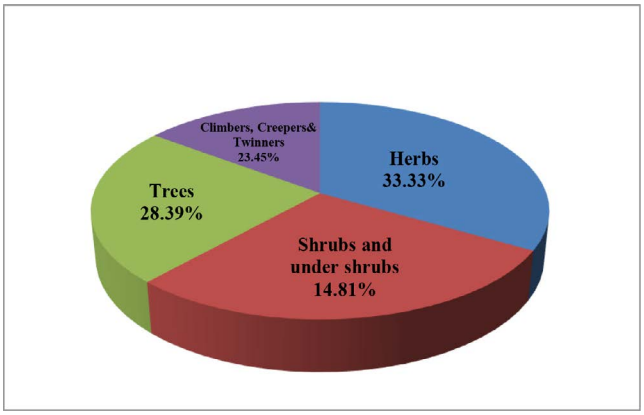


Figure 1. Habit Wise Analysis of Medicinal Plants.

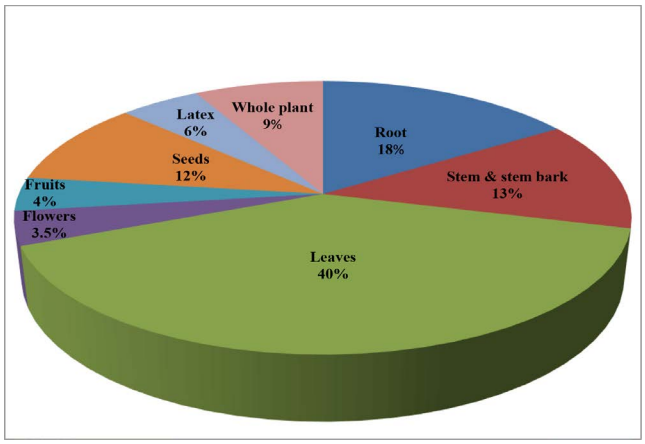


Figure 2. Part Wise Analysis of Medicinal Plants.

Table 1. Enumeration of medicinal plants

S.No.	Binomial / Status	Common / Local name	Family	Habit	Parts / Medicinal uses	Active Principles
1	***Tinospora cordifolia*** Miers. S	Seendil kodi	Menispermaceae	Climber	**Whole plant** - Digestive, anti-inflammatory	Alkaloids, phytosterol & glycosides
2	***Cocculus hirsutus*** Diels. PS	Kattukodi	Menispermaceae	Climber	**Leaf** - Diuretic, laxative, stomach-ache **Root** - Weight loss, fever	Alkaloids
3	***Capparis sepiaria*** Linn. PS	Curai	Capparidaceae	Shrub	**Leaf** - Ulcer, diarrhoea **Root** - Cancer, stomach complaints, wounds	Flavonoids and phenols
4	***Cretaeva religiosa*** Forst.	Mavilankai	Capparidaceae	Tree	**Stem bark** - Joint pains	Triterpenes
5	***Polycarpaea corymbosa*** Lam. PS	Nilaisedachi	Caryophyllaceae	Herb	**Leaf** - Jaundice, astringent	Triterpene and saponins
6	***Abutilon indicum*** G. Don. PS	Thuthi	Malvaceae	Shrub	**Leaf** - Laxative, diuretic, sedative, astringent, piles	Triterpene, phenols and steroids

7	***Pavonia zeylanica*** Cav. PS	Mammati	Malvaceae	Undershrub	**Whole plant** - Skin diseases. **Root** - Piles, constipation, rheumatism	Tannins
8	***Aegle marmelos*** Corr. S/C	Vilvam	Rutaceae	Tree	**Fruit** - Dysentery, ulcer, respiratory disorders, astringent	Phenols
9	***Ailanthus excelsa*** Roxb. S/C	Perumaram	Simarubaceae	Tree	**Bark** - Fever	Triterpenes
10	***Azadirachta indica*** A. Juss. PS/C	Veppai	Meliaceae	Tree	**Bark and Leaf** - Fever, skin diseases	Nimbidine and nimbine
11	***Melia azedarach*** Linn. S	Kattu vembhu	Meliaceae	Tree	**Leaves and Seeds** - Piles, skin disease	Phenols
12	***Zizyphus jujube*** Lam. PS	Arulatotiyam	Rhamnaceae	Tree	**Fruits & Seeds** - Gastrointestinal disorders	Flavonoids and triterpene
13	***Zizyphus rugosa*** Lam. PS	Totari	Rhamnaceae	Tree	**Leaf** - Menorrhagia **Bark** - Toothaches,swollens	Alkaloids
14	***Cissus quadrangularis*** Linn. PS/C	Pirantai	Vitaceae	Climber	**Stem** - Bone fractures	Triterpene
15	***Cardiospermum canescens*** Wall. S	Kattu mudakkathan	Sapindaceae	Twinner	**Leaf** - Body pain, rheumatism	Phenols and flavonoids
16	***Cardiospermum halicacabum*** Linn. PS	Mutakkorran	Sapindaceae	Twinner	**Leaf** - Anemia, asthma, joint pain, eye diseases, fracture, inflammation	Phenols
17	***Odina wodier*** Roxb. PS	Oti	Anacardiaceae	Tree	**Bark** - Gout, rheumatism, heart diseases, ulcer	Tannins
18	***Crotalaria ovalifolia*** Wall. PS	Tharakodi	Fabaceae	Creeper	**Leaf** - Diabetes, leprosy, scabies, fever	Alkaloids
19	***Tephrosia purpurea*** Pers. PS/C	Kolinchi	Fabaceae	Herb	**Root & Bark** - Relieve stomach pain, upsets	Flavonoids
20	***Clitoria ternatea*** Linn. PS/C	Kannikkodi	Fabaceae	Climber	**Root** - Thyroid disorders, antiulcer, cough	Tannins, saponins, triterpenoids and alkaloids
21	***Crotalaria medicaginea*** Lam. S	Sempoo	Fabaceae	Herb	**Leaf**- Skin problems, stomach disorders	Alkaloids
22	***Vigna trilobatus*** Ait. PS	Naripayaru	Fabaceae	Climber	**Leaf & seeds**- Skin infection **Root** - Antidote, chestpain, epilepsy	Tannins
23	***Indigofera enneaphylla*** Linn. PS	Ciru-nerunci	Fabaceae	Herb	**Seeds** - Scorpion bites, ovarian cancer	Alkaloids
24	***Indigofera trita*** L.f. PS	Punal-murunkai	Fabaceae	Herb	**Leaf** - Rheumatism, inflammation, liver diseases	Phenols and alkaloids
25	***Pongamia glabra*** Vent. PS/C	Punkai	Fabaceae	Tree	**Leaf** - Arthritis, wounds, skin diseases **Root** - sinus ulcer **Flower** - Diabetes	Phenols and flavonoids
26	***Cassia auriculata*** Linn. PS/C	Avaram	Caesalpiniaceae	Shrub	**Leaf** - Skin diseases	Phenols

27	***Delonix elata*** Gamb. PS	Vadanarayanan	Caesalpiniaceae	Tree	**Leaf** - Anti-inflammatory **Root** - Abdominal pains	Flavonoids
28	***Cassia angustifolia*** Vahl. S	Alakalampokki	Caesalpiniaceae	Shrub	**Leaf** - Weight loss, diuretic, laxative	Saponins and glycosides
29	***Cassia hirsuta*** Linn. S	Malaiyavarai	Caesalpiniaceae	Herb	**Leaf** - Skin diseases	Phenols
30	***Albizzia amara*** Boiv. PS	Arappu	Mimosaceae	Tree	**Leaf and Flowers** - Boils, ulcer, erysipelas, relieve dandruff	Tannins, saponins and glycosides
31	***Leucaena leucocephala*** Linn. PS	Savundal maram	Mimosaceae	Tree	**Root and Bark** - Abortifacient **Seeds** - Emollient	Flavonoids
32	***Albizzia lebbeck*** Benth. PS	Vagai	Mimosaceae	Tree	**Leaf** - Night blindness **Bark and Seeds** - astringent	Flavonoids, tannins and saponins
33	***Acacia nilotica*** Linn. PS	Karuvelai	Mimosaceae	Tree	**Leaf** - Diarrhoea, eye problems **Bark** - Strengthens teeth	Tannins and phenol
34	***Acacia planifrons*** W. & A. PS	Kodaivelam	Mimosaceae	Tree	**Fruit** - Ulcer, diarrhoea	Tannins
35	***Psidium guajava*** Linn. PS/C	Guava	Myrtaceae	Tree	**Leaf** - Wounds, ulcer, diarrhoea, anti-inflammatory, anti-spasmodic	Triterpenoid
36	***Coccinia indica*** W. and A. PS	Kovakkai	Cucurbitaceae	Climber	**Whole plant Extract** - kidney problems	Saponins, flavonoids and alkaloids
37	***Trianthema portulacastrum*** L. S	Sharunnai	Aizoaceae	Creeper	**Leaf** - Inflammation, analgesic, diuretic	Alkaloids and tetraterpenoid
38	***Vernonia cinerea*** Less. PS	Puvamkuruntal	Compositae	Herb	**Whole plant** - Astringent, stomachic, febrifuge **Seeds** - anthelmintic	Alkaloids and triterpenoid
39	***Acanthospermum hispidum*** D.C. S	Kombumul	Compositae	Herb	**Leaf** - Fever, skin disease	Tannins, flavonoids, alkaloids and triterpenes
40	***Vicoa indica*** Dc. S	Jimikkipoo	Compositae	Herb	**Leaf decoction** - Stomach upset & dysentery	Flavonoids, tannins, alkaloids and phenols
41	***Salvadora persica*** Linn. S	Peru-vila	Salvadoraceae	Shrub	**Whole plant** - Antiplaque, cytotoxic, heart disease, gum disease, rheumatism	Alkaloids
42	***Azima tetracantha*** Lam. S/C	Changan-chedi	Salvadoraceae	Undershrub	**Leaf** - Antioxidant, expectorant, rheumatism **Bark** - Snake bite, uterine tonic	Alkaloids, terpenes and phenols
43	***Vinca rosea*** L. S/C	Nithya Kalyani	Apocyanaceae	Herb	**Leaf and Stem** - Cancer, leukemia, toothache, mouth ulcer **Flower** - Nose bleeds	Alkaloids, vinblastine and vincristine

44	***Wrightia tinctoria*** R. Br. PS	Paalai	Apocyanaceae	Tree	**Seeds and Root** - Anti dysentery, snakebite	Alkaloids, flavonoids, tannins and phenols
45	***Pergularia extensa*** N. E. Br. PS	Veliparutthi	Asclepiadaceae	Twinner	**Leaf and Root** - headache, joint pain	Alkaloids, triterpenes & saponins
46	***Calotropis procera*** R.Br. PS	Vellai erukku	Asclepiadaceae	Shrub	**Milky latex** - Applied on the wounds	Glycosides and flavonoids
47	***Ehretia pubscens*** Benth. T	Pakkupattai	Boraginaceae	Tree	**Leaf** - Diarrhoea, tooth ache	Phenols
48	***Trichodesma indica*** R.Br. PS	Kallutaitumapi	Boraginaceae	Herb	**Leaf** - Diarrhoea, dyspepsia, skin diseases **Root** - Anti - inflammatory	Flavonoids, alkaloids and phenols
49	***Ipomaea staphylina*** R. and S. S	Onaankodi	Convolvulaceae	Climber	**Root** - Laxative, diuretic, blood purifier	Alkaloids, phenols and glycolipids
50	***Ipomaea wrightii*** Choisy. S	Wright's morning glory	Convolvulaceae	Climber	**Leaf** - Diabetes, dysentery, rheumatism, kidney ailments	Alkaloids
51	***Ipomaea obscura*** K.Gawl. PS	Siruthali	Convolvulaceae	Twinner	**Root and leaf** - Dysentery, aphthae	Tannins and phenols
52	***Merremia pentaphylla*** Linn. PS	Mochukkodi	Convolvulaceae	Climber	**Whole plant** - Blood purifier, cancer	Alkaloids, tannins and carbohydrates
53	***Merremia tridentata*** Hall.f. PS	Savirykodi	Convolvulaceae	Creeper	**Leaf** - Cough, fever. **Root** - Toothache, anti-inflammatory	Flavonoids, terpenes and alkaloids
54	***Evolvulus alsinoides*** Linn. PS	Vishnukranthi	Convolvulaceae	Herb	**Whole plant** - Fever	Flavonoid and alkaloids
55	***Rivea hypocraterifor-mis*** Choisy. S	Musuttai	Convolvulaceae	Climber	**Aerial parts** - Antioxidant	Tannin, alkaloids, flavonoids and carbohydrates
56	***Ipomaea indica*** Merr. S	Blue morning glory	Convolvulaceae	Climber	**Leaf** - Fatigue, meningitis, anti-coagulant	Flavonoid
57	***Datura metel*** Linn. PS	Umathai	Solanaceae	Herb	**Leaf and Seed** - Anti- asthmatic, hypnotic, narcotic, antispasmodic	Alkaloids
58	***Priva leptostachya*** Juss. PS	Bellia ottai	Scrophulariaceae	Herb	**Root** - Antioxidant, anti-inflammatory	Phenols, terpenoids and alkaloids
59	***Pedalium murex*** Linn. S	Peru-nerunci	Pedaliaceae	Herb	**Whole plant** - Anti -inflammatory, sedative, digestive	Alkaloids, tannins, flavonoids and phenols
60	***Sesamum alatum*** Thonn. S	Ellu	Pedaliaceae	Herb	**Leaf** - Promote cattle fertility **Fruit** - oil production, diarrhoea, intestinal disorders	Alkaloids
61	***Andrographis echioides*** Nees. PS	Kopuramtanki	Acanthaceae	Herb	**Leaf** - Hair falling, growth, jaundice	Flavonoids

62	***Vitex negundo*** Linn. PS/C	Nocchi	Verbenaceae	Tree	**Root and seed** - Skin diseases, ringworm, liver disease	Alkaloids and flavonoids
63	***Premna corymbosa*** R. and Willd. S	Pasumunnai	Verbenaceae	Shrub	**Leaf** - Inflammation	Alkaloids and terpenes
64	***Tectona grandis*** Linn. S	Tekku	Verbenaceae	Tree	**Wood** - Digestion disorders	Tannins and phenols
65	***Ocimum canum*** Sims. PS	Naithulasi	Lamiaceae	Herb	**Seed** - Rubifacient, dietary fiber, anti - microbial agent	Terpenes
66	***Ocimum sanctum*** Linn. PS/C	Tulasi	Lamiaceae	Herb	**Leaf** - Cold, digestive problems, fever, stress, blood sugar, heart problem, skin diseases **Seed oil** - Relieve cancer	Flavonoids
67	***Leucas aspera*** Spr. S	Thumbai	Lamiaceae	Herb	**Leaf –** cough, cold **Leaf juice** - Anti-cobra venom in live stocks	Triterpenoids, alkaloids snf flavonoids
68	***Boerhaavia diffusa*** Linn. S	Sarandai	Nyctaginaceae	Herb	**Whole plant** - Cancer, kidney, diabetes, nervous disease, paralysis	Triterpenoids, alkaloids and flavonoids
69	***Aerva lanata*** Juss. PS	Poolapoo	Amarantaceae	Herb	**Flower** - Kidney problems, toothache, head ache	Flavonoids
70	***Aerva tomentosa*** Forsk. PS	Periya-pulai	Amarantaceae	Herb	**Flower** - Kidney problems, toothache, head ache	Flavonoids and alkaloids
71	***Digera arvensis*** Forsk. PS/C	Toyya-k-kirai	Amarantaceae	Herb	**Seed** - Urinary disorders	Terpenoid and alkaloids
72	***Achyranthes aspera*** Linn. PS	Nayurii	Amarantaceae	Herb	**Leaf** - Asthma, malaria, cough, skin rash, snake bite, analgesic **Root** - Cold, relieve body pain, astringent to wounds	Alkaloids, tannins and saponins
73	***Aristolochia bracteata*** Retz. S	Aduthinnarppalai	Aristolochiaceae	Climber	**Leaf** - Wound healing	Alkaloids
74	***Croton bonplandianum*** PS	Reilpoondu	Euphorbiaceae	Herb	**Leaf** -Asthma, bronchitis, scabies, headache **Latex** - Laxative	Diterpenoids, tannins and phenols
75	***Cicca distica*** Linn. S/C	Sirunelli	Euphorbiaceae	Tree	**Fruit and Leaf** - Liver tonic, cancer, asthma, sudorific	Tannins and saponin
76	***Fluggea leucopyrus*** Willd. PS	Mulluppulatti	Euphorbiaceae	Shrub	**Leaf –** Boils wounds	Tannins and Alkaloids
77	***Euphorbia tirucalli*** Linn. PS	Tirukukalli	Euphorbiaceae	Shrub	**Latex** - Syphilis, sarcoma, skin tumours, rheumatism	Latex and alkaloids
78	***Ficus religiosa*** Linn. PS	Arasamaram	Moraceae	Tree	**Leaf, Latex and Bark** - Dysentery, diarrhoea, healing warts, cooling agent, gonorrheoa	Tannins, saponins, flavonoids and glycosides
79	***Ficus bengalensis*** Linn. PS	Banyan tree, Alamaram	Moraceae	Tree	**Leaf and Latex** - Chronic diarrhoea, relieving effect on lumbago	Terpenoids, tannin and glycosides

80	***Aloe vera*** Linn. S/C	Katrazhai	Liliaceae	Shrub	**Latex** - Skin burn, anti-cancer	Gum, resin, saponins and phenol
81	***Commelina bengha-lensis*** Linn. PS	kanan valai	Commelinaceae	Herb	**Leaf** - Wounds, boils acne, prickly heat and fever	Phenols, flavonoids, tannins and alkaloids
Abbreviation:			T-Threatened			
S-Sporadic; PS-Presently safe; C-Cultivated;						

recorded a maximum number of leaves (40%) followed by root and root bark (16%), stem and stem bark (13%), seeds (10.5%), whole plant (8%), latex (5%), fruits (4%) and flowers (3.5 %). This is following the results of[7]. The 81 different medicinal plants are used to treat skin diseases, rheumatism, diabetes, diarrhoea, dysentery, jaundice, thyroid disorder, liver and cardiac diseases, throat infection, respiratory diseases, fever, bone fractures, gastrointestinal disorders, ovarian cancer, neuromuscular pain, ulcer, wounds, brain tumors, hypertension, metabolic syndrome, plaque, leprosy, spasm, scurvy, sarcoma and kidney problems (Table 1). Similar findings were noted and recorded by[8–10].

4. Conclusion

The study depicts that the local people prefer traditional medicine due to their socio-economical status, low traditional beliefs, concepts, knowledge and practices among them for preventing and curing diseases are accessible till now. However, they rely on traditional health care systems and the need for immediate documentation of this knowledge and preserving these valuable plants to ensure their continued existence for our future generation. Hence, the present study was carried out to examine the intensity of therapeutic plants in Molamalai. Most of the recorded plants have no or less harmful effects on the human body. Plant species have enormous medicinal potentialities and can be studied using various methods of clinical trials and pharmacological studies in the future. Therefore, documenting traditional knowledge is the only way to preserve the knowledge base for conserving plant resources endemic to this region. This information may be used for adopting the proper healthcare measures by the policymakers and may provide a lead in the development of new drugs.

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