Int.J.Curr.Microbiol.App.Sci (2020) *9*(3): 969-977

International Journal of Current Microbiology and Applied Sciences
ISSN: 2319-7706 **Volume 9 Number 3 (2020)**
Journal homepage: http://www.ijcmas.com

Original Research Article https://doi.org/10.20546/ijcmas.2020.903.114

Survey of Medicinal Plants in Mahadevan Hill, K.V. Kuppam, At Vellore District, Tamil Nadu, India

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Keywords

Medicinal plant, traditional medicines, diseases, Mahadevan hill, flora and biodiversity

Article Info

Accepted:
05 February 2020
Available Online:
10 March 2020

A B S T R A C T

In order to document the medicinal plants and their applications, a field survey was undertaken at Mahadeva hill which is located 28 Km away from Vellore city and 60 k.m. from Islamiah College (Autonomous), Vaniyambadi, TamilNadu, India. An attempt has been made to identify the medicinal plants traditionally used by the people of the region and also to preserve the traditional heritage. Further this study highlights the risks of extensive human exploitation of biodiversity of the region. The survey was carried out during January to November 2019. A total of 88 herbaceous medicinal plants were documented and an inventory was prepared. All these 88 plants species are belonging to 40 families such as Acanthaceae, Aizoaceae, Alangiaceae, Alliaceae, Amaranthaceae, Annonaceae, Apocyanaceae, Aristolochiaceae, Asclepiadaceae, Asteraceae, Bombacaceae, Caesalpinacea, Capparaceae, Caricaceae, Cesalpinioideae, Cleomaceae, Cucurbitaceae, Euphorbiaceae, Fabaceae, Gentianaceae, Labiatae, Lamiaceae, Liliaceae, Lythraceae, Malvaceae, Meliaceae, Mimosaceae, Moraceae, Myrtaceae, Oleaceae, Oxalidaceae, Papilionoideae, Poaceae, Rhamnaceae, Rubiaceae, Rutaceae, Sapindaceae, Solanaceae, Verbanaceae and Vitaceae.This quantitative survey gives an account on the floral diversity and uses of medicinal plants.

Introduction

India has contributes eight percent of total world bio-resources and represents one among the 12 mega-diversity countries in the world due to the species richness and level of endemism recorded in the various agro climatic areas of the country. There are about 17,000 species of higher plants, of which approximately 8,000 species are considered medicinal plants and used by village communities, particularly tribal communities, or in traditional medicinal systems, such as the Ayurveda.

Since the start of human civilization, medicinal plants have been used by mankind for its therapeutic importance. The term medicinal plants include a various types of plants used in herbalism and some of these

plants have a medicinal activities. Medicinal plants are the "backbone" of traditional medicine, which means more than 3.3 billion people in the underdeveloped countries utilize medicinal plants on a regular basis (Davidson-Hunt2000). These medicinal plants are considered as rich resources of constituents which can be used in drug development and synthesis. Besides, these plants play a acute role in the development of human cultures around the whole world.

Current evaluations suggest that, in many developing countries, a large proportion of the population relies heavily on traditional practitioners and medicinal plants to meet primary health care needs. Although recent medicine may be available in these countries, herbal medicines have often maintained popularity for historical and cultural reasons. Medicinal plants are frequently used as raw materials for extraction of active ingredients and used in the synthesis of different drugs. Asin case of laxatives, blood thinners, antibiotics and anti-malarial medications, contain plants ingredients. Moreover, the active constituents of Taxol, vincristine, and morphine isolated from foxglove, periwinkle, yew, and *opium poppy* respectively.

The development and commercialization of medicinal plant based bio-industries in the developing countries is dependent upon the availability of facilities and information concerning upstream and downstream bioprocessing, extraction, purification, and promoting of the industrial prospective of medicinal plants.

Furthermore, the absence of efficient socio-economic and public healthcare systems reinforces reliance of rural and lower-income urban populations on the use of traditional medicinal herbs and plants as complementary aids to routine pharmaceutical market products. A recent estimate suggests that nearly 9,000 plants have known medicinal applications in various cultures and countries, and this is without having conducted comprehensive research amongst several indigenous and other communities. The Ethnobotanical studies of different tribal localities may lead to find new information on unexploited natural resources as sources of medicine, food, fodder, fibre, and animal habitat.

The Mahadevan hill is a very rich forested area in terms of plants, Animal and flower diversity which provide many valuable medicinal plants and tribals of the study area are using these plants since ancient time which is yet to record in a proper scientific way. The detailed information on medicinal uses of plants is not available or not recorded well. So the present study suggests that to document all the plant biodiversity resources for the first time.

Materials and Methods

Description of study area

Mahadevan hills in Kanguppam in Vellore district of Tamil Nadu State, India. It is located 25 KM towards west from District headquarters Vellore. 9 Km from K.V.Kuppam and 163 Km from State capital Chennai.

Methodology

The study area was surveyed randomly from January to November 2019. Data was collected from the local People and medicinal practitioners inhabiting in and around the Mahadevan hill. In this study, data collection was carried out through interviews and detailed personal discussions with the local people who are unique in usage of medicinal plants. The discussion contained the details of the plants, parts used, medicinal uses and mode of preparation.

Results and Discussion

The Study was based on the survey of traditional information on the medicinal plants from Mahadevan hill of K.V. Kuppam, Vellore district. In this study, we engaged mainly on plant species reported by the native people in and around the study region for their medicinal practices. Present data are the general results of the ethnobotanical survey conducted from January 2019 to November 2019. Herbal therapies are considered the ancient forms of health care known to mankind on this world.

Prior to the development of recent medicine, the traditional classifications of medicine that has advanced over the centuries within various communities, are still maintained as a great traditional information base onherbal medicines (Mukherjee and Wahil, 2006). Traditionally, this wealth of precious knowledge has been passed on orally from generation to generation without any written document and is still retained by various indigenous groups around the world (Perumal Samy and Ignacimuthu, 2000 and Saranraj *et al.,* 2016).

Due to the growth of demand for biochemical diversity in screening programs, seeking therapeutic remedies from natural products, interest particularly in ethno medicinal plants has grown throughout the world (Saranraj and Sujitha, 2015). Herbal therapies are considered as the oldest forms of health care known to mankind on this earth. Traditional popular medicine uses the knowledge, skills and practices based on the concepts, beliefs and experiences indigenous to its cultures for maintenance of health.

Documenting the native knowledge through ethnobotanical studies is vital for the conservation and utilisation of biological resources. Ethnobotanical survey has been found to be one of the consistent approaches to medicine discovery (Fabricant and Farnsworth, 2001; Kolanjinathan and Saranraj, 2015).

Traditional uses of 88 plant species spread over 40 families are described under this study. The tribes and peoples from various rural villages have used the medicinal plants to treat various diseases and disorders such asasthma, bronchitis, cough, diabetes, fever, gonorrhoea, heart troubles, intestinal worms, jaundice, leprosy, malaria, snakebites, sore eyes, toothache, tuberculosis, wounds etc.The medicinal plants used by them are arranged by scientific name with Family name, Vernacular name, Plant parts used and Therapeutic uses in Table-1

The plants documented in this survey belong to the families such as Acanthaceae, Aizoaceae, Alangiaceae, Alliaceae, Amaranthaceae, Annonaceae, Apocyanaceae, Aristolochiaceae, Asclepiadaceae, Asteraceae, Bombacaceae, Caesalpinacea, Capparaceae, Caricaceae, Cesalpinioideae, Cleomaceae, Cucurbitaceae, Euphorbiaceae, Fabaceae, Gentianaceae, Labiatae, Lamiaceae, Liliaceae, Lythraceae, Malvaceae, Meliaceae, Mimosaceae, Moraceae, Myrtaceae, Oleaceae, Oxalidaceae, Papilionoideae, Poaceae, Rhamnaceae, Rubiaceae, Rutaceae, Sapindaceae, Solanaceae, Verbanaceae and Vitaceae.

In India, there are about 54 million native people of different traditional groups inhabiting various landscapes. These native groups possess their own distinct culture, religious rites, food habit and have a rich knowledge of traditional treatment. Even today, native and certain local communities practiced herbal treatment to cure a range of diseases, with plants particularly used as popular medicine to treat snakebites (Parinitha *et al.,* 2005).

Consumption of plants for medicinal purposes in India has been documented long back in olden literature because they are necessary to human survival (Mohamed Tariq and Md Rayees Ifham, 2013; Sastri *et al.*, 1996). The consumption, management and estimation of wild plants are central aspects of the traditional knowledge in many human populations. Thus, plants gathering, the distribution and conservation of knowledge within the community are traditional performs that have contribution to the survival of many cultures. In most of the cultures the medical system coexists with several traditional systems. These traditional medical systems are generally based on the uses of natural and native products which are normally related to the people's perspective on the world and life (Toledo *et al.*, 2009). In this study, a botanical survey was carried out in Vellore district, Tamilnadu, India.

Table.1 List of Medicinal Plants in Mahadevan Hill, K.V. Kuppam, Vellore District

S. No.	Plant Name	Local Name	Parts Used	Therapeutic Use
1	*Abutilon indicum* (Malvaceae)	Thuthi	Leaf	Antimicrobial activity.
2	*Acalypha indica* (Euphorbiaceae)	Kuppaimeni	Leaf	Leaf juice is applied externally for curing body itching.
3	*Achyranthes aspera* (Amaranthaceae)	Naivooruvi	Leaf	Wounds
4	*Acmella oleracea (Asteraceae)*	Therupallupoondu	leaves and flowers	Stammering, toothache, and stomatitis
5	*Adhatoda vasica* (Acanthaceae)	Adathodai	Aerial parts	Bronchitis, Leprosy, Heart troubles, Asthma, Cough, Sore eyes and Gonorrhea.
6	*Aeglemarmelos* (Rutaceae)	Vilvam	Leaf	The dried and powdered leaves are used for diabetes.
7	Aervalanata ((Amaranthaceae))	Sirukanpeelai	Wholeplant	Snakebites
8	*Allium cepa* (Alliaceae)	Vengkaayam	Bulb onion	Bulb of the onion is used for diabetes.
9	*Alangium salvifolium* (Alangiaceae)	Alengi	Aerial part	Antioxidant and antimicrobial activities.
10	*Aloe vera* (Liliaceae)	Kathazai	Aerial parts	Promotes menstrual flow, Heals wounds and fresh cuts, Eye diseases, Asthma, Leprosy and Jaundice.
11	*Amaranthus virudis L.* (Amaranthaceae)	Thoia	Leaf	Leaf paste is applied over the infected area to cure erysipelas.
12	*Anisomeles malabarica* (Labiatae)	Peruntumpai	Aerial part	The plant is useful halitosis, amentia, intestinal worms and fever arising from teething in children.
13	*Annona squamosal* (Annonaceae)	Setha	Fruits	Intestinal worms.
14	*Aristolochia bracteolate* (Aristolochiaceae)	Aaduthinnappalai	Leaf	Leaf juice is taken orally to treatment of diabetes.

15	*Artocarpus hirsutus Lam.* (Moraceae)	Kattupala	Fruit	Fruits used as appetizer, seed with honey used to treat asthma.
16	*Azadirachta indica* (Meliaceae)	Veempu (Neem)	Leaf	Powdered leaves are used for diabetes.
17	*Blepharis medaraspatensis (L)* (Acanthaceae)	Elumbuotti	Seeds	dysuria, diseases of nervous system, diuretic, aphrodisiac
18	*Cajanus cajan* (Fabaceae)	Thovaray	Seed	Seeds boiled and taken along with food items
19	*Calotropis gigantean* (Asclepiadaceae)	Erukkam	Leaf Milk	Cure rheumatic Joints pain and swellings.
20	*Cardiospermum halicacabum* (Sapindaceae)	Mudakkaththan	Leaf	Rheumatic arthritis
21	*Carica papaya* (Caricaceae)	Pappali	Leaf, fruits	Tuberculosis and promotes menstrual flow.
22	*Cassia alata* (Cesalpinioideae)	Seemaiakathi	Leaf	Ringworm patches, cough and eczema.
23	*Cassia auriculata* (Caesalpinacea)	Avaram	Flower	Daily three or four flower are taken regularly
24	*Cassia fistula* (Cesalpinioideae)	Sarakondrai, Konnei	Aerial part	Bark decoction mixed with garlic and powdered pepper is given to cattle as purgative.
25	*Cassia obtuse* (Cesalpinioideae)	Nilaavarai	Leaf	Antimicrobial activity.
26	*Cassia roxburghii* (Cesalpinioideae)	Sennkondrai	Leaf	Hepatoprotective activity.
27	*Cassia tora* (Cesalpinioideae)	Tagarai	Aerial part	Malaria, ring worm, chronic inflammation of the skin and other skin diseases.
28	*Catharanthus roseus* (Apocyanaceae)	Nithyakalyani	Aerial parts	Antimicrobial and Anticancer activity.
29	*Ceibapentandra* (Bombacaceae)	Ilavam	Aerial part	Diuretic, antipyretic, tonic, gonorrhoea, dysuria, acrid, bitter, thermogenic febrifuge, emetic tonic and tumours.
30	*Celosia argentea* (Amaranthaceae)	Pannaikeerai	Leaf	Antimicrobial activity.
31	*Cissusquadrangularis* (Vitaceae)	Perandai	Aerial Parts	Heart diseases, diabetes and metabolic Syndrome
32	*Citrus limon (Linn.) Burm.* (Rutaceae)	Elumichai	Fruit	Fruit is used to cure nail infection, juice induces freshness to body.
33	*Cleome viscosa* (Cleomaceae)	Naaikadugu	Leaves	Wounds, ulcers, discharge of pus from the ear.
34	*Clitoria ternatea* (Fabaceae)	SanguPushpam	Leaf	Antimicrobial activity, Eye diseases and Headache.
35	*Coccinia grandis* (Cucurbitaceae)	Kovai	Leaf	Eye diseases
36	*Couroupita guianensis*	Naga Lingam	several parts	Hypertension, tumors, pain,

	(Amaranthaceae)		of the tree	inflammation, common cold, stomachache, skin conditions, wounds, malaria, and toothache.
37	*Crateva adansonii* (Capparaceae)	Mavelangam	Leaf	Fever, acrid and cough
38	*Cucumis sativus* (Cucurbitaceae)	Vellari	Leaf Fruits	Fever, Bronchitis, Jaundice, HaemorrphagesStrangury and General debility.
39	*Cynodon dactylon* (Poaceae)	Arugampul	Whole parts	Antimicrobial and Diabetes.
40	*Datura metal* (Solanaceae)	Oomatthai	Leaves	Asthma, cough, tuberculosis, bronchitis, haemorrhoids, boils, sores, skin diseases, rheumatism, headache, toothache, cholera, abortifacient and anaesthetic
41	*Datura stramonium* (Solanaceae)	Umattai	All parts	Antimicrobial and Anticancer activity.
42	*Delonix regia* (Fabaceae)	Semmayirkondrai	Seed	The seed is carminative, purifies and enriches the blood and is used in cases of inflammation, “ear ache” and chest complaint
43	*Desmostachya bipinnata* (Poaceae)	Darbai pul	Leaves	Dysentery and menorrhagia, and as a diuretic
44	*Eclipta alba* (Asteraceae)	Karsalamkanni	Leaf	Leaf is used for the treatment of Diabetes
45	*Eclipta procera* (Asteraceae)	Mangel Karisalankanni	Whole parts	Antibacterial activity and Jaundice.
46	*Eclipta prostrate* (Asteraceae)	VellaiKarisalankanni	Whole parts	Antibacterial activity and Eye diseases.
47	*Enicostem malittorale* (Gentianaceae)	Vellaruku	Leaf	The powered leaves are used for diabetes.
48	*Ervatamia divaricate* (Apocyanaceae)	Nantiyavarttam	Leaf	Antibacterial and Antifungal activity.
49	*Erythrina indica Lam.* (Fabaceae)	Kalyanamurungai	Leaf	Leaves relive body pain; headache, fever, cold, fruits treat diabetics.
50	*Eucalyptus globules Labill.* (Myrtaceae)	Neelagri	Leaf	Latex is applied on the skin to alleviate body pain & never disorders.
51	*Eugenia jambolana* (Myrtaceae)	Naval	Seed	Early morning seeded powered is taken to cure diabetes.
52	*Euphorbia heterophylla* (Euphorbiaceae)	Amman Paccarici	Aerial parts	Remove intestinal worms
53	*Euphorbia hirta* (Euphorbiaceae)	Amman pacharisi	Leaf	Leaf juice is taken orally for treatment of diabetes
54	*Ficusbenghalensis* (Moraceae)	Aalamaram	Bark	Bark decoction is used for diabetes

55	*Ficus racemosa* (Moraceae)	Atthi	Root	Root decoction is taken orally to cure diabetes.
56	*Ficus religiosa* (Moraceae)	Arasu	Leaf	Antibacterial activity.
57	*Gisekia pharnaceoides* (Aizoaceae)	Manalikkirai	Aerial parts	Antibacterial activity.
58	*Gymnema sylvestre* (Apocyanaceae)	Sakkaraikolli	Leaf	Leaf juice is taken daily
59	*Hemidesmus indicus* (Asclepiadaceae)	Nannari	Aerial parts	Fever and Skin diseases
60	*Heteropogon contortus* (Poaceae)	Poonthodapam	Whole plant	Native Hawaiians used to construct pili houses.
61	*Hibiscus cannabinus* (Malvaceae)	Pulichakeerai	Leaf	Antimicrobial activity.
62	*Hibiscus rosasinensis* (Malvaceae)	Semparuthi	Leaf Flower	Hair growth and hair infections.
63	*Jasminum angustifolium* (Oleaceae)	Kattu Malligai	Root and flower	Skin diseases, ulcers, diseases of eye, stomatitis, pruritus, anti-toxic.
64	*Lablab purpureus* (Papilionoideae)	Avarai	Leaf	Alexipharmic, Emmenagogue, Astringent, diuretic, anaphrodisiac, stomachic and antispasmodic.
65	*Lantana camara Linn.* (Verbenaceae)	Unni chedi	Leaf	Leaf juice improves digestion in children and fruits - treat diabetics.
66	*Lawsonia inermis* (Lythraceae)	Maruthani	Leaf	Antimicrobial activity and Cooling of body. Leaves applied on foot to cure etching and healing of the crack.
67	*Lucas aspera Sprong.* (Lamiaceae)	Thumbai	Leaf	Leaves used to relive tooth ache and prevents tooth/gum infection.
69	*Millettia pinnata* (Fabaceae)	Pungamaram	Flowers	anti-diabetic action
70	*Mimosa pudica* (Mimosaceae)	Thottasurungi	Leaf	Wounds
71	*Mollugo cerviana* (Aizoaceae)	Porpadakam	Aerial part	Treat fever.
72	*Morinda coreia* (Rubiaceae)	Nuna	Leaf	Antibacterial activity.
73	*Nerium oleander (sol)* (Apocynaceae)	Arali	Fruit Edible	Ear pain
74	*Ocimum basilicum* (Labiatae)	Karpura Thulasi	Leaf	Leaf juice is mixed with cumin is given to cure the ear pains.
75	*Ocimum sanctum* (Labiatae)	Thulasi	Leaf	Leaf juice is mixed with cumin is given to cure the dry cough.
76	*Oxalis corniculata* (Oxalidaceae)	Pulichchakeerai	Leaf	Antimicrobial activity.

77	*Phyllanthus amaru* (Euphorbiaceae)	Kilanelli	Leaf	Leaf juice is taken orally to treat diabetes.
78	*Polyalthia longifolia* (Annonaceae)	Nettilinkam	Leaf	Fever, gonorrhea, uterus aliment, leucorrhoea, mouth ulcer heart problem, blood pressure and stimulated respiration.
79	*Pongamia pinnata* (Fabaceae)	Pungam	Whole Plant Extract	Antiseptic
80	*Psidium guajava* (Myrtaceae)	Koiyaa	Fruit	Daily one fruits is taken to cure diabetes.
81	*Solanum nigrum* (Solanaceae)	Manathakalli	Aerial parts	Antimicrobial activity.
82	*Solanum virginianum* (Solanaceae)	Kandankatthiri	Fruits	cough, asthma and chest pain
83	*Spermacocehispida* (Rubiaceae)	Nathachuri	Leaf	The powered leaves are taken twice daily.
84	*Thespesia populnea* (Malvaceae)	Puvaracu	Leaf	Skin disease
85	*Tridax procumbens* (Rubiaceae)	Kenatrupasan Vettukaya puntu	Leaf	Leaf juice is applied externally for healing wounds.
86	*Vitex negundo* (Verbanaceae)	Nochi	Leaf	Headache and Sinus problem.
87	*Withania somnifera* (Solanaceae)	Ashwagandha	All parts	Antimicrobial activity and Leaf paste in cow's milk used to treat asthma.
88	*Ziziphus mauritiana* (Rhamnaceae)	Elandai	Fruits	Nutritious and rich in vitamin C.

The survey reveals that Mahadevan hill is enriched with many plants. The medicinal plants in the hill are still used by the local inhabitants for many purposes. The biodiversity of the hill should be further explored and conserved in future. Through this ethnobotanical survey, the obtainability and existence of many medicinal plants have been examined and verified.

We observed that these plants are be used as drugs by pharmacologically unexplored areas of India, which may be utilized for the better human health. This study offers a ideal for studying the association between plants and people, within the context of traditional therapies. This study also gathered a broad scale of information regarding medicinal plants used by the peoples of Vellore district. The survey specified that, the study area has outstanding plant diversity with sufficiently of medicinal plants to treat a wide range of human ailments. It is evident from the interviews conducted in Mahadevan hill.

Knowledge of medicinal plants is limited to traditional healers, herbalists who are living in rural areas and collecting the medicinal plants from the Mahadevan hill unscientifically. It is concluded that the unscientific collection of ethnobotanical plants from the Mahadevan hill of Vellore district possess greater pressure on the depletion of diversity of the local region. Hence, there is an crucial need to assess the biodiversity of the local forest, and conserve the biodiversity as well as the traditional knowledge by appropriate documentation and conservation strategies.

Acknowledgements

The authors thank the management of Islamiah College (Autonomous) for providing the facilities to carry out this research work.

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How to cite this article:

Devendiran. D, H. Abdul Jaffar Ali, K. Muhammed Shariq and Farook. M.A. 2020. Survey of Medicinal Plants in Mahadevan Hill, K.V. Kuppam, At Vellore District, Tamil Nadu. *Int.J.Curr.Microbiol.App.Sci.* 9(03): 969-977. doi: https://doi.org/10.20546/ijcmas.2020.903.114