

Ethnomedicinal plants survey in Kurunthamalai Hill, Coimbatore District, Tamil Nadu, India

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Abstract. An ethnomedicinal plants survey was carried out in Kurunthamalai Hill, Metuppalayam Taluk, Coimbatore District, Tamil Nadu, India. Plants are the significant source of therapeutic drugs. It plays important role in human's survival. In India above 3,000 plants for their medicinal value, is generally estimated that over 6,000 plants in India are in use in traditional, folk and herbal medicine, representing about 75% of the medicinal needs of the Third World countries. The present study investigated that 70 plants belonging to 39 families. In these families leguminosae held the dominant position.

Keywords: Survey; Medicinal plants; Kurunthamalai Hill; Therapeutic use.

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Introduction

Medicinal plants are played an important role, to treating various diseases throughout the world. India possesses almost 8% of the estimated biodiversity of the world with around 1,260,000 species. This is because of its varied geographical and climatic conditions. A vast knowledge of how to use the plants against different illness may be expected to have accumulated in areas of where the use of the plant is still of great importance. The plants used in ethno medicine contain a wide range of substances that can be used to treat chronic as well infectious diseases.

Ethnomedicinal practices are preferred largely because medicinal plants are less expensive, readily available and reliable and they are considered to have fewer side effects than modern medicines. Medicinal plants are the wealthy bio-resources of drugs of traditional medicinal systems, modern medicines, nutraceuticals, food supplements and folk medicines, pharmaceuticals, intermediate and chemical entitled for synthetic drugs (Abraham, 1981). As per our knowledge there is no reports in this study area.

Materials and methods

Study area

Kurunthamalai hill situated in geographical position of 15° 41' N Longitude and 73° 56' E Latitude in Kurunthamalai small village in Metuppalayam Taluk, Coimbatore District of Tamil Nadu. It comes under Metuppalayam forest range. It is located 24 km from the City of Coimbatore and 4 km from Karamadai. In This village is 15 km from the Western Ghats of Tamil Nadu. It has a highest elevation of hill is 375 m above MSL. The forest type of this region is dry deciduous or scrub jungle. Annual rainfall is around 450 mm and temperature in a year is varying between 18 °C and 38 °C. The soil is look like shallow with sandy loam and Red soil. The plant population was not static which changed according to the climate and the rainfall. The important crops which are cultivated like cotton and coriander leaves.

Collection and identification of medicinal plants

The present study was performed by 16 field surveys during the period of May 2018 to February 2019. The plant materials with flower and fruits were photographed and collected for further study. Collected plants are pressed with the help of a wooden press. After drying, the plant specimens are mounted on herbarium sheet with the help of glue and stitched with threads. The specimens are treated with 2% mercuric chloride solution to avoid Fungus and insect attacks. Prepared herbarium deposited at the department of Botany, PSG College of Arts and Science, Coimbatore. The collected plant specimens are taxonomically identified with the help of following floras, Flora of the Presidency of Madras (Gamble, 1935), Flora of Coimbatore (Chandra Bose and Nair, 1987), Flora of Tamil Nadu (Nair and Henry, 1983). The plants were enumerated following the Natural system of Classification of Bentham & Hooker with binomial, local name, description of the plant and uses.

Result and discussion

The variability in altitude, climate, and rainfall has contributed to the rich floristic diversity of this region which can rightly be called a treasure house of medicinal plants. The soil is of sandy loam type with approximately neutral pH. The soil is in fact the very hearts of the life layer known as the biosphere because it represents a zone, where in plant materials are produced, held, maintained and are available to plants through their roots and the soil is a natural body of vegetation, mineral and organic constituents as reported by Joffe (1949).

Some important medicinal plants in Kurunthamalai Hill

In the Present survey reported that a total of 70 plants (Figure 1) belonging to 39 families, from those families Leguminosae held the dominant position. Almost all parts of the plant from subterranean roots to flowers at top are used to treat various human ailments. Part wise analysis of the drug indicates the dominance of leaf as a source of drug followed by stems and stem barks, roots and root barks, fruits, seeds, flowers and bulbs.

1. *Cocculus hirsutus* (L.) Diels. The leaf is used to treat polyuria, eczema, dysuria, abdominal disorders.
2. *Cissampelos pareira* L. Fever, Skin diseases, Piles, Diarrhea, Dyspnea, Rheumatism.
3. *Michelia champaca* L. Flower oil is used to cure rheumatism, ophthalmia and Headache.
4. *Cleome viscosa* L. Leaf juice is used for Earache and eye troubles.
5. *Capparis divaricata* Lam. antirheumatic, tonic, expectorant, antispasmodic and analgesic agents.
6. *Hybanthus enneaspermus* (L.) F. Muell. Entire plant is shade dried, powdered and administered with honey for Immunity.
7. *Malvastrum cromandelicum* (L.) Garcke. used as an anti-inflammatory, analgesic, and anti-dysenteric.
8. *Pavonia odorata* Willd. Anti-inflammatory.
9. *Thespesia populnea* (L.) Sol. ex Correa. Treatment of fracture wounds, ulcers and boils.
10. *Hugonia mystax* Linn. Roots were used as anthelmintic, astringent.
11. *Tribulus terrestris* L. Urinary disorders, Diabetes, Piles, Heart diseases.
12. *Aegle marmelos* (L.) Correa. Diarrhea, Dysentery, Emesis, Insomnia.
13. *Pleiospermium alatum* (Wight & Arm.) Swingle. Cure rheumatic pain.
14. *Simaruba galuca* DC. Anthelmintic, Antidysenteric and Antihypertic action.
15. *Ziziphus glabrata* Heyne ex Roth. Used to treat inflammation, to relieve pain, convulsions and viral infections.
16. *Dodonaea viscosa* (L.) Jacq. Leaf juice is used for Earache and eye troubles.
17. *Mangifera indica* L. Diarrhea, vomiting, diabetes and uterine bleeding.
18. *Indigofera linnaei* Ali. Antitumor and cytotoxic activities.
19. *Abrus precatorius* L. Leprosy, Skin diseases, Intestinal parasite, Worms.
20. *Vigna trilobata* L. Leaves & fruits are used to cure fever.
21. *Albizia amara* (Roxb.) Boiv. The leaves and flowers have been applied to boils, burns, eruptions.
22. *Caesalpinia pulcherrima* Swartz. Anti-inflammatory and Antibacterial activity.
23. *Cassia absus* Linn. Eye diseases, Anti poisonous, Cure Ulcers.
24. *Coccinia grandis* (L.) Voigt. Diabetes, Stomatitis, Dyspnea, Cough, Jaundice.
25. *Spermacoce ocymoides* Burn.f. Leaf is used as cure the diabetes mellitus.
26. *Catunaregam spinosa* (Thumb.) Tirveng. Inflammations, ulcers, wounds and tumors.
27. *Vernonia cinerea* Less. Intermittent fever, Malaria, Skin eruptions.
28. *Ageratum conyzoides* Linn. Leaf paste used for Headache.
29. *Chromolaena odorata* (L.) King & Robins. Leaves and stem is used for skin diseases.
30. *Plumbago zeylanica* L. Skin diseases, Intestinal parasite, Piles and Cancer.
31. *Mimusops elengi* L. The bark is used for high fever.
32. *Diospyros montana* Roxb. Leaves decoction used treat boils.
33. *Jasminum auriculatum* Vahl. Leaves are taken to oral ulcer.
34. *Rouwolfia tetraphylla* L. Root is used to treat muscular and rheumatism pain.
35. *Catharanthus roseus* (L.) G. Don. Used for the treatment of diabetes, fever, malaria, throat infections.
36. *Tabernaemontana divaricata* (L.) R.Br. ex Roem. & Schult. The flower juice can be mixed with oil and used as eye drops.
37. *Thevetia peruviana* (Pers.) K. Schum. Heart diseases, Urinary disorders.
38. *Wrightia tinctoria* R.Br. Leaves is directly applied on inflammation.
39. *Cryptolepis grandiflora* Wight. Leaf decoction cure gastrointestinal disorders.

40. *Caralluma umbellata* Haw. It cures Ulcer.
41. *Pergularia daemia* (Forrsk). Chiov. Used as anthelmintic, laxative, antipyretic, expectorant.
42. *Trichodesma indicum* (L.) Lehm. Leaves and rhizome are used to heal wounds.
43. *Evolvulus alsinoides* (L.) Brain tonic, Epilepsy and Insomnia.
44. *Ipomea obscura* (L.) Ker Gawl. Leaves are used for ulcer.
45. *Ipomea pes-tigridis* L. Leaves are used for dog bite and in boils.
46. *Tecoma stans* (L.) Juss. ex Kunth. The roots are used as a powerful diuretic, vermifuge and tonic.
47. *Pedaliium murex* L. Leaves are used for reduce itching.
48. *Martynia annua* L. Leaves used for scorpion sting.
49. *Dicliptera paniculata* (Forssk.) I. Darbysh. Leucorrhoea, Tuberculosis and Wounds.
50. *Blepharis maderaspatensis* (L.) B. Heyne ex Roth. Leaf juice with lime juice mixed and applying for cure cuts.
51. *Andrographis echiioides* (L.) Nees. Cures malarial and fungal disorders.
52. *Barleria prionitis* Linn. Nervous disorders, Anti poisonous and Uterine Tonic.
53. *Barleria buxifolia* L. Roots and leaves paste cure to stomach ache.
54. *Lantana camera* L. Leaves has been used as an antitumor, antibacterial and antihypertensive agent.
55. *Priva cordifolia* (L.f.) Druce. Act as mosquito repellent.
56. *Ocimum filamentosum* Forssk. Leaves is used for Gout.
57. *Orthosiphon thymiflorus* (Roth), Sleensen. Used for asthma, hepatitis, liver injury and immune deficiency diseases.
58. *Anisochilus carnosus* (L.f.) Wall. Antimicrobial activity.
59. *Hyptis suaveolens* Poit. Antimicrobial activity and Anti-fungal activity.
60. *Anisomeles malabarica* R.Br., Leaf juice is used for cough and Fever.
61. *Boerhavia diffusa* (L.) Rottb. Swelling, Tonic, Urinary disorders and Uterine bleeding.
62. *Aerva tomentosa* Forsk. Plant used against snake bites, breast cancer and rheumatism.
63. *Aristolochia indica* L. Cure snake bites.
64. *Santalum album* L. Antiseptic, antipyretic, expectorant and diuretic.
65. *Holoptelea integrifolia* Planch. Leaf juice applied for hair loss area.
66. *Ficus benghalensis* L. Leaves, fruits and latex are used in diabetes, dysentery and ulcers.
67. *Euphorbia heterophylla* L. Stomach problems and to treat dysentery.
68. *Phyllanthus maderaspatensis* L. Plant extracts have shown anti-hepatotoxic, hepatoprotective, and choleric activities.
69. *Commelina benghalensis* L. Leaf is used for scorpion and fleabites.
70. *Kyllinga triceps* Rottb. Decoction of roots is used in diabetes and to relieve thirst in fevers.

Conservation status of the plants

In this study, collected plant species were compared with IUCN Red List in order to identify their status (Table 1). Conservation status of the listed medicinal plants at local level was measured following the IUCN Red List Categories and Criteria.

Table 1. IUCN red listed medicinal plants recorded in study area.

	Plant name	Family	Ret status	Reference
1	<i>Aegle marmelos</i> (L.) Correa.	Rutaceae	Vulnerable	Divya et al., 2018
2	<i>Andrographis echioides</i> (L.) Nees.	Acanthaceae	Rare in Maruthamalai	Subbaiyan et al., 2014; Aadhan and Anand, 2017
3	<i>Anisochilus carnosus</i> (L.f.) Wall.	Lamiaceae	Vulnerable in Pudukkottai	Narayanaswamy 2015
4	<i>Aristolochia indica</i> L.	Aristolochiaceae	Rare in Sadhuragiri Hills	Aadhan and Anand, 2017
5	<i>Barleria buxifolia</i> L.	Acanthaceae	Endemic to Peninsular India	Kumar et al, 2012
6	<i>Barleria prionitis</i> L.	Acanthaceae	Least concern	Moe, 2012
7	<i>Caralluma umbellata</i> Haw.	Asclepidaceae	Endangered	Moe, 2012
	<i>Catunaregam spinosa</i> (Thumb.) Tirveng.	Rubiaceae	Least concern	Moe, 2012
8	<i>Cissampelos pareira</i> L.	Menispermaceae	Least concern in Sri Lanka	Moe, 2012
9	<i>Cocculus hirsutus</i> (L.) Diels	Menispermaceae	Endangered	Moe, 2012
10	<i>Diospyrous montana</i> Roxb.	Ebenaceae	Near Threatened in Sri Lanka	Moe, 2012
11	<i>Dodonaea viscosa</i> (L.) Jacq.	Sapindaceae	Least concern in Pudukkottai.	Narayanaswamy, 2015
12	<i>Evolvulus alsinoides</i> L.	Convolvulaceae	Vulnerable	Murugeswaran et al., 2014
13	<i>Holoptelea integrifolia</i> Planch.	Ulmaceae	Endangered in Karnataka	Khan and Hussain, 2013
14	<i>Hugonia mystax</i> Linn.	Linaceae	Least concern	Moe, 2012
15	<i>Hybanthus enneaspermus</i> (L.) F. Muell.	Violaceae	Rare	Priya et al., 2011
16	<i>Ipomoea obscura</i> (L.) Ker Gawl.	Convolvulaceae	Least concern	Moe, 2012
17	<i>Martynia annua</i> L.	Pedaliaceae	Least Concern Pudukkottai	Narayanaswamy, 2015.
18	<i>Orthosiphon thymiflorus</i> (Roth), Sleensen.	Lamiaceae	Near Threatened	MOE, 2012
19	<i>Pavonia odorata</i> Willd.	Malvaceae	Rare to Coimbatore	Chandrabose and Nair, 1987
20	<i>Phyllanthus maderaspatensis</i> L.	Euphorbiaceae	Least concern	MOE, 2012
21	<i>Plumbago zeylanica</i> L.	Plumbaginaceae	Vulnerable in Jawathu hills	Vijaya Sankar et al., 2008
22	<i>Priva cordifolia</i> (L.f.) Druce	Verbinaceae	Endangered	MOE, 2012
23	<i>Santalum album</i> L.	Santalaceae	Near threatened/ Endangered Maruthamalai	Subbaiyan et al., 2014; Aadhan and Anand, 2017
24	<i>Trichodesma indicum</i> (L.) Lehm.	Boraginaceae	Vulnerable	MOE, 2012
25	<i>Vernonia cinerea</i> Less.	Asteraceae	Least concern	MOE, 2012
26	<i>Vigna trilobata</i> L. Verdc.	Fabaceae	Near Threatened	MOE, 2012



1. *Cocculus hirsutus* (L.) Diels



2. *Cissampelos pareira* L.



3. *Michelia champaca* L.



4. *Cleome viscosa* L.



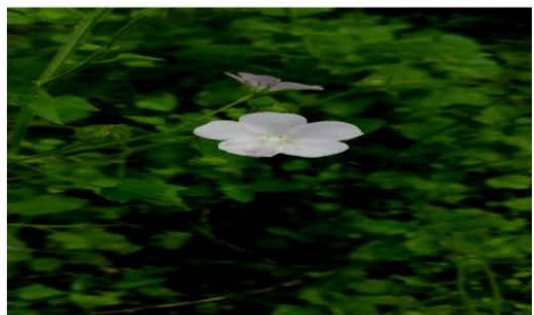
5. *Capparis divaricata* Lam.



6. *Hybanthus enneaspermus* (L.) F.



7. *Malvastrum cromandelicum* (L.) Garcke.



8. *Pavonia odorata* Willd.

Figure 1. Some important medicinal plants in Kurunthamalai Hill.



9. *Thespesia populnea* (L.) Sol. ex Correa.



10. *Hugonia mystax* Linn.



11. *Tribulus terrestris* L.



12. *Aegle marmelos* (L.) Correa.



13. *Pleiospermium alatum* (Wight & Arm.) Swingle



14. *Simaruba galuca* DC.



15. *Ziziphus glabrata* Heyne ex Roth



16. *Dodonaea viscosa* (L.) Jacq.

Figure 1. Continued.



17. *Mangifera indica* L.



18. *Indigofera linnaei* Ali.



19. *Abrus precatorius* L.



20. *Vigna trilobata* L.



21. *Albizia amara* (Roxb.) Boiv.



22. *Caesalpinia pulcherrima* Swartz.



23. *Cassia absus* Linn.



24. *Coccinia grandis* (L.) Voigt.

Figure 1. Continued.



25. *Spermacoce ocymoides* Burn.f.



26. *Catunaregam spinosa* (Thumb.)



27. *Vernonia cinerea* Less.



28. *Ageratum conyzoides* Linn.



29. *Chromolaena odorata* (L.) King & Robins



30. *Plumbago zeylanica* L.



31. *Mimusops elengi* L.



32. *Diospyros montana* Roxb.

Figure 1. Continued.



33. *Jasminum auriculatum* Vahl.



34. *Rouwolfia tetraphylla* L.



35. *Catharanthus roseus* (L.) G. Don



36. *Tabernaemontana divaricata* (L.) R.Br.



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38. *Wrightia tinctoria* R.Br.



39. *Cryptolepis grandiflora* Wight.



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Figure 1. Continued.



49. *Dicliptera paniculata* (Forssk.) I.Darbysh.



50. *Blepharis maderaspatensis* (L.) B. Heyne.



51. *Andrographis echinoides* (L.) Nees.



52. *Barleria prionitis* Linn.



53. *Barleria buxifolia* L.



54. *Lantana camera* L.



55. *Priva cordifolia* (L.f.) Druce



56. *Ocimum filamentosum* Forssk.

Figure 1. Continued.



57. *Orthosiphon thymiflorus* (Roth), Sleensen.



58. *Anisochilus carnosus* (L.f.) Wall.



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60. *Anisomeles malabarica* R.Br.,



61. *Boerhavia diffusa* (L.) Rottb.



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63. *Aristolochia indica* L.



64. *Santalum album* L.

Figure 1. Continued.

65. *Holoptelea integrifolia* Planch.66. *Ficus benghalensis* L. B. Heyne.67. *Euphorbia heterophylla* L.68. *Phyllanthus maderaspatensis* L.69. *Commelina benghalensis* L.70. *Kyllinga triceps* Rottb.**Figure 1.** Continued.

Survey of active principles of plants through the literature confirmed the medicinal uses of plants were used to treat different diseases such as diarrhea, dysentery, headache, inflammation, fever, cold, cough, diabetes, oedema, allergic, rheumatism, chronic bronchitis, piles, Urinary infections, oliguria, hypertension, kidney problems, hoarseness and jaundice, ulcers, wounds tuberculosis, menorrhagia, epistaxis, Kidney and bladder ailments. Habit wise analysis indicates the dominance of herbs followed by trees, shrubs and under shrubs and climbers and twinners. This study found that the whole plants and different parts of the medicinal plants are used as medicine, but the most commonly used plant part was leaves.

Conclusion

Our study reveals that medicinal plants are major source of medicine for the local people living in Kurunthamalai village. Results obtained in this study represents a useful and long lasting information about the medicinal plants, which can contribute to preserve the indigenous knowledge on the use of medicinal plants in this region and also attract the future generations towards the traditional healing practices.

Through this study we found that a great variety of medicinal plants were used by village peoples for the treatment of numerous diseases and ailments but several peoples only have the appropriate knowledge on the plants and their medicinal properties. There are 57 species used for medicinal purposes. Some are *Evolvulus alsinoides* used as brain tonic agent. *Trichodesma indicum*, *Barleria buxifolia*, *Catunaregam spinosa* are used for fever. *Trichodesma indicum* is used cure dysentery.

Bone fracture was cured by *Dicliptera paniculata*. Stomach disorders cured plant namely *Euphorbia heterophylla*, *Barleria buxifolia* and *Cryptolepis grandiflora*. *Pavonia odorata* used as anti-inflammatory agent. *Aristolochia indica* used to cure the snake bite. The present study on Kurunthamalai hill 26 plants comes under IUCN red list category they are least concern (9), vulnerable (5), rare (4), endangered (4), near threatened (4). Therefore, the results of this survey can be included into future conservation of plants.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

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