RESEARCH ARTICLE

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

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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 as ointment 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 Drdhbala, 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 neutraceuticals (Ghosh, 2003; Sharma and Muddem, 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 tribes. 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.

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 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.

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.

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 (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.

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

<table>
<thead>
<tr>
<th>Botanical Names</th>
<th>Voucher No</th>
<th>Family</th>
<th>Local name</th>
<th>Plant parts</th>
<th>Dosage forms</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abruces precatiorius L.</td>
<td>KASCH-007</td>
<td>Fabaceae</td>
<td>Kattu kundumani</td>
<td>Leaves</td>
<td>Fresh leaves are chewed to prevent dental pain.</td>
<td>C</td>
</tr>
<tr>
<td>Acalypha fruticosa Forsk.</td>
<td>KASCH-010</td>
<td>Euphorbiaceae</td>
<td>Sirisimm</td>
<td>Leaves</td>
<td>Fresh leaves ground with salt and eaten to get relief from stomach ache.</td>
<td>C</td>
</tr>
<tr>
<td>Acorus calamus L.</td>
<td>KASCH-021</td>
<td>Zingiberaceae</td>
<td>Vasampu</td>
<td>Rhiomone</td>
<td>Rhiomone paste mixed with the ash of peacocks feather and honey and administered orally to cure cough.</td>
<td>R</td>
</tr>
<tr>
<td>Actinopteris radiata (SW.) Link.</td>
<td>KASCH-005</td>
<td>Actinopteridaceae</td>
<td>Purasangi</td>
<td>Whole plant</td>
<td>Whole plant is applied on cuts and wounds; paste with sugar is given two times a day as an aphrodiasic.</td>
<td>R</td>
</tr>
<tr>
<td>Aegle marmelos Corr.</td>
<td>KASCH-003</td>
<td>Rutaceae</td>
<td>Vilvam</td>
<td>Root and leaves</td>
<td>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.</td>
<td>C</td>
</tr>
<tr>
<td>Aloe vera L.</td>
<td>KASCH-030</td>
<td>Liliaceae</td>
<td>Chottu kathalai</td>
<td>Leaves</td>
<td>Leaf gel is applied on boils and wounds twice a day.</td>
<td>C</td>
</tr>
<tr>
<td>Ambelocissus tomentosa Planch.</td>
<td>KASCH-023</td>
<td>Vitaceae</td>
<td>Sivappukodi kilangu</td>
<td>Leaves</td>
<td>Leaf used for joint the bone.</td>
<td>C</td>
</tr>
<tr>
<td>Anaphalis alata Nees.</td>
<td>KASCH-009</td>
<td>Asteraceae</td>
<td>Feriannangai</td>
<td>Whole plant</td>
<td>The whole plant is used to cure dysentery, cholera, diabetes, swellings, itchies and piles.</td>
<td>C</td>
</tr>
<tr>
<td>Asparagus racemosus Wild.</td>
<td>KASCH-006</td>
<td>Liliaceae</td>
<td>Thaneevattan kilangu</td>
<td>Tuber</td>
<td>Tuber extract administered orally to cure urinary disorders. And also administered orally for two days to cure dysentery.</td>
<td>C</td>
</tr>
<tr>
<td>Anisochilus argenteus Gamb.</td>
<td>KASCH-077</td>
<td>Lamiaceae</td>
<td>Kalthamarai</td>
<td>Leaves</td>
<td>Leaf paste is applied for skin diseases.</td>
<td>E</td>
</tr>
<tr>
<td>Arisaema leschenaultia Bl.</td>
<td>KASCH-052</td>
<td>Araceae</td>
<td>Kaattu karunai</td>
<td>Tuber</td>
<td>Tuber juice used to cure cough.</td>
<td>C</td>
</tr>
<tr>
<td>Arisaeam tortuosum Schott.</td>
<td>KASCH-057</td>
<td>Araceae</td>
<td>Kaattu sarai</td>
<td>Tuber</td>
<td>Tuber ground with water and the paste applied externally on the spot of snake and insect bite.</td>
<td>C</td>
</tr>
<tr>
<td>Aristolochnia indica L.</td>
<td>KASCH-002</td>
<td>Aristolochiaceae</td>
<td>Unkkodi</td>
<td>Root and leaves</td>
<td>Fresh root ground with water and administered orally to cure a stomach pain. Leaves ground with onion and inhaled to get relief from faintness.</td>
<td>C</td>
</tr>
<tr>
<td>Asparagus racemosus Wild.</td>
<td>KASCH-006</td>
<td>Liliaceae</td>
<td>Thaneevattan kilangu</td>
<td>Tuber</td>
<td>Tuber extract administered orally to cure urinary disorders. And also administered orally for two days to cure dysentery.</td>
<td>C</td>
</tr>
<tr>
<td>Begonia malabarica Lam.</td>
<td>KASCH-004</td>
<td>Begoniaceae</td>
<td>Rathasorri</td>
<td>Stem</td>
<td>The fresh succulent part of the stem used to cure blood cancer.</td>
<td>R</td>
</tr>
<tr>
<td>Biophytum longipedunculatum Govind.</td>
<td>KASCH-001</td>
<td>Oxalidaceae</td>
<td>Surungi</td>
<td>Leaves</td>
<td>The leaves are ground and given along with butter milk for diarrhoea; after delivery, the leaves of this plant along with jujucy is cooked and given to the delivered ladies to expel the lochia and remains from the uterus.</td>
<td>E</td>
</tr>
<tr>
<td>Bridelia crumenulata Roxb.</td>
<td>KASCH-011</td>
<td>Euphorbiaceae</td>
<td>Mulvengai</td>
<td>Stem and bark</td>
<td>Stem bark mixed with the bark of Anogeessa latifolia and boiled in water. Boiled water is used for bathing to get relief from body pain.</td>
<td>C</td>
</tr>
<tr>
<td>Bulbophyllum albiflorum Bl.</td>
<td>KASCH-090</td>
<td>Orchidaceae</td>
<td>Pommanjal</td>
<td>Pseudobulb</td>
<td>The pseudobulb paste used for skin diseases.</td>
<td>E</td>
</tr>
<tr>
<td>Bulbophyllum fusco-purpleum W.</td>
<td>KASCH-099</td>
<td>Orchidaceae</td>
<td>Throbati manjal</td>
<td>Whole plant</td>
<td>Juice of pseudobulb is taken orally to reduce body temperature; whole plant used for treat diabetic disorders; pseudobulb also has anti-fertility property.</td>
<td>End</td>
</tr>
<tr>
<td>Bulbophyllum neillgerrense W.</td>
<td>KASCH-091</td>
<td>Orchidaceae</td>
<td>Maran manjal</td>
<td>Whole plant</td>
<td>The whole plant used for strengthening of a weak uterus for conception.</td>
<td>R</td>
</tr>
<tr>
<td>Bulbophyllum treamum W.</td>
<td>KASCH-032</td>
<td>Orchidaceae</td>
<td>Seethai manjal</td>
<td>Leaves</td>
<td>The leaf used to treat pulmonary tuberculosis and fever.</td>
<td>R</td>
</tr>
<tr>
<td>Canarium strictum Roxb.</td>
<td>KASCH-044</td>
<td>Burseraceae</td>
<td>Sambirani mararn</td>
<td>Resin</td>
<td>Resin ground with turmeric and made into paste and applied over the cracks in legs.</td>
<td>R</td>
</tr>
<tr>
<td>Canas indica L.</td>
<td>KASCH-087</td>
<td>Musaceae</td>
<td>Kalvalai</td>
<td>Root</td>
<td>The roots are abortifacient and insecticidal and are useful in destroying lice in the hair.</td>
<td>C</td>
</tr>
<tr>
<td>Caralluma adscendens R.Br.</td>
<td>KASCH-012</td>
<td>Asclepiadaceae</td>
<td>Pachapuli</td>
<td>Shoot</td>
<td>Tender shoots ground with onion, tamarind and the paste is used to cure digestive disorders.</td>
<td>C</td>
</tr>
<tr>
<td>Celastrus paniculatum Wild.</td>
<td>KASCH-033</td>
<td>Celastraceae</td>
<td>Vaaluluvai</td>
<td>Whole plant</td>
<td>The whole plant is used for appetite suppressive and used for memory restorative activity.</td>
<td>R</td>
</tr>
<tr>
<td>Centella asiatica Urb.</td>
<td>KASCH-092</td>
<td>Apiaceae</td>
<td>Vallarai</td>
<td>Leaves</td>
<td>Leaf paste is used to eczema and leucorrhoea.</td>
<td>C</td>
</tr>
<tr>
<td>Chamaerictis rumota Lam.</td>
<td>KASCH-071</td>
<td>Caesalpinaceae</td>
<td>Konni</td>
<td>Root and Leaves</td>
<td>Roots crushed with water add little salt and drink relieve stomachache and cough.</td>
<td>C</td>
</tr>
<tr>
<td>Chlorophyllum minutum (Graham) Dalz.</td>
<td>KASCH-051</td>
<td>Anthericaceae</td>
<td>Visamoongil ila</td>
<td>Leaves</td>
<td>The leaf is useful as an aphrodiasic.</td>
<td>E</td>
</tr>
</tbody>
</table>

Continue………..
<table>
<thead>
<tr>
<th>Plant Name</th>
<th>Family</th>
<th>Part Used</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cinnamonum macrocarpum Hook.f.</td>
<td>Lamiaceae</td>
<td>Stem</td>
<td>Stem decoction administered orally for cough.</td>
</tr>
<tr>
<td>Coelogyne nervosa A.Rich.</td>
<td>Orchidaceae</td>
<td>Pseudobulb</td>
<td>Pseudobulb paste applied on body of children and taken bath to maintain good health; pseudobulb used to cure skin diseases.</td>
</tr>
<tr>
<td>Coelogyne odoratissima Lindl.</td>
<td>Orchidaceae</td>
<td>Pseudobulb</td>
<td>Pseudobulb used to cure skin diseases.</td>
</tr>
<tr>
<td>Commelina longifolia Lam.</td>
<td>Commelinaceae</td>
<td>Whole plant</td>
<td>Whole plant is used to cure fever.</td>
</tr>
<tr>
<td>Costus speciosus (Koen.) J.E. Smith.</td>
<td>Costaceae</td>
<td>Rhizome</td>
<td>Rhizome used to cure bronchitis and asthma.</td>
</tr>
<tr>
<td>Crotalaria clarkei Gamb.</td>
<td>Fabaceae</td>
<td>Vatta illiprai</td>
<td>Decoction of whole plants in small quantity used to treat cardiac diseases.</td>
</tr>
<tr>
<td>Crotalaria mysorensis Roth.</td>
<td>Fabaceae</td>
<td>Vellai vishnumguthi</td>
<td>Seeds are sprinkled in flames to produce smoke to driving away the snakes.</td>
</tr>
<tr>
<td>Curculigo orchideae Gaertn.</td>
<td>Hypoxidaceae</td>
<td>Nilappanai kizhangu</td>
<td>Rhizome used to cure inflammatory and cancer.</td>
</tr>
<tr>
<td>Curcuma longifolia</td>
<td>Zingiberaceae</td>
<td>Kaattu manjal</td>
<td>Rhizome paste used to control the dandruff and skin allergies.</td>
</tr>
<tr>
<td>Cyanotis arachnoidea Clark.</td>
<td>Poaceae</td>
<td>Kanakampul</td>
<td>Leaf oil used to cure asthma, urinary tract infections, digestive complaints, fevers, and headache to promote sweating.</td>
</tr>
<tr>
<td>Debregeasia longifolia Brum.f.</td>
<td>Urticaceae</td>
<td>Vaadavalliveri</td>
<td>Leaf juice is applied over the skin to cure scabies.</td>
</tr>
<tr>
<td>Dendrobium herbaceum Lindl.</td>
<td>Orchidaceae</td>
<td>Aerial part</td>
<td>10 gm fresh leaves are made into paste with 10 gm young shoots of Andrographis paniculata and applied on the infected parts twice a day for 7 days to cure syphilis.</td>
</tr>
<tr>
<td>Dendrobium macrostachyum Lindl.</td>
<td>Orchidaceae</td>
<td>Aerial parts</td>
<td>Aerial parts used for skin allergies.</td>
</tr>
<tr>
<td>Dicranopteris linearis Burm.f.</td>
<td>Gleicheniaceae</td>
<td>Yamaivanangi</td>
<td>Crushed leaves are applied as a poultice to control fever; the plant is used to get rid of intestinal wars; to treat boils, ulcers and wounds.</td>
</tr>
<tr>
<td>Dioscorea oppositifolia L.</td>
<td>Dioscoreaceae</td>
<td>Yam</td>
<td>The yam is used for menstrual cramps.</td>
</tr>
<tr>
<td>Dioscorea tomentosa L.</td>
<td>Dioscoreaceae</td>
<td>Noora kilingukodi</td>
<td>The yam is used for rheumatoid arthritis and stomach cramps disorders.</td>
</tr>
<tr>
<td>Elaeagnus kologa Schlecht.</td>
<td>Elaeagnaceae</td>
<td>Kelangi</td>
<td>The plant is used to cure knee pain in old age persons.</td>
</tr>
<tr>
<td>Eria myroserensis Ilviri.</td>
<td>Orchidaceae</td>
<td>Irviali</td>
<td>Whole plant used for diabetes, skin infectious diseases and also induced fertility.</td>
</tr>
<tr>
<td>Eria polystachya A.Rich.</td>
<td>Orchidaceae</td>
<td>Irviali</td>
<td>Whole plant juice used to cure fever.</td>
</tr>
<tr>
<td>Erythroxylum monogynum Roxb.</td>
<td>Erythroxylaceae</td>
<td>Devatharu</td>
<td>Stem, bark and leaves</td>
</tr>
<tr>
<td>Euphorbia rothiana Spr.</td>
<td>Euphorbiaceae</td>
<td>Ponnavaarai</td>
<td>Stem, bark and leaf decoction given to pregnant women’s for timely easily delivery.</td>
</tr>
<tr>
<td>Euphorbia vajraveli Binoj. &amp; Balakr.</td>
<td>Euphorbiaceae</td>
<td>Malakalili</td>
<td>The seed used for anti fertility.</td>
</tr>
<tr>
<td>Fagrea ceilanica Thunb.</td>
<td>Loganiaceae</td>
<td>Malaikathiri</td>
<td>Fruit</td>
</tr>
<tr>
<td>Flueggea leucopryia Wodd.</td>
<td>Urticaceae</td>
<td>Venppoolan</td>
<td>The fruit is used for wounds and treating leprosy.</td>
</tr>
<tr>
<td>Garcinia gammi-gutta L.</td>
<td>Clusiaceae</td>
<td>Kodampalli</td>
<td>Leaves and dried fruits used for obesity, diabetes, ulcers, inflammations and hypotension.</td>
</tr>
<tr>
<td>Gardenia gymniferia L.f.</td>
<td>Rubiaceae</td>
<td>Vellapaavattada</td>
<td>A decoction of the resinos exudation is used to cure fever and combined with Clerodendron serratum is used dyspepsia and nervous disorders.</td>
</tr>
<tr>
<td>Gymnema sylvestre R.Br.</td>
<td>Asclepiadaceae</td>
<td>Sankarai kolli / Sirukurnjan</td>
<td>Leaves</td>
</tr>
<tr>
<td>Habenaria plantaginea Lindl.</td>
<td>Orchidaceae</td>
<td>Severali</td>
<td>Whole plant used to cure stomach problems.</td>
</tr>
<tr>
<td>Hellebores isora L.</td>
<td>Sterculiaceae</td>
<td>Isorai</td>
<td>Whole plant used to cure stomach problems.</td>
</tr>
<tr>
<td>Hemidesmus indicus (L.) R.Br.</td>
<td>Asclepiadaceae</td>
<td>Nannari</td>
<td>Root</td>
</tr>
<tr>
<td>Heracleum rigens Wall. ex DC.</td>
<td>Apiaceae</td>
<td>Malai yelam; Kattu yelam</td>
<td>Root is used as a stimulant to increase blood circulation.</td>
</tr>
<tr>
<td>Hoya pauciflora Wight.</td>
<td>Asclepiadaceae</td>
<td>Nachathrapoo</td>
<td>Whole plant used to cure head ache and stomach problems.</td>
</tr>
<tr>
<td>Hypophylla schulli (Buch.-Harn.) M.R. &amp; S.M.Almeida.</td>
<td>Acanthaceae</td>
<td>Neemulli</td>
<td>Whole plant ground mixed with cow’s urine and used for chronic treatment.</td>
</tr>
<tr>
<td>Impatiens paradisiaca Bedd.</td>
<td>Balsaminaceae</td>
<td>Thakaladiver</td>
<td>The fresh whole plant is made into paste and applied on the spot of scorpion and insect bite.</td>
</tr>
</tbody>
</table>

Continue…………
<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Family</th>
<th>Part Used</th>
<th>Medical Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Justicia adathodo L.</td>
<td>Acanthaceae</td>
<td>Leaves</td>
<td>Leaf juice is used to treat respiratory disorders.</td>
</tr>
<tr>
<td>Kleinia grandiflora Wall. ex DC.</td>
<td>Asteraceae</td>
<td>Leaves</td>
<td>Leaf used to control asthma and lung problem.</td>
</tr>
<tr>
<td>Limonia acidissima L.</td>
<td>Rutaceae</td>
<td>Fruit</td>
<td>Fruit eaten with sugar to prevent the body maturity.</td>
</tr>
<tr>
<td>Litsea deccanensis Gamb.</td>
<td>Lauraceae</td>
<td>Stem and bark</td>
<td>Stem and bark boiled with water and used to get relief body pain.</td>
</tr>
<tr>
<td>Lycopodium clavatum Clarke.</td>
<td>Lycopodiaceae</td>
<td>Whole plant</td>
<td>Whole plant is kept to keep of evil spirits.</td>
</tr>
<tr>
<td>Malaxis rheidi Sw.</td>
<td>Orchidaceae</td>
<td>Whole plant</td>
<td>Whole plant grown with water and paste applied externally to cure blisters and wounds. Tuber paste applied externally for insect bite.</td>
</tr>
<tr>
<td>Michaelia champaca L.</td>
<td>Annonaceae</td>
<td>Flower</td>
<td>The flower macerated in coconut oil and applied externally for opthalmic, nasal infections, sinus and rheumatism.</td>
</tr>
<tr>
<td>Myristica dactyloides Gaeptner.</td>
<td>Lauraceae</td>
<td>Seed</td>
<td>Seed paste with water administered orally to cure dysentery.</td>
</tr>
<tr>
<td>Naringi crenulata Roxb.</td>
<td>Rutaceae</td>
<td>Root, bark and leaves</td>
<td>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.</td>
</tr>
<tr>
<td>Neolitsea foliosa Gamb.</td>
<td>Lauraceae</td>
<td>Tender stem</td>
<td>The tender stem part chewed to cure dental problem.</td>
</tr>
<tr>
<td>Nepheirophus auriculata (L.) Trimen.</td>
<td>Oleandraceae</td>
<td>Tuber</td>
<td>Tuber is edible and decoction of the fresh front given in cough.</td>
</tr>
<tr>
<td>Oberonia wightiana Lindl.</td>
<td>Orchidaceae</td>
<td>Whole plant</td>
<td>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.</td>
</tr>
<tr>
<td>Oberonia verticillata Wight.</td>
<td>Orchidaceae</td>
<td>Whole plant</td>
<td>Whole plant is paste applied externally to cure insect bites.</td>
</tr>
<tr>
<td>Peperomia tetraphylla Forst.f.</td>
<td>Piperaceae</td>
<td>Leaves</td>
<td>Leaf juice administered orally to get relief gas trouble and body pain.</td>
</tr>
<tr>
<td>Phyllanthus amarus Schum.</td>
<td>Euphorbiaceae</td>
<td>Pseudobulb</td>
<td>The pseudobulb administered for increasing appetite.</td>
</tr>
<tr>
<td>Pilea melastomoides Pot.</td>
<td>Urticaceae</td>
<td>Leaves</td>
<td>Leaves used to get allergies at the time of child birth.</td>
</tr>
<tr>
<td>Piper hysterophyllum Miq.</td>
<td>Piperaceae</td>
<td>Fruit</td>
<td>Leaf juice administered orally to get relief gas trouble.</td>
</tr>
<tr>
<td>Piper longum L.</td>
<td>Piperaceae</td>
<td>Seed</td>
<td>Ash of the seed is taken orally with honey to cure cough.</td>
</tr>
<tr>
<td>Piper mulesusa Buch.-Ham.</td>
<td>Piperaceae</td>
<td>Fruit</td>
<td>Dried fruits used for dental care and the paste applied on forehead to cure headaches.</td>
</tr>
<tr>
<td>Piper schmiditii Hook.f.</td>
<td>Piperaceae</td>
<td>Fruit</td>
<td>The dried fruit powder taken orally for three days with hot water to cure dyspepsia, scorpion and insect bites.</td>
</tr>
<tr>
<td>Plumago zeylanica L.</td>
<td>Plumbaginaceae</td>
<td>Root</td>
<td>Root is powdered and administered orally with jiggery to cure leucorrhoea.</td>
</tr>
<tr>
<td>Polystachya concreta Jacq.</td>
<td>Orchidaceae</td>
<td>Tuber</td>
<td>Approximately 100gm of fresh tuber with 300ml 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.</td>
</tr>
<tr>
<td>Pierocarpus marsupium Roxb.</td>
<td>Fabaceae</td>
<td>Stem bark</td>
<td>Stem bark boiled with Terminalia chebula fruit and decoction is applied externally to get relief from toothache.</td>
</tr>
<tr>
<td>Rauwolfia serpentina Benth.</td>
<td>Apocynaceae</td>
<td>Whole plant</td>
<td>Root paste is used as an antidote for snake bite.</td>
</tr>
<tr>
<td>Rauwolfia tetraphylla L.</td>
<td>Apocynaceae</td>
<td>Root</td>
<td>Root used to treat high blood pressure and mental disorders.</td>
</tr>
<tr>
<td>Schofieldia racemosa Harms.</td>
<td>Anacardiaceae</td>
<td>Leaves</td>
<td>The leaves of the plant traditionally used for cough.</td>
</tr>
<tr>
<td>Scilla ivanishkina Roth.</td>
<td>Hyacinthaceae</td>
<td>Pseudobulb</td>
<td>The pseudobulb administered for increasing appetite.</td>
</tr>
<tr>
<td>Selaginella involvens (Sw.) Spring.</td>
<td>Selaginellaceae</td>
<td>Leaves</td>
<td>Leaves used for curing jaundice.</td>
</tr>
<tr>
<td>Selaginella wightii Spring.</td>
<td>Selaginellaceae</td>
<td>Whole plant</td>
<td>The whole plant part used to treat irregular menstruation; given externally to pregnant women for an easy delivery.</td>
</tr>
<tr>
<td>Semecarpus anacardium L.f.</td>
<td>Anacardiaceae</td>
<td>Fruit</td>
<td>Decoction of crushed fruit given for asthma.</td>
</tr>
<tr>
<td>Shorea roxburghii Don.</td>
<td>Dipterocarpaceae</td>
<td>Resin</td>
<td>The resin used as an astringent.</td>
</tr>
<tr>
<td>Sirhookera lanceolata Wight.</td>
<td>Orchidaceae</td>
<td>Whole plant</td>
<td>Whole plant used antidote for poisonous bite.</td>
</tr>
<tr>
<td>Solanum surattense Burm.f.</td>
<td>Solanaceae</td>
<td>Leaves and fruit</td>
<td>Leaves and fruit used as green vegetable and used to cure cough and cold.</td>
</tr>
<tr>
<td>Solena amplexicaulis Lam.</td>
<td>Cucurbitaceae</td>
<td>Fruit</td>
<td>The fruit used to cure diabetes.</td>
</tr>
</tbody>
</table>

Continue………..
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 14% climbers, 11% epiphytes, 1% liane and trees 24% respectively (Fig. 3).

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.

<table>
<thead>
<tr>
<th>Species</th>
<th>Family</th>
<th>KASCH</th>
<th>Life-forms of medicinal plants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strobilanthes kunthianus T. And.</td>
<td>Acanthaceae</td>
<td>KASCH-055</td>
<td>Leaves</td>
</tr>
<tr>
<td><em>Strychnos nux-vomica</em> L.</td>
<td>Loganiaceae</td>
<td>KASCH-050</td>
<td>Stem bark and fruit</td>
</tr>
<tr>
<td><em>Strychnos potatorum</em> L.f.</td>
<td>Loganiaceae</td>
<td>KASCH-067</td>
<td>Stem bark, leaves and fruit</td>
</tr>
<tr>
<td><em>Swertia beddomei</em> Calrke.</td>
<td>Gentianaceae</td>
<td>KASCH-047</td>
<td>The seeds are immersed in water for 5 days and in milk for 2 days is boiled and given to reduce blood pressure.</td>
</tr>
<tr>
<td><em>Terminalia arjuna</em> Wight &amp; Arn.</td>
<td>Combretaceae</td>
<td>KASCH-111</td>
<td>Seed</td>
</tr>
<tr>
<td><em>Terminalia bellarica</em> Roxb.</td>
<td>Combretaceae</td>
<td>KASCH-018</td>
<td>Stem bark and fruit</td>
</tr>
<tr>
<td><em>Terminalia chebula</em> Retz.</td>
<td>Comretaceae</td>
<td>KASCH-020</td>
<td>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.</td>
</tr>
<tr>
<td><em>Tinospora cordifolia</em> Miers.</td>
<td>Menispermacae</td>
<td>KASCH-068</td>
<td>Fruits used to cure jaundice, leproacy, digestive and cardiac diseases.</td>
</tr>
<tr>
<td><em>Toddalia asiatica</em> Lam.</td>
<td>Rutaceae</td>
<td>KASCH-060</td>
<td>Leaf juice along with butter milk administered orally to cure piles.</td>
</tr>
<tr>
<td><em>Vanda testacea</em> Lindl.</td>
<td>Orchidaceae</td>
<td>KASCH-048</td>
<td>One teaspoon fruit juice is used 2-3 times in a day for cough.</td>
</tr>
<tr>
<td><em>Vetiveria zizanoides</em> Nash.</td>
<td>Poaceae</td>
<td>KASCH-039</td>
<td>The roots are used to cure rheumatism and nervous disorder. It is also remedy for secondary syphilis and scorpion-sitting.</td>
</tr>
<tr>
<td><em>Zingiber zerumbet</em> Sm.</td>
<td>Zingiberaceae</td>
<td>KASCH-026</td>
<td>The root is used as coolant and the paste applied over the wounds for quick healing.</td>
</tr>
</tbody>
</table>

IUCN status: C-Common, R-Rare, E-Endemic, End-Endangered.
The local/tribal peoples are preparation of ailments in different forms viz., paste, decoction, juice, powder and raw eaten (Fig. 5). In the tribes 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 vajravelai, 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 tribes 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, turneric, 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.

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REFERENCES


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