

Survey of Some Ethno Medicine Used by Tribal Population in Nilgiri Hills, South India

Abubacker MN*, Gurunathan S, Ganapathy G and Prince M

Department of Biotechnology, National College, Tiruchirappalli, Tamil Nadu, India

Abstract

India has richest genetic resources of medicinal plants and indigenous systems of medicine like Ayurveda, Siddha and Unani. However, there is a need to understand ethnomedicinal plants used by tribal populations. Hence, a survey of some ethno medicinal plants used by tribal population in Nilgiri Hills, Tamil Nadu, India was conducted. A total of forty-nine plant species belonging to twenty-nine families are documented in this survey. In this report, six plants from Astraceae, four plants from Lamiaceae, three from Solanaceae and Rutaceae, two each from Scrophulariaceae, Apiaceae, Myrtaceae, Liliaceae and Poaceae are recorded. Common names of the medicinal plants, their parts employed as medicine and their ethnomedicinal uses were documented. The tribal medicines have shown good results and healing properties in treating various symptoms and diseases. Hence, conservation of these medicinal plants is of utmost importance and utilizes the traditional ethnomedicinal heritage of tribals to mankind.

Keywords: Ethnomedicinal plants; Decoction; Diuretic; Stomach ailments; Pain relieving

Received: May 21, 2018, **Accepted:** July 19, 2018, **Published:** July 25, 2018

Introduction

Medicinal herbs are moving from fringe to mainstream use with a greater number of people seeking remedies and health approaches free from side effects caused by synthetic chemicals. Recently, considerable attention has been paid to utilize eco-friendly and bio-friendly plant-based medicinal products for the prevention and cure of different human diseases. It is documented that 80% of the world's population has faith in traditional medicine. These are not only used for primary health care in rural areas in developing countries, but also in developed countries [1].

India officially recognizes over 3000 plants for their medicinal value [2]. In rural India, 70% of the population is dependent on the traditional system of Ayurveda medicine. In order to promote Indian herbal drugs, there is an urgent need to evaluate the therapeutic potentials of the drugs as per WHO guidelines. The traditional use can provide valuable clues for the selection, preparation and indications for use of herbal formulation basically starts from the survey of tribal population. Ethnobotanical studies are often significant in revealing locally important plant species especially for the discovery of plant based drugs [3]. This study has therefore been initiated to document the plants used in the ethnomedicinal practices of Nilgiri Hills, Tamil Nadu, and India together with the associated ethnobotanical knowledge

and practices.

Study Area

Ethnobotanical survey was conducted in Nilgiris, it is located at 11.10 and 11.45 N latitude and 76.14 and 77.2 E longitude. The small district of Tamil Nadu, India enjoys a subtropical to temperate climate by virtue of its altitude of 2580 and the minimum of 750 meters above MSL. Soil formation is classified into four kinds namely black soil, brown soil, yellow soil and red soil. The average rainfall of the district is 1865 mm. The area inhabited by various tribes. Information regarding the ethnobotanical details by open-ended interviews.

Objective of the Study

The objective of this research is to prepare a survey of the medicinal plants used by the tribal population in Nilgiri Hills.

- The type of plants used by the tribes of that region
- The type of preparation of the plant parts used by them
- The healing properties by the plant crude extracts
- The plant samples were identified and authenticated in the Department of Biotechnology using Flora.

Significance of study

- To survey of different ethnomedicinal plants used by the tribes of Nilgiris.
- To promote the identification and development of new drugs to cure diseases.
- To help in the conservation of such ethnomedicinal plants.
- To help the researchers to be used as reference area of such ethnomedicinal plants for further studies.
- Collection and in vitro conservation of these medicinal plants in the laboratory for continuous production of medicinal products.

Materials and Methods

Plant collection

The plant and plant parts used as medicine by the tribes were collected from the Nilgiris of Tamil Nadu, India. The plant samples were identified in the Department of Biotechnology, National College, Tiruchirappalli, Tamil Nadu, India using Flora of Presidency of Madras by Gambel [4] and The Flora of the Nilgiris and Puleney Hill-Tops by Fyson [5]. Herbarium were prepared and documented in the Department. The survey was conducted for one complete year and the collection of samples was periodically conducted twice in a month. During the survey oral questions were asked to the tribes with the aid of local people to get correct information about the medicinal plants. The plants were collected then and there and identified, pressed, dried on the spot using plant press and brought to the department and documented.

Results

In this study, 49 plant species of medicinal importance were observed and documented. Most of these medicinal plants are harvested from natural environment in the hills. The list of the plants, its binomial, family, common name, parts used and medicinal uses are listed below:

1. *Achyranthes bidentata* Bl. (Amaranthaceae)

Common Name : Nayuruvi
Parts Used : Whole plant
Medicinal uses:

- The roots, leaves and stems are widely used as anodyne, anti-inflammatory, anti-rheumatic, digestive, diuretic, emmenagogue and vasodilator.
- Used in the treatment of aching back and knees and asthenia or the lower limbs.
- The herb is taken internally to treat hypertension, back pains, urine in the blood, menstrual pain and bleeding.

2. *Acorus calamus* L. (Araceae)

Common Name : Sweet flag, Vasambo
Parts Used : Dry rhizomes
Medicinal uses:

- Rhizome: aromatic, bitter, carminative, nervine, antispasmodic, sedative, stomachic, expectorant, emetic, laxative, diuretic, stimulant, useful in dyspepsia, colic, fevers, nerve tonic, bronchitis, dysentery, epilepsy and other mental ailments, glandular and abdominal tumours and in snake bite.

3. *Aegle marmelos* L. (Rutaceae)

Common Name : Wood apple, Vilvam
Parts Used : Fruit, roots and leaves
Medicinal uses:

- The fruit is used in religious rituals and as an ayurvedic remedy for such ailments as diarrhea, dysentery, intestinal parasites, dryness of the eyes, and the common cold. It is a very powerful antidote for chronic constipation.
- The roots are astringent, bitter and febrifuge and are useful in diarrhoea, dysentery, dyspepsia, stomachalgia, cardiopalmus, seminal weakness, vomiting, intermittent fever and swellings.
- The leaves of the tree are useful as laxative, febrifuge and expectorant, also in ophthalmia, deafness, inflammations, catarrh, and diabetes and asthmatic complaints.

4. *Ageratum conyzoides* L. (Asteraceae)

Common Name : Goat weed
Parts Used : Whole plant
Medicinal uses:

- A decoction or infusion of the herbs is given in stomach ailments such as diarrhoea, dysentery and intestinal colic with flatulence and in rheumatism and fever.
- The leaves are used for fomentation in the leprosy and other cutaneous diseases.
- The juice of the leaves and roots is used as eye lotion, anthelmintic and antidyseric properties.

5. *Aloe vera* (L.) Burm. (Liliaceae)

Common Name : True Aloe, Katrazhai
Parts Used : Leaves
Medicinal uses:

- Leaf contains a mucilaginous gel used in burns as first aid medicinal plant.
- The gel is used to facilitating digestion, aiding blood and lymphatic circulation, kidney, liver and gall bladder functions.
- Used in wound, healing, moisturizing and cosmetic and pharmaceutical formulations.

6. *Argemone mexicana* L. (Papaveraceae)

Common Name : Mexican Prickly Poppy
Parts Used : Milky juice, oil

- Medicinal uses:
- Cure leprosy, skin diseases, seeds sedative.
7. *Arisaemales chenaulti* Blume (Araceae)
Common Name : Rats-tail Cobra Flower
Parts Used : Whole plant
Medicinal uses:
- Urinary diseases, eczema, piles, fistula
8. *Artemisia annua* L. (Asteraceae)
Common Name : Sweet Annie
Parts Used : Leaves
Medicinal uses:
- Dried leaves have been used against malarial fevers.
 - Used medicinally as a tonic, stomachic, febrifuge and anthelmintic.
9. *Asparagus racemosus* Willd. (Asparagaceae)
Common Name : Asparagus
Parts Used : Leaves, roots
Medicinal uses:
- Rejuvenate effect on female reproductive system
 - Duodenal ulcer, immunomodulatory activities
 - Gastric ulcers, dyspepsia, nervous disorders, inflammation and liver diseases
10. *Bacopa monnieri* (L.) Pennel (Scrophulariaceae)
Common Name : Brahmi
Parts Used : Whole plant
Medicinal uses:
- Used as nerve tonic/memory enhancer.
 - Tranquilizer, musculature relaxant, antispasmodic and anticancer
11. *Bidens pilosa* L. (Asteraceae)
Common Name : Marigold
Parts Used : Whole flowering plant
Medicinal uses:
- A juice made from the leaves is used to dress wounds and ulcers.
 - A decoction of the leaves is anti-inflammatory, styptic and alterative.
 - The whole plant is antirheumatic; it is also used in enemas to treat intestinal ailments.
12. *Calendula officinalis* L. (Asteraceae)
Common Name : Marigold
Parts Used : Flowers
Medicinal uses:
- Used to soothe skin and sprained muscles
 - Chapped skin and tooth aches
13. *Canna indica* L. (Cannaceae)
Common Name : Indian shot
Parts Used : Rhizome and fruits
Medicinal uses:
- Rhizome is diuretic, diaphoretic and demulcent
 - Rhizome decoction used in fevers and dropsy
14. *Capsella bursa-pastoris* (L.) Medik (Brassicaceae)
Common Name : Shepherd's Bag
Parts Used : Whole plant
Medicinal uses:
- Used to check hemorrhage in child birth and bleeding from open wounds.
 - It is used to check haemostatic, vasoconstriction and diuretic properties, gastric, uterine and pulmonary bleeding, to treat gastritis and enteritis and urinary and kidney disorders.
15. *Catharanthus roseus* G. Don (Apocyanaceae)
Common Name : Periwinkle
Parts Used : Roots, seeds
Medicinal uses:
- Used as antidiabetic, diuretic, hemorrhagic, antimalarial, antispasmodic and anticancer
16. *Centella asiatica* (L.) Urban (Apiaceae)
Common Name : Indian Penny Wort, Vallarai
Parts Used : Whole plant
Medicinal uses:
- Rejuvenating diuretic herb, rejuvenate the nervous system improves circulatory problems, treatment of varicose veins, ulcers and wounds.
17. *Chenopodium ambrosoides* L. (Chenopodiaceae)
Common Name : Mexican Tea
Parts Used : Leaf, whole plant, seed
Medicinal uses:
- Sedative and pain-relieving properties
18. *Citrus aurantium* L. (Rutaceae)
Common Name : Sweet orange
Parts Used : Rind and flowers
Medicinal uses:

- Dried orange peel or rind is valuable in checking vomiting and preventing worms;
 - It is useful as carminative in atonic dyspepsia, flatulence, gastric irritabilities.
 - Essential oil from the rind of the fruit is valued in perfumery.
19. *Coleus forskohlii* Brig. (Lamiaceae)
- Common Name : Coleus, Kanvalikilangu
- Parts Used : Tuberos root
- Medicinal uses:
- The tuberous roots are found to be a rich source of forskohlin, which is being developed as a drug for hypertension, glaucoma, asthma, congestive heart failures and certain types of cancers.
20. *Cymbopogon flexuosus* Nees. (Poaceae)
- Common Name : Lemon grass
- Parts Used : Leaves and shoot
- Medicinal uses:
- Lemon grass is principally taken as a tea to remedy digestive problems diarrhea and stomach ache.
 - It relaxes the muscles of the stomach and gut, relieves cramping pains and flatulence.
 - Lemon grass is primarily regarded as a fever-reducing herb.
21. *Datura metel* L. (Solanaceae)
- Common Name : Moonflower, Karu-ommathi
- Parts Used : Whole plant
- Medicinal uses:
- The leaves and seed is antiasthmatic, antispasmodic, antispasmodic, bronchodilator, used in heart diseases, fever, diauuhoea and skin diseases
22. *Digitalis purpurea* L. (Scrophulariaceae)
- Common Name : Foxglove
- Parts Used : Leaves and flowers
- Medicinal uses:
- Treating congestive heart failure, used as diuretic, stimulant and tonic; promotes and stimulates the activity of all muscle tissues,
 - Improves blood flow to the kidneys and aids in removing any obstructions there thus improving urination,
 - Poisonous and sedative.
23. *Eucalyptus globules* Labill. (Myrtaceae)
- Common Name : Tasmanian Blue Gum, Kapoorathaila-maram
- Parts Used : Leaves
- Medicinal uses:
- Essential oil found in the leaves is a powerful antiseptic and is used all over the world for relieving coughs and colds, sore throats and other infections.
 - The leaves are antiperiodic, antiseptic, aromatic, deodorant, expectorant, febrifuge, hypoglycemic, and stimulant.
 - The leaves and the essential oil they contain, are antiseptic, antispasmodic, expectorant, febrifuge and stimulant.
24. *Eupatorium odoratum* L. (Asteraceae)
- Common Name : Boneset
- Parts Used : Leaves
- Medicinal uses:
- Leaf extracts with salt are used as a gargle for sore throats and colds.
 - Used to scent aromatic baths.
 - To accelerate blood clotting and to treat soft tissue wounds, burn wounds, and skin infections.
25. *Ficus carica* L. (Moraceae)
- Common Name : Common Fig
- Parts Used : Dried fleshy receptacles
- Medicinal uses:
- It is used to remove the gravel in the kidneys or bladders and also obstructions of the liver and spleen.
 - The latex is widely applied on warts, skin ulcers and sores, and taken as a purgative and vermifuge.
26. *Foeniculum vulgare* Mill. (Apiaceae)
- Common Name : Fenkel
- Parts Used : Leaves and fruits
- Medicinal uses:
- The leaves are regarded to have diuretic properties while the roots are purgative.
 - Useful in diseases of the chest, spleen and kidney.
27. *Lavandula angustifolia* Miller (Lamiaceae)
- Common Name : Lavender
- Parts Used : Leaves, flowers and seeds
- Medicinal uses:
- Essential oil of lavender has antiseptic and anti-inflammatory properties.
 - All infusion of lavender is to soothe and heal insect bites.
 - Lavender oil is to soothe headaches.
 - Used as an aid to sleep and relaxation.

28. *Lobelia nicotifolia* L. (Lobeliaceae)
Common Name : Wild Tobacco
Parts Used : Leaves
Medicinal Uses :
- Lobelia to treat respiratory and muscle disorders, and as a purgative.
 - Medicinal properties include, emetic (induces vomiting), stimulant, antispasmodic, expectorant, diaphoretic, relaxant, nauseant, sedative, diuretic and nervine.
29. *Michelia nilagirica* Zenk (Magnoliaceae)
Common Name : Hill champa
Parts Used : Bark, root, root-bark, leaves, flowers, fruits and oil
Medicinal uses:
- Infusion and decoction of flower is used in dyspepsia, nausea and fevers and also used for preventing scalding in gonorrhoea and renal disease.
 - Bark powder is used as a decoction to fevers and chronic gastritis and used in chronic rheumatism.
30. *Ocimum sanctum* L. (Lamiaceae)
Common Name : Basil, Thulasi
Parts Used : Leaves
Medicinal uses:
- Basil has antimicrobial properties and is an ingredient in some perfumes, mouth washes.
31. *Oenothera biennis* L. (Onagraceae)
Common Name : Evening Primrose
Parts Used : Leaves, flowers and seeds
Medicinal uses:
- Sedative, digestive, anti-viral, anti-oxidant, anti-inflammatory.
 - Help to prevent hardening of the arteries, heart disease, eczema, cirrhosis, rheumatoid arthritis, menopause, premenstrual, syndrome, multiple sclerosis, and high blood pressure.
32. *Oxalis corniculata* L. (Geraniaceae)
Common Name : Indian Sorrel
Parts Used : Whole plants
Medicinal uses:
- Plant is anthelmintic, anti-inflammatory, astringent, depurative, diuretic, emmenagogue, febrifuge, lithontriptic, stomachic and styptic.
 - It is used in the treatment of influenza, fever, urinary tract infections, enteritis, diarrhea, traumatic injuries, sprains and poisonous snake bites.
33. *Papavers omniferum* L. (Papaveraceae)
Common Name : Opium
Parts Used : Capsules and seeds
Medicinal uses:
- It is used to treat mental and nervous diseases.
 - The seeds, which lowers the blood-cholesterol.
34. *Passiflora edulis* Sims. f.P. edulis flavicarpa (Passifloraceae)
Common Name : Passion fruit
Parts Used : Fruits
Medicinal uses:
- It is used in the treatment of insomnia and traditionally known to produce a restful sleep without any narcotic hangover. It is also used to treat epilepsy, ulcers and haemorrhoids.
 - Passion fruit juice inhibits cancer cell growth.
35. *Physalis peruviana* L. (Solanaceae)
Common Name : Cape Gooseberry
Parts Used : Fruits
Medicinal uses:
- The fruits are used to make jam. Juice of leaves is given in worms and bowel complaints.
 - Leaf infusion as an enema to relieve abdominal ailments in children.
36. *Piper longum* L. (Piperaceae)
Common Name : Pippal, Tippili
Parts Used : Immature berries
Medicinal uses:
- Powered long pepper administered with honey will relieve cough, cold, asthma, hoarseness and hiccup.
37. *Piper nigrum* (Piperaceae)
Common Name : Pepper, Kuru Milaku
Parts Used : Dried unripe fruits
Medicinal uses:
- Used in cough, cold, chronic bronchitis, palsy, gout, rheumatism, lumbago, insomnia, epilepsy, asthma, amorexia, piles, dyspepsia, and leukoderma.
 - Bark is useful internally in bleeding piles.
38. *Rhododendron arboretum* Sm. (Ericaceae)
Common Name : Puvaracu
Parts Used : Flowers and petals
Medicinal uses:
- Scarlet petals, fresh/dried is used in curing dysentery and

- hill diarrhea.
39. *Rhodomyrtus tomentosa* (Aiton) Hassk (Myrtaceae)
Common Name : Hill gooseberry
Parts Used : Leaves, roots and fruits
Medicinal uses:
- The fruit as a cure for dysentery and diarrhoea.
 - A decoction of the roots or leaves is drunk for diarrhoea and stomachache and as a protective medicine after birth.
 - Leaves are used to dress wounds.
40. *Rubia cordifolia* (Wild.) Miers (Rubiaceae)
Common Name : Indian Madder
Parts Used : Roots
Medicinal uses:
- The roots are alternative, anodyne, antiphlogistic, antitussive, astringent, diuretic, emmenagogue, expectorant, styptic, tonic and vulnerary. They are used to lower the blood pressure.
 - The roots are used internally in the treatment of abnormal uterine bleeding, internal and external hemorrhage, bronchitis, rheumatism, stones in the kidney, bladder and gall and dysentery.
41. *Rubus ellipticus* Sm. (Rosaceae)
Common Name : Golden Evergreen Raspberry
Parts Used : Fruits and roots
Medicinal uses:
- A decoction of the root is used in the treatment of fevers.
 - Gastric troubles, diarrhoea and dysentery.
 - The juice of the fruit is used in the treatment of fever, colic, coughs and sore throat.
42. *Ruscus aculeatus* L. (Liliaceae)
Common Name : Butcher's broom
Parts Used : Root and rhizome
Medicinal uses:
- Diaphoretic, diuretic, deobstruent and aperient.
 - Diuretic in dropsy, urinary obstructions and nephritic cases.
 - Decoction of the leaves is useful as general mouthwash.
43. *Ruta graveolens* L. (Rutaceae)
Common Name : Garden rue
Parts Used : Whole plant
Medicinal uses:
- Anti-septic, stimulant, emmenagogue irritant and abortifacient. Juice of the plant is stimulant, expectorant and anti-spasmodic and anthelmintic to children.
- Useful in infantile convulsions and also bronchitis and pneumonia.
 - Relieve gouty and rheumatic pains and to treat nervous heart problems, such as palpitations in women going through menopause.
44. *Salvia officinalis* L. (Lamiaceae)
Common Name : Sage
Parts Used : Leaves
Medicinal uses:
- Sage is used as a mild tonic, astringent, diaphoretic, antipyretic, dentifrice, a carminative and for treatment sore-throats.
 - The herb has been used in the mouth washes, gargles, poultices, tooth-powers, hair tonics and hair dressings.
45. *Solanum nigrum* L. (Solanaceae)
Common Name : Black night-shade
Parts Used : Whole plant
Medicinal uses:
- The juice of the fresh herb is sometimes used for fever and to allay pain. The fruit is used as a cosmetic as rubbing the seeds on the cheeks remove freckles.
 - The fruit has been used for diabetes. It is used as an antiperiodic, antiphlogistic, diaphoretic, diuretic, emollient, febrifuge, narcotic, purgative and sedative.
 - Freshly prepared fruit extracts is recommended in dropsy and also in heart diseases, skin disease and piles, gonorrhoea, inflammatory swellings, chronic cirrhosis of liver and spleen.
46. *Taraxacum officinale* (Webbre.) Wiggers (Asteraceae)
Common Name : Dandelion
Parts Used : Entire plant
Medicinal uses:
- The entire plant preparation is used for stimulating appetite and for relieving stomach fullness and gas (dyspepsia).
 - Leaf has been used for stimulating the appetite, and for promoting water loss and blood circulation. It has also been used for gallstones and arthritis.
 - Root is a valuable hepatic, stimulant and very beneficial in obstruction of the liver, chronic disorder of the liver and visreal diseases. It is also a mild tonic, disphoretic and diuretic.
47. *Vetiveria zizanioides* L. (Poaceae)
Common Name : Vetiver
Parts Used : Roots

Medicinal uses:

- The root extract are useful in burning sensation and also used for making screen which keeps rooms cool in summer.
- Root decoction cure for dyspepsia, washing sores in mouth
- Root paste on forehead as cure for headache.

48. *Dodonaea viscosa* (L.) Jacq. (Sapindaceae)

Common Name : Virāli (Tamil)

Parts Used : Leaves

Medicinal uses:

- Leaves are used to cure bone fractures. The broken bones are tied and fried leaves are applied around it.

Discussion

Herbs were found to be the most dominant growth forms in the preparation of ethnomedicine of the study region. Plant extracts are paying much attention in these days for drug discovery and development because of no side-effects [6,7]. Hence, studies were directed and gradually shift and towards popular plant products for biologically active ingredients to cure some ailments and plays a vital role [8-10] in drug development and discovery.

Conclusion

This study provides:

- Conservation and sustainable exploitation of ethnomedicinal plants,
- Cultivation of wild medicinal plants for drug extraction,
- Synergy in relation to pharmacological action of ethnomedicine,
- Quality control during collection and processing of ethnomedicine,
- In vitro propagation techniques for conservation and future drug discovery and development,
- ISM (Indian System and Medicines) or Agmark certification for raw materials is essential for quality drug development,
- The development of ethnomedicine from the rich traditional natural resources requires an integrated approach with application of good manufacturing practice guidelines will help human community in healing many health disorders.

Acknowledgement

The authors express thanks to Padmavibhushan Dr V Krishnamurthy, President, Sri K Ragunathan, Secretary, Dr K Anburasu, Director and Dr R Sundararaman, Principal, National College, Tiruchirappalli for providing the infrastructure facilities, supports and encouragement given to PG and Research Department of Biotechnology to carry over the research work.

References

- 1 Selvaraj N, Mohandass B, Anita B, Murugesh KA (2009) Medicinal Plants of Nilgiris - An organic perspective. Nandiseva Printing Works, Odhagamandalam.
- 2 Dubey NK, Rajesh Kumar, PramilaTripathi (2004) Global promotion of herbal medicine: India's opportunity. Current Science 86: 1-10.
- 3 Cotton CM (1996) Ethnobotany: Principles and applications. John Willy and Sons Ltd., Chichister, England.
- 4 Gamble JS (2013) Flora of the Presidency of Madras. Neeraj Publishing House, Delhi-110052.
- 5 Fyson PF (1975) The Flora of the Nilgiris and Pulney Hill-Tops. Bishen Singh Mahendra Pal Singh, Dehra Dun and Periodical Experts, Delhi.
- 6 Indian Medicinal Plants (1997) A Compendium of 500 Species - Part-3. Orient Longman Publications. pp: 256-263.
- 7 Umrao Singh, Wadhvani AM, Johri BM (1990) Dictionary of Economic Plants in India. Indian Council of Agricultural Research, New Delhi.
- 8 Yemane B, Medhanie G, Surender Reddy K (2017) Survey of some common medicinal plants used in Eritrean Folk Medicine. American Journal of Ethnomedicine 4: 1-4.
- 9 Abubacker MN, Ramanathan R, Senthilkumar T (2008) In vitro antifungal activity of Cassia alata flower extract. Natural Product Radiance 7: 6-9.
- 10 Abubacker MN, Kamala Devi P (2014) In vitro antifungal potentials of bioactive compound Oleic acid, 3-(Octadecyloxy) propyl ester isolated from *Lepidagathis cristata* Willd (Acanthaceae) inflorescence. Asian Pacific Journal of Tropical Biomedicine 4: S826-S829.