



ISSN : 2350-0743

www.ijramr.com



International Journal of Recent Advances in Multidisciplinary Research

Vol. 02, Issue 12, pp.1047-1055, December, 2015

## RESEARCH ARTICLE

### SURVEY AND DOCUMENTATION OF COMMERCIALY SOLD MEDICINAL PLANTS IN LOCAL MARKETS OF VELLIANGIRI HILLS (POONDI), COIMBATORE DISTRICT, TAMIL NADU, INDIA

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#### ARTICLE INFO

##### Article History:

Received 13<sup>th</sup>, September 2015  
Received in revised form  
08<sup>th</sup>, October 2015  
Accepted 11<sup>th</sup>, November 2015  
Published online 30<sup>th</sup>, December 2015

##### Keywords:

Velliangiri hills,  
Traditional healers,  
Local market,  
Medicinal plants,  
Conservation

#### ABSTRACT

To document the medicinal value, local name, plant parts, mode of preparation and IUCN status of medicinal plants sold in local markets of Velliangiri hills (Poondi), Coimbatore district, Tamil Nadu, India. Ethnobotanical data were collected by personal interview through questionnaires from medicinal man, traditional healers and elder persons. The information's on time of collection of medicinal plants, parts used, dosage and quantity of collection per season or year were gathered from twenty local shops (respondents) and documented. The survey revealed a total of 111 species of commercially sold medicinal plants by the different tribes of Velliangiri hills which were used in their traditional health care system. Most of the plant materials in the market were sold in dried form and also singly or in combination with other plants. These plants were used in the treatment of various ailments such as fever, cold, cough, rheumatism, skin diseases, scabies, diabetes, jaundice, malaria, piles, sexual complaints and antidote for poisonous bites. Of the 111 commercially sold medicinal plants, about 57 are listed in the IUCN red listed categories. It is an urgent need that to encourage the tribes in domestication and cultivation of medicinal plants which help to conserve the biodiversity and sustainable source of medicinal plants.

#### INTRODUCTION

Utilization of plants for medicinal purpose in India has been documented in ancient literature (Charak and Drdhabala, 1996). Traditional healers provide considerable information about the use of many plants or plant parts as medicine (Rodgers, 1991). The Indian systems of medicine identified ca. 1,500 medicinal plants, of which can 500 species are mostly used in the preparation of drugs (Retnam and Martin, 2006). Herbal medicines are assumed to be of great importance in the primary healthcare of individuals and communities in many developing countries as the herbal medicines are comparatively safer than synthetic drugs (Sheldon *et al.*, 1997). Plant-based traditional knowledge has become a recognized tool in search for new sources of drugs and nutraceuticals (Ghosh, 2003; Sharma and Mujumdar, 2003). Commercially sold wild medicinal plants are those while are collected in large quantities for the preparation of drugs. Medicinal plants, which are the major raw materials for pharmaceuticals and Ayurvedic industries, are mostly collected from wild and mainly by tribals. With the increase in human population, the medicinal plants are over exploited. (Anonymous, 1997). However, there was no complete information particularly on medicinal plants commercially sold local markets in Velliangiri hills of Coimbatore district, Tamil

Nadu, except few stray collecting made by (Balasubramaniam, 2005). Hence, a study was undertaken in Poondi foot hills of Velliangiri hills, a part of Nilgiri Biosphere Reserve to collect the information on the commercially sold medicinal plants, their medicinal values, local names, plant part used dosage forms and IUCN status.

#### MATERIALS AND METHODS

##### Study area

The study area Velliangiri hills come under Boluvampatti reserve forests of Coimbatore District and are the major hills range of Western Ghats, Tamil Nadu, India. The study area occupies the southernmost part and the "spur" of Nilgiri Biosphere Reserve of Southern Western Ghats, which lies between the 6° 40' to 7° 10' E longitude, 10° 55' to 11° 10' N latitude and forms a part of western boundary of Coimbatore District, Tamil Nadu bordering the Palghat District of the State of Kerala. This area is floristically very rich and socio-religiously important since a famous temple, called Velliangiri Andavar temple also called "Thenkailayam" (South Kailash) is situated at the peak of the hills (1840 m above MSL), which is the highest point of Velliangiri hills (Fig.1). The altitude varies from 520 and 1840 m above MSL. The forest types met within the study area are southern tropical thorn forests (scrub jungles), tropical dry deciduous forests, and tropical wet evergreen forests, temperate forests (sholas) and southern

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montane humid grasslands. The soil type is red, loamy, acidic and ferruginous. The average rainfall in the hills is ca. 3500 mm at the foothills and ca. 4500 mm at the peak per year.

Velliangiri Andavar temple by walking all along the distance of nearly 10 kilometer. The footpath sides in different hills the tribes are build temporary medicinal plant market.



Figure 1. Location map of the study area Velliangiri hills

**Ethnic peoples**

The Irulars, Malasars and Mudugars are located in different area of Velliangiri foot hills. The tribes are mainly depending on the food and medicine for the hills. In the festival time of March-May in every year the thousands of pilgrim’s to visit the

Tribes collected medicinal plants mostly in season (June-December) is a favorable time for heavy collection with dried form to store in hamlets and festival time to sell in local markets. The dried medicinal plants are approximately small quantity and packing with polythene covers in small packets (Fig. 2).

Each medicinal plant price is varying from one market to other market. Since the common and easily available medicinal plants are 20 to 50 rupees and rarely collected plants are 500 to 1000 rupees/packet. Sometimes the tribes are directly collected the fresh medicinal plants and sold in the local markets.

(Ahmedullah and Nayer, 1987), Red Data Book of Indian plants (Nayer and Sastry, 1987-1990) and Hotspots of Endemic plants of India, Nepal and Bhutan (Nayer, 1996). Identification was confirmed at the Botanical survey of India, Southern circle, Coimbatore, Tamil Nadu.



**Figure 2. The medicinal shop in Velliangiri holy hills Coimbatore district, Tamil Nadu**

### Collection and identification of plant samples

Frequent field trips were undertaken to the study area during 2012-2014. Information about the commercially sold medicinal plants and plant samples were collected from tribals and local markets in the study area. Other information such as local name, plant part traded, used, place of collection and season of collection were also gathered using standard protocol (Jain S.K., 1989). The plant samples were immediately labeled with their local names with which they were purchased and placed in clean polythene bags. Collected medicinal plants were identified with the help of the field floras (Gamble, 1957; Mathew, 1983; Chandrabose, 1988 and Murugesan, 2005). Plant names were checked according to International Plant Name Index (IPNI 2008). The medicinal plant populations and vulnerable status are analyzed (IUCN Criteria, 2012b). The endemic status was analyzed with the help of previous literature viz., Endemic Plants of the Indian Region

The plant specimens were deposited in the herbarium of Kongunadu Arts and Science College (KASCH), Coimbatore.

### RESULT AND DISCUSSION

The survey resulted in the collection of 111 species of commonly medicinal used plants distributed into 90 genera belonging to 55 families. These plants are listed alphabetically in order of botanical names (Table-1). Other information relating to their local names, medicinal uses, mode of preparation, plant parts and IUCN status were also documented. Of the 111 commercially sold medicinal plants 57 were listed in the red list of medicinal plants of South India. Among these, such as 31 species are rare/threatened, 6 species are listed in endangered and 20 species are in endemic category. A total of 54 families contributed to the species list, Orchidaceae was the largest contributor to contributing 17% of the species.

Table 1. List of medicinal plants are commercially sold local markets in Velliangiri hills, (Poondi), Coimbatore district, Tamil Nadu, India

Botanical Names	Voucher No	Family	Local name	Plant parts	Dosage forms	Status
<i>Abrus precatorius</i> L.	KASCH-007	Fabaceae	Kattu kundumani	Leaves	Fresh leaves are chewed to prevent dental pain.	C
<i>Acalypha fruticosa</i> Forsk.	KASCH-010	Euphorbiaceae	Sirisinni	Leaves	Fresh leaves ground with salt and eaten to get relief from stomach ache.	C
<i>Acorus calamus</i> L.	KASCH-021	Zingiberaceae	Vasampu	Rhizome	Rhizome paste mixed with the ash of peacocks feather and honey and administered orally to cure cough.	R
<i>Actinopteris radiata</i> (SW.) Link.	KASCH-005	Actinopteridaceae	Purasangi	Whole plant	Whole plant is applied on cuts and wounds; paste with sugar is given two times a day as an aphrodisiac.	R
<i>Aegle marmelos</i> Corr.	KASCH-003	Rutaceae	Vilvam	Root and leaves	The dried root powder mixed with hot water and administered orally for severe fever. The fresh leaf-paste applied over the surface to cure bone fracture. Leaves are also offered for Lord Siva.	C
<i>Aloe vera</i> L.	KASCH-030	Liliaceae	Chotthu katalai	Leaves	Leaf gel is applied on boils and wounds twice a day.	C
<i>Ampelocissus tomentosa</i> Planch.	KASCH-023	Vitaceae	Sivappukodi kilangu	Leaves	Leaf used for joint the bone.	C
<i>Anaphalis elliptica</i> DC.	KASCH-027	Asteraceae	Balaarugu	Whole plant	Whole plant powder is used for fever.	E
<i>Anaphalis subdecurrrens</i> Gamb.	KASCH-029	Asteraceae	Vellarugu	Whole plant	Whole plant used for diuretic.	E
<i>Anaphalis wightiana</i> DC.	KASCH-031	Asteraceae	Vellaargu	Whole plant	Whole plant decoction used as a coolant.	E
<i>Andrographis alata</i> Nees.	KASCH-009	Acanthaceae	Periannangai	Whole plant	The whole plant is used to cure dysentery, cholera, diabetes, swellings, itches and piles.	C
<i>Anisochilus argenteus</i> Gamb.	KASCH-077	Lamiaceae	Kalthamarai	Leaves	Leaf paste is applied for skin diseases.	E
<i>Arisaema leschenaultia</i> Bl.	KASCH-052	Araceae	Kaattu karunai	Tuber	Tuber juice used to cure cough.	C
<i>Arisaema tortuosum</i> Schott.	KASCH-057	Araceae	Kaattu sarai	Tuber	Tuber ground with water and the paste applied externally on the spot of snake and insect bite.	C
<i>Aristolochia indica</i> L.	KASCH-002	Aristolochiaceae	Urikkodi	Root and leaves	Fresh root ground with water and administered orally to cure a stomach pain. Leaves ground with onion and inhale to get relief from faintness.	C
<i>Asparagus racemosus</i> Willd.	KASCH-006	Liliaceae	Thaneervittan kilangu	Tuber	Tuber extract administered orally to cure urinary disorders. And also administered orally for two days to cure dysentery.	C
<i>Begonia malabarica</i> Lam.	KASCH-004	Begoniaceae	Rathasorri	Stem	The fresh succulent part of the stem used to cure blood cancer.	R
<i>Biophytum longipedunculatum</i> Govind.	KASCH-001	Oxalidaceae	Surungi	Leaves	The leaves are ground and given along with butter milk for diarrhea; after delivery, the leaves of this plant along with jiggery is cooked and given to the delivered ladies to expel the lochia and remains from the uterus.	E
<i>Bridelia crenulata</i> Roxb.	KASCH-011	Euphorbiaceae	Mulvengai	Stem and bark	Stem bark mixed with the bark of <i>Anogessus latifolia</i> and boiled in water. Boiled water is used for bathing to get relief from body pain.	C
<i>Bulbophyllum albidum</i> Hk.f.	KASCH-090	Orchidaceae	Ponmanjal	Pseudobulb	The pseudobulb paste used for skin diseases.	E
<i>Bulbophyllum fusco-purpureum</i> W.	KASCH-099	Orchidaceae	Throbathi manjal	Whole plant	Juice of pseudobulb is taken orally to reduce body temperature; whole plant used for treat diabetic disorders; pseudobulb also has antifertility property.	End
<i>Bulbophyllum neilgherrense</i> W.	KASCH-091	Orchidaceae	Mara manjal	Whole plant	The whole plant used for strengthening of a weak uterus for conception.	R
<i>Bulbophyllum tremulum</i> W.	KASCH-032	Orchidaceae	Seethai manjal	Leaves	The leaf used to treat pulmonary tuberculosis and fever.	R
<i>Canarium strictum</i> Roxb.	KASCH-044	Burseraceae	Sambirani maram	Resin	Resin ground with turmeric and made into paste and applied over the cracks in legs.	R
<i>Canna indica</i> L.	KASCH-087	Musaceae	Kalvalai	Root	The roots are abortifacient and insecticidal and are useful in destroying lice in the hair.	C
<i>Caralluma adscendens</i> R.Br.	KASCH-012	Asclepiadaceae	Pachaipuli	Shoot	Tender shoots ground with onion, tamarind and the paste is used to cure digestive disorders.	C
<i>Celastrus paniculata</i> Wild.	KASCH-033	Celastraceae	Vaaluluvai	Whole plant	The whole plant is used for appetite suppressive and used for memory restorative activity.	R
<i>Centella asiatica</i> Urb.	KASCH-092	Apiaceae	Vallarai	Leaves	Leaf paste is used to eczema and leucorrhoea.	C
<i>Chamaecrista pumila</i> Lam.	KASCH-071	Caesalpinaceae	Konnai	Root and Leaves	Roots crushed with water add little salt and drink relieve stomachache and cough.	C
<i>Chlorophytum nimmonii</i> (Graham) Dalz.	KASCH-051	Anthericaceae	Visamoongil ilia	Leaves	The leaf is useful as an aphrodisiac.	E

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<i>Cinnamomum macrocarpum</i> Hook.f.	KASCH-101	Lauraceae	Lavangam	Stem	Stem decoction administered orally for cough.	R
<i>Coelogyne nervosa</i> A.Rich.	KASCH-110	Orchidaceae	Seethai manjal	Pseudobulb	Pseudobulb paste applied on body of children and taken bath to maintain good health; pseudobulb used to cure skin diseases.	R
<i>Coelogyne odoratissima</i> Lindl.	KASCH-061	Orchidaceae	Seethai manjal	Pseudobulb	Pseudobulb used to cure skin diseases.	R
<i>Commelina longifolia</i> Lam.	KASCH-076	Commelinaceae	Velarugu	Whole plant	Whole plant is used to cure fever.	C
<i>Costus speciosus</i> (Koen.) J.E. Smith.	KASCH-081	Costaceae	Insulin plant	Rhizome	Rhizome used to cure bronchitis and asthma.	C
<i>Crotalaria clarkei</i> Gamb.	KASCH-062	Fabaceae	Vatta illppai	Whole plant	Decoction of whole plants in small quantity used to treat cardiac diseases.	C
<i>Crotalaria mysorensis</i> Roth.	KASCH-069	Fabaceae	Vellai vishnugranthi	Seed	Seeds are sprinkled in flames to produce smoke to driving away the snakes.	C
<i>Curculigo orchioides</i> Gaertn.	KASCH-088	Hypoxidaceae	Nilappanai kizhangu	Rhizome	Rhizome used to cure inflammatory and cancer.	C
<i>Curcuma neilgherrensis</i> Wight.	KASCH-078	Zingiberaceae	Kaattu manjal	Rhizome	Rhizome paste used to control the dandruff and skin allergies.	R
<i>Cymbopogon citratus</i> Stapf.	KASCH-093	Poaceae	Kanakampul	Leaves	Leaf oil used to cure asthma, urinary tract infections, digestive complaints, fevers, and headache and to promote sweating.	R
<i>Cyanotis arachnoidea</i> Clark.	KASCH-097	Commelinaceae	Vellai velarugu	Whole plant	The decoction of the whole plant is used in swellings above abdomen. The whole plant used for rheumatism and joint pains; leaves used to cure skin diseases.	C
<i>Debregeasia longifolia</i> Brum.f.	KASCH-040	Urticaceae	Vaadavalliveri	Leaves	Leaf juice is applied over the skin to cure scabies.	C
<i>Dendrobium herbaceum</i> Lindl.	KASCH-013	Yanaimiratti	Orchidaceae	Aerial part	10 gm fresh leaves are made into paste with 10 gm young shoots of <i>Andrographis paniculata</i> and applied on the infected parts twice a day for 7 days to cure syphilis.	E
<i>Dendrobium macrostachyum</i> Lindl.	KASCH-019	Orchidaceae	Yanaimiratti	Aerial parts	Aerial parts used for skin allergies.	R
<i>Dicranopteris linearis</i> Burm.f.	KASCH-041	Gleicheniaceae	Yanaivanangi	Leaves	Crushed leaves are applied as a poultice to control fever; the plant is used to get rid of intestinal worms; to treat boils, ulcers and wounds.	R
<i>Dioscorea oppositifolia</i> L.	KASCH-034	Dioscoreaceae	Vallikkiluvai	Yam	The yam is used for menstrual cramps.	C
<i>Dioscorea tomentosa</i> Koen.	KASCH-053	Dioscoreaceae	Noora kilangukodi	Yam	The yam is used for rheumatoid arthritis and stomach cramps disorders.	C
<i>Elaeagnus kologa</i> Schlecht.	KASCH-080	Elaeagnaceae	Kolungi	Whole plant	The plant is used to cure knee pain in old age persons.	E
<i>Eria mysorenses</i> Lindl.	KASCH-066	Orchidaceae	Ivirali	Whole plant	The whole plant used for diabetes, skin infectious diseases and also induced fertility.	End
<i>Eria polystachya</i> A.Rich.	KASCH-014	Orchidaceae	Ivirali	Whole plant	Whole plant juice used to cure fever.	E
<i>Erythroxylum monogynum</i> Roxb.	KASCH-022	Erythroxylaceae	Devatharu	Stem, bark and leaves	Stem, bark and leaf decoction given to pregnant women's for timely easily delivery.	C
<i>Euphorbia rothiana</i> Spr.	KASCH-102	Euphorbiaceae	Ponnaavaarai	Seed	The seed used for antifertility.	C
<i>Euphorbia vajravelui</i> Binojk. & Balakr.	KASCH-109	Euphorbiaceae	Malaikalli	Root	Root decoction used to cure digestive disorders, wounds, ulcers and cough.	End
<i>Fagraea ceilanica</i> Thunb.	KASCH-094	Loganiaceae	Malaikkathiri	Fruit	The fruit is used for wounds and treating leprosy.	R
<i>Flueggea leucopyrus</i> Willd.	KASCH-064	Euphorbiaceae	Venppoolan	Root	The root paste used as appetizer and blood purifier.	E
<i>Garcinia gummi-gutta</i> L.	KASCH-054	Clusiaceae	Kodampulli	Leaves and dried fruits	Leaves and dried fruits used for obesity, diarrhea, ulcers, inflammations and hyper-perspiration.	R
<i>Gardenia gummifera</i> L.f.	KASCH-024	Rubiaceae	Vellapaavattaa	Resin	A decoction of the resinous exudation is used to cure fever and combined with <i>Clerodendron serratum</i> is used dyspepsia and nervous disorders.	C
<i>Gymnema sylvestre</i> R.Br.	KASCH-059	Asclepiadaceae	Sarkarai kolli / Sirukurinjan	Leaves	Air dried powdered leaf mixed with water and given orally for scorpion and rat bite. Fresh chewed for diabetes.	C
<i>Habenaria plantaginea</i> Lindl.	KASCH-042	Orchidaceae	Sevirali	Whole plant	Whole plant used to cure stomach problems.	R
<i>Helicteres isora</i> L.	KASCH-035	Sterculiaceae	Idampuri-Valampuri	Fruit	The entire fruit is crushed and given to patients suffering from diarrhea. It is also used as a baby bath powder.	C
<i>Hemidesmus indicus</i> (L.) R.Br.	KASCH-043	Asclepiadaceae	Nannari	Root	Root is used as a stimulant to increase blood circulation.	C
<i>Heracleum rigens</i> Wall. ex DC.	KASCH-074	Apiaceae	Malai yelam; Kattu yelam	Fruit	Fruits used as condiments to get relief from digestive disorders.	E
<i>Hoya pauciflora</i> Wight.	KASCH-084	Asclepiadaceae	Nachathrapoo	Whole plant	Whole plant used to cure head ache and stomach problems.	E
<i>Hygrophylla schulli</i> (Buch.-Ham.) M.R.& S.M.Almeida.	KASCH-107	Acanthaceae	Neermulli	Whole plant	Whole plant ground mixed with cow's urine and used for chronic treatment. Leaf decoction used as diuretic.	C
<i>Impatiens parasitica</i> Bedd.	KASCH-103	Balsaminaceae	Thaekadiver	Aerial parts	The fresh whole plant is made into paste and applied on the spot of scorpion and insect bite.	E

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<i>Justicia adathoda</i> L.	KASCH-095	Acanthaceae	Aduthinchedi	Leaves	Leaf juice is used to treat respiratory disorders.	C
<i>Kleinia grandiflora</i> Wall. ex DC.	KASCH-098	Asteraceae	Nilampirandai	Leaves	Leaf used to control asthma and lung problem.	E
<i>Limonia acidissima</i> L.	KASCH-065	Rutaceae	Vilamaram	Fruit	Fruit eaten with sugar to prevent the body maturity.	C
<i>Litsea deccanensis</i> Gamb.	KASCH-045	Lauraceae	Kaattu kathari	Stem and bark	Stem and bark boiled with water and used to get relief body pain.	C
<i>Lycopodium clavatum</i> Clarke.	KASCH-030	Lycopodiaceae	Sivanjadai	Whole plant	Whole plant is used to keep of evil spirits.	R
<i>Malaxis rheedi</i> Sw.	KASCH-046	Orchidaceae	Kattu-vengayam	Whole plant	Whole plant ground with water and paste applied externally to cure blisters and wounds. Tuber paste applied externally for insect bite.	R
<i>Michaelia champaca</i> L.	KASCH-072	Annonaceae	Shenbagam	Flower	The flower macerated in coconut oil and applied externally for ophthalmic, nasal infections, sinus and rheumatism.	C
<i>Myristica dactyloides</i> Gaertner.	KASCH-089	Lauraceae	Kattu Jaathikkai	Seed	Seed paste with water administered orally to cure dysentery.	R
<i>Naringi crenulata</i> Roxb.	KASCH-096	Rutaceae	Magavilvam	Root, bark and leaves	Air dried leaves, bark and root powder mixed with milk and taken orally in empty stomach at early morning to cure sterility in both sexes. Air dried root powder mixed with pepper and administered orally to cure severe fever.	C
<i>Neolitsea foliosa</i> Gamb.	KASCH-104	Lauraceae	Porumila ilai	Tender stem	The tender stem part chewed to cure dental problem.	C
<i>Nephrolepis auriculata</i> (L.) Trimen.	KASCH-105	Oleandraceae	Miorosisan	Tuber	Tuber is edible and decoction of the fresh front given in cough.	C
<i>Oberonia wightiana</i> Lindl.	KASCH-015	Orchidaceae	Senkathalai	Whole plant	Whole plant decoction used to treat blood pressure. Leaves crushed with salt and turmeric and the paste applied and tied with bandage to cure external tumors on body.	R
<i>Oberonia verticillata</i> Wight.	KASCH-025	Orchidaceae	Senkathalai	Whole plant	Whole plant is paste applied externally to cure insect bites.	R
<i>Peperomia tetraphylla</i> Forst.f.	KASCH-036	Piperaceae	Kalbrammi	Leaves	Leaf juice administered orally to get relief gas trouble and body pain.	E
<i>Phyllanthus amarus</i> Schum.	KASCH-008	Euphorbiaceae	Kizhanelli	Root and leaves	Root and leaf paste used for jaundice.	C
<i>Pilea melastomoides</i> Poir.	KASCH-082	Urticaceae	Pachai Rathasoori	Leaves	Leaves used to cure allergies at the time of child birth.	R
<i>Piper hymenophyllum</i> Miq.	KASCH-073	Piperaceae	Vaal Thippili	Fruit	Leaf juice administered orally to get relief gas trouble.	E
<i>Piper longum</i> L.	KASCH-075	Piperaceae	Thippili	Seed	Ash of the seed is taken orally with honey to cure cough.	E
<i>Piper mulleusa</i> Buch.-Ham.	KASCH-106	Piperaceae	Kattu Thippili	Fruit	Dried fruits used for dental care and the paste applied on forehead to cure headache.	R
<i>Piper schmidtii</i> Hook.f.	KASCH-083	Piperaceae	Kattu kurumilagu	Fruit	The dried fruit powder taken orally for three days with hot water to cure dyspepsia, scorpion and insect bites.	R
<i>Plumbago zeylanica</i> L.	KASCH-085	Plumbaginaceae	Kodiveli	Root	Root is powdered and administered orally with jiggery to cure leucorrhoea.	C
<i>Polystachya concreta</i> Jacq.	KASCH-049	Orchidaceae	Irruviralli	Tuber	Approximately 100gm of fresh tuber with 500ml of water is boiled till it reduces to 100ml. Then, 3 to 4 ml of this decoction is taken orally with 7 to 8 drops of honey in empty stomach twice a day for 2 months for treatment of arthritis.	End
<i>Pterocarpus marsupium</i> Roxb.	KASCH-079	Fabaceae	Vaengai	Stem bark	Stem bark boiled with <i>Terminalia chebula</i> fruit and decoction is applied externally to get relief from toothache.	C
<i>Rauvolfia serpentina</i> Benth.	KASCH-108	Apocynaceae	Sarpagaanthi	Whole plant	Root paste is used as an antidote for snake bite.	End
<i>Rauvolfia tetraphylla</i> L.	KASCH-086	Apocynaceae	Pampukaalaa chedi	Root	Root used to treat high blood pressure and mental disorders.	C
<i>Schefflera racemosa</i> Harms.	KASCH-058	Araliaceae	Peimiratti	Leaves	The leaves of the plant traditionally used for cough.	E
<i>Scilla hyacinthiana</i> Roth.	KASCH-016	Hyacinthaceae	Nara vengayam	Pseudobulb	The pseudobulb administered for increasing appetite.	C
<i>Selaginella involvens</i> (Sw.) Spring.	KASCH-028	Selaginellaceae	Karudapachai	Leaves	Leaves used for curing jaundice.	C
<i>Selaginella wightii</i> Spring.	KASCH-017	Selaginellaceae	Sanjeevani	Whole plant	The whole plant part used to treat irregular menstruation; given externally to pregnant women for an easy delivery.	C
<i>Semecarpus anacardium</i> L.f.	KASCH-037	Anacardiaceae	Shenkottai	Fruit	Decoction of crushed fruit given for asthma.	C
<i>Shorea roxburghii</i> Don.	KASCH-070	Dipterocarpaceae	Kungliam	Resin	The resin used as an astringent.	R
<i>Sirhookera lanceolata</i> Wight.	KASCH-063	Orchidaceae	Vishachedi	Whole plant	Whole plant used antidote for poisonous bite.	R
<i>Solanum surrattense</i> Burm.f.	KASCH-056	Solanaceae	Kandankathari	Leaves and fruit	Leaves and fruit used as green vegetable and used to cure cough and cold.	C
<i>Solena amplicaulis</i> Lam.	KASCH-038	Cucurbitaceae	Kattuappakovai	Fruit	The fruit used to cure diabetes.	C

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<i>Strobilanthes kunthianus</i> T. And.	KASCH-055	Acanthaceae	Kaattu kurinji	Leaves	The leaves crushed and the juice used to cure a stomach ailments.	E
<i>Strychnos nux-vomica</i> L.	KASCH-050	Loganiaceae	Etti maram	Stem bark, leaves and fruit	Stem bark, leaves and fruits ground with <i>Aloe vera</i> leaves and the paste is taken orally to cure piles.	C
<i>Strychnos potatorum</i> L.f.	KASCH-067	Loganiaceae	Shenththan kottai	Seed	The seeds are immersed in water for 5 days and in milk for 2 days is boiled and given to reduce blood pressure.	C
<i>Swertia beddomei</i> Calrke.	KASCH-047	Gentianaceae	Sitharathai	Whole plant	The whole plant decoction is taken orally to cure diabetics, blood pressure and poisonous bites.	End
<i>Terminalia arjuna</i> Wight & Arn.	KASCH-111	Combretaceae	Marutha maram	Stem bark and fruit	Bark juice administered orally to cure heart diseases. Fruit juice with butter milk administered orally for stomach and fruit juice mixed with honey taken orally to cure cough.	C
<i>Terminalia bellarica</i> Roxb.	KASCH-018	Combretaceae	Thanikkai	Fruit	One teaspoon fruit juice is used 2-3 times in a day for cough.	C
<i>Terminalia chebula</i> Retz.	KASCH-020	Comretaceae	Kadukkai	Fruit	Fruits used to cure jaundice, leproacy, digestive and cardiac diseases.	C
<i>Tinospora cordifolia</i> Miers.	KASCH-068	Menispermaceae	Cheenthikodi	Leaves	Leaf juice along with butter milk administered orally to cure piles.	C
<i>Toddalia asiatica</i> Lam.	KASCH-060	Rutaceae	Milaguaranai	Root	Root bark powdered and used to cure stomach ulcers.	C
<i>Vanda testacea</i> Lindl.	KASCH-048	Orchidaceae	Vanda	Root	The root is used to cure rheumatism and nervous disorder. It is also remedy for secondary syphilis and scorpion-siting.	R
<i>Vetiveria zizanoides</i> Nash.	KASCH-039	Poaceae	Vettiver	Root	The root is used as coolant and the paste applied over the wounds for quick healing	R
<i>Zingiber zerumbet</i> Sm.	KASCH-026	Zingiberaceae	Kaattu inji	Rhizome	Fresh rhizome as a cure for edema, stomach ache, sores and loss of appetite while the juice of the boiled rhizomes is used to treat worm infection in children.	R

IUCN status: C-Common, R-Rare, E-Endemic, End-Endangered.

Followed by Orchidaceae, Euphorbiaceae contributed about 6% of the species, Piperaceae contributed about 5% of the species. Asteraceae, Acanthaceae, Fabaceae and Rutaceae contributing 4% of the species each and the remaining families were represented one or two species in each. Among the 111 species, herbs contributed 43% of the species, followed by 7% shrubs, 14% climbers, 11% epiphytes, 1% liane and trees 24% respectively (Fig. 3).

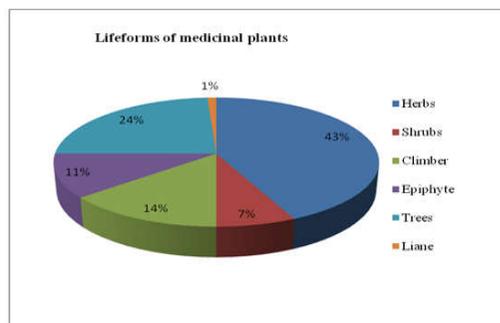


Figure 3. The life-forms of medicinal plants commercially sold from Velliangiri Hills, (Poondi)

Destructive collections of medicinal plants were observed in the present study. Of the 111 species of commercially exploited medicinal plants, 26% for leaves, 23% underground parts (root, rhizome, tubers and yam), 9% for reproductive parts (flower, fruit and seed), 23% for whole plant, 15% for Aerial parts (stem, bark and resin) and 4% for pseudobulb were collected (Fig. 4). The medicinal plants are mostly collected in season wise June-December is a favorable time for heavy collection. Some of the beautiful pteridophytes viz. *Actinopteris radiata*, *Dicranopteris linearis*, *Lycopodium clavatum*, *Nephrolepis auriculata*, *Selaginella involvens* and *Selaginella wightii* are collected and used for tribal health care system to sell in local market.

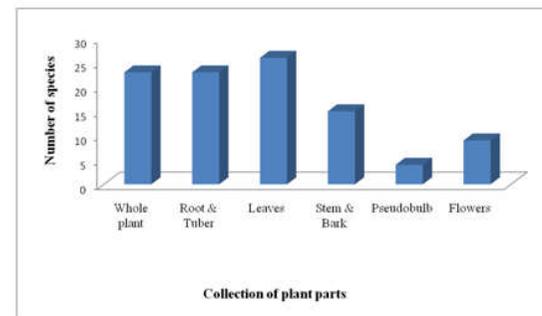


Figure 4. Collection of different medicinal plant parts in Velliangiri hills, (Poondi)

The local/tribal peoples are preparation of ailments in different forms viz., paste, decoction, juice, powder and raw eaten (Fig. 5). In the tribals are mostly prepared in paste form for (38%), decoction in (26%), juice in (24%) and raw eaten in only (4%). The pilgrims purchase the medicinal plants in local market of Velliangiri hills, at the time tribes/local peoples are clearly explained to medicinal importance of plants, preparation of ailments, dosage and consumptions. They pilgrims are easily recognize the local/tribal people explanation and buy in a number of required medicinal plants in local markets.

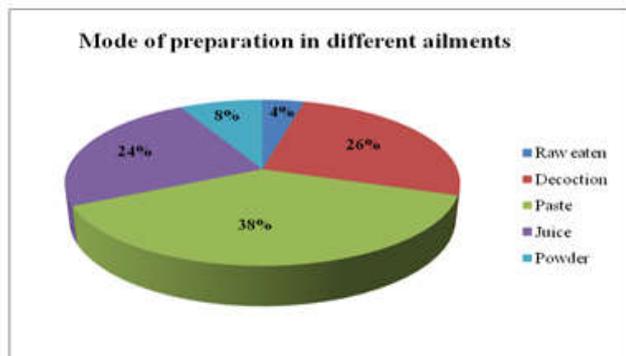


Figure 5. Ailments preparation in various categories

In the local market/shops of Velliangiri hills, the pilgrims and other peoples were purchasing the medicinal plants and used to treat their Common ailments viz., skin infections, stomachache, cough, fever, rheumatism, asthma, wound healing, fertility and diabetes. (Fig. 6).

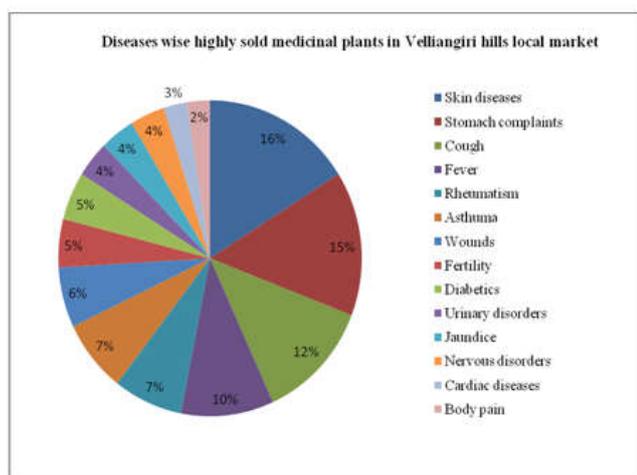


Figure 6. Diseases wise highly sold medicinal plant species in Velliangiri hills

The local/tribal peoples were given priority to skin and stomach related diseases and mostly collect plants viz., *Anisochilus argenteus*, *Bulbophyllum albidum*, *Bulbophyllum tremulum*, *Coelogyne nervosa*, *Coelogyne odoratissima*, *Curcuma neilgherrensis*, *Dendrobium macrostachyum* and *Eria mysorenses*. The species *Aristolochia indica*, *Habenaria plantaginea*, *Hoya pauciflora*, *Strobilanthes kunthianus*, *Terminalia chebula* and *Toddalia asiatica* regularly used to address the stomach disorders. The study revealed that some of the administered medicinal plant ailment categories are newly reported in the study area.

The present study also analyzed the status of plant populations based on IUCN criteria and found that the species such as

*Bulbophyllum fusco-purpureum*, *Eria mysorenses*, *Euphorbia vajravelui*, *Polystachya concreta*, *Rouvolfia serpentina* and *Swertia beddomei* were categorized as Endangered. Because these plant populations are decreased in year by year due to over collection by local people/tribal in the study region. However, the tribals are also interested to collect some of the epiphytic orchids and pteridophytes in small quantity which give high income per day, Rare than the large quantity of commonly available medicinal plants which gives small income only per day.

The tribes adding some common ingredients such as sugar, salt, honey, milk, onion, pepper, turmeric, tamarind, jiggery, coconut oil and cow's urine to prepare various ailments to meet human health care system. They thought that these ingredients are very helpful to cure common diseases within few days in free of side effects, local availability, low cost and high effectiveness. The vernacular names of certain medicinal plants which are sold in the local markets were confusing with original plant species and are considered as the adulterant. A single local name is indicating in three different plant species. For example, Seethai Manjal is the local name for *Coelogyne nervosa* in the literature, the same name was used to indicate two more plants viz., *Bulbophyllum tremulum* and *Coelogyne odoratissima*. It is the fact that, the local people and others use to go on collecting medicinal plants in the wild which cause extinction of such species. But tribal who using this plant medicinal properties were different in species to species.

**Conclusion**

The present study observed that certain species of orchids viz., *Bulbophyllum fusco-purpureum*, *Eria mysorenses*, *Coelogyne nervosa*, *Dendrobium herbaceum* and *Oberonia verticillata* were regularly collected from the study region and sold in the local markets by the local/tribal people. This will generate some income to them to fulfill their basic livelihoods. It is suggested that these wild plant species should be conserved seriously and to be encouraged for large scale cultivation and to develop many herbal gardens for medicinal plants in the suitable areas and also to generate additional income to local/tribal people. It is concluded from the study that, to enlighten the negative impacts of over-exploitation and to ensure sustainable utilization, the tribes who are involved in the collection of medicinal plants should be given appropriate training in the scientific way of collection and sustainable use of bio-resources. As a result, sustained yield from the forest can be achieved by diminishing the collection and utilization of medicinal plants.

**Acknowledgement**

The authors are grateful thanks to Dr. M. Aruchami, President, Tmt. C. A. Vasuki Secretary and Director and Dr. T. Muraleeswari, Principal, Kongunadu Arts and Science College, Coimbatore for encouragement and facilities. Our sincere thanks to Joint Director, Botanical Survey of India, Southern Circle, Coimbatore for permitting use to consult the library and herbarium resources. Our grateful thanks to Tamil Nadu Forest department for granting permission and support facilities for our research work. The authors are thanks to Irular, Malasar and Mudugar tribal peoples and traditional healers for sharing their valuable knowledge of ethnomedicinal practices.

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