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Studies on ethnomedicinal plants used by the Malayali tribe of Kalrayan Hill, Tamil Nadu state

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An ethnomedicinal plants survey was carried out to collect the information about the medicinal plants found in kalrayan hill and used by the native malayali tribe of Southern Eastern Ghats of India. 80 plant species, belonging to 41 families, which are used in traditional health care system are described under this study. The studies also attempted to find out the medicines prepared out of these medicinal plants, forms of medicine and their corresponding ailments. In this communication, the information obtained from the tribals was compared with the already existing literatures on ethnobotany of India. The documented ethnomedicinal plants were mostly used to cure skin diseases, wounds and rheumatism. The medicinal plants used by the tribals are arranged alphabetically, and followed by their botanical name, family name, common names, vernacular name(s), part(s) used, mode of preparation and their corresponding diseases.

Keywords: Ethnobotany, Medicinal plants, Kalrayan Hill, Eastern Ghats

India is one of the world's 12 mega biodiversity centers with the presence of over 45000 different plant species. The Eastern and the Western Ghats and the north eastern hills are the main biodiversity hotspots of India and the India's bio-diversity is unmatched due to the presence of 16 different agro-climatic zones 10 vegetation zones 25 biotic provinces and 426 biomes (habitats of specific species). Of these, about 15000-20000 plants have good medicinal value. However, only 7000-7500 species are used for their medicinal values by indigenous people. Today the continued deforestation and environmental degradation of habitats in many parts of the country has brought about the depletion of medicinal plants and the associated knowledge. The part of the medicinal plants collected also poses a serious threat to the survival of the species (Berhe Tesfu et al., 1995; Kibebew and Addis, 1996). Loss of the knowledge has been aggravated by the expansion of modern education which has made the younger generation underestimate its traditional values.

India has the second largest tribal population in the world after Africa. The tribal people mostly depend on forests for their livelihood. Plants and their parts are not only used as food and medicine but also used in various tribal rituals that are a part of their social and religious life. The recent forest cover estimates in Tamilnadu by Forest Survey of India points out that the Tamilnadu has a forest area of 2.26 million ha, which constitutes 17.40% of the state. Among them only 1.71 million ha is under actual forest cover, which is 13.10% of the total geographical area. Tamilnadu has a total scheduled tribe population of 0.65 million which constitute about

1.04% of the total population of the state. The majority of the tribes that inhabit the start include kadar, muduvan, paaliyan, kanikkar, malayali, soliga and konda redid. kalrayan hill, which is a part of the Eastern ghats, lies on the western side of the Kallakurichi Taluk. This area spread over an area of 600 sq. kms. Along with the Pachaimalai, Javadi, and Shevaroy hills, they separate the Kaveri river basin to the north from the Palar river basin to the south. The range as a whole is fairly smooth, with soil well-suited for plant growth. Scrub jungles reach up to 400 metres in altitude, while deciduous forests can be found between above 800 metres. Sholas, a type of high-altitude stunted evergreen forest, can be found growing on isolated plateaus.

Ethnic people are highly knowledgeable about the vegetation and their multi socio, economic and religious values, and one among them is their medicinal values. This knowledge is passed through oral communication from generation to generation (Perumal Samy and Ignacimuthu, 1998, 2000), and is still retained by various indigenous groups around the world. The World Health Organization estimates that about 80% of the population of most developing countries relies on herbal medicines for their primary health care needs (de Silva, 1997; Mukherjee and Wahil, 2006). In Indian medicine systems, Ayurveda, Sidha and Unani entirely and Homeopathy partially depend either on plant materials or their derivatives for treating human ailments (Prajapati et al., 2003). Nearly 1100 species were recognized as sources of raw materials for Ayurvedic and Unani formulations (Gupta, 1986). This plant based traditional knowledge has become a recognized tool in search for new sources of drugs and nutraceuticals (Sharma and Mujumdar, 2003). Therefore, the present work has been made to document the indigenous medicinal systems and medica plants used by the malayali tribes of kolli hill of eastern ghats against various diseases and human health disorders.

2. Materials and Methods

2.1 Study area and Vegetation

Kalrayan hill are located in the semi-evergreen forest with the altitude ranging from 1000 to 3800 meters above mean sea level in the Attur taluk of Salem district in Tamilnadu state, South India. This is one of the places with a rich biodiversity in India. Traditional healers, called "Vaidyars" from indigenous groups were targeted for documentation of the uses of medicinal plants. The study area has semi deciduous to scrub forests, found on hill slopes. It is an area where sandalwood grows naturally, besides other dominant species like teak and bamboo. Indigenous species like *Pterocarpus marsupium*, *Terminalia chebula* and *Dalbergia lacifolia* are also found in this region.

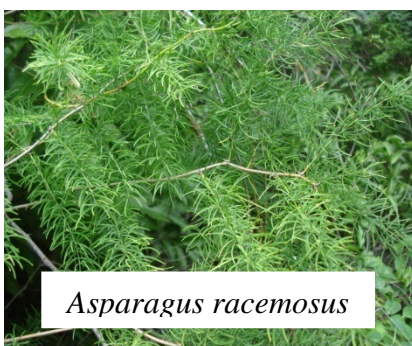
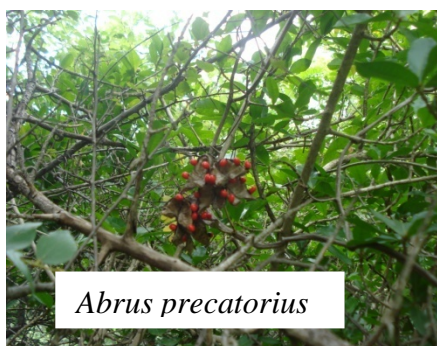
2.2 The malayali tribe

The malayalis (literally meaning mountain people) are the principal inhabitants of the Kalrayan hill, and call themselves as malaikaran, male goudar and also believe that they originally belonging to the vellalla caste of cultivators and migrated from kancipuram to the hills of south west Tamilnadu a few generations ago. According to Thurston (1990) the term malayali has been derived from the words malai (hill), al (person) and is used to denote hill people.

2.3 Methods of data collection

The field survey, the information collected on plant species was mainly gathered through semi-structured interviews that were held with selectively 14 knowledgeable elders (13 men and 1 woman) between the ages of 45 and 80, and also with the assistance of local administrators and community leaders, who served as key informants. Information regarding,

local name, plant part(s) used, ailments, mode of preparation and administration were recorded through informal meetings, interviews, open and group discussions and overt observation, with selected strata of informants. At the end of each interview, specimens of the plants were collected for scientific identification and herbarium preparation following standard procedures (Jain and Rao, 1977). Specimen number, local name, location and identification points were remarked on each herbarium sheet and field note book. The collected plants were identified according to different references concerning the medicinal plants of South India and voucher specimens were deposited in the Institute herbarium.



3. Results and Discussion

The present investigation indicates a high level of consensus of traditional knowledge of medicinal plants within the malayali community. The results of this study show that a large number of medicinal plants are traditionally used by the tribal community of Kalrayan hill for the treatment of various diseases or health disorders of man. In this study, 80 plant species were reported and arranged alphabetically by the botanical name. Common names, vernacular name, and their family belonging to part (s) used, mode of preparation and their administration have also been given (see Table 1). The reported species belong to 74 genera and 41 families with a highest representative of five species belong to the family Asteraceae and four species belong to the family Asclepiadaceae, Caesalpiniceae, Fabaceae and Lamiaceae. From Amaranthaceae, Apocyanaceae, Euphorbiaceae, Malvaceae, Liliaceae, Rutaceae and Solanaceae three species each. The families Aristolochiaceae, Combretaceae, Lauraceae, Mimosaceae, Piperaceae, Poaceae, Rubiaceae and Verbenaceae have two species each, whereas the rest of 22 families have one species each.

Ethnomedicinal plants listed in Table-1 were used in more than 36 types of diseases. Maximum number of 8 species were used to cure body cooling followed by 7 species used to cure skin diseases, 6 species used to cure fever and wound, 5 species used to cure cold and Stomachache, 4 species used to cure Diabetes and Headache, 3 species used to cure Snake bite, 2 species used to cure Jaundice, Scorpion sting, Stimulant, Urinary diseases and White low, and 1 species was used to treat Anticancer, Antileprotic, Breast milk, Cough and Chest pain, Diaphoretic, Digestive disorder, Diuretic, Dysentery, Fungal diseases, Joint pain, Ophthalmia, Phlem, Piles, Poisonous, Rheumatism, Scabies, Small pox, Stone disorder, Swelling, stimulate hunger and Ulcer. Leaves were the most widely used plant part, which accounted for 33 species out of 80 reported medicinal plants in this study. Seed stood in second, followed by whole plant (7 species), root (6 species), bark (5 species), latex and stem (4 species), flower and fruit (3 species), rhizome and ripe skin (2 species) and resin, skin bulb, tuber and young twig (1 species). The majority of the remedies were prepared in the form of juice from freshly collected plant parts. The paste was usually prepared by pounding or crushing the plant parts in a stone-made mortar and pestle. Water was mostly used to dilute the juice. The plant materials were used in fresh form or in dried form and most plants to be used as a remedy were stored for later use in the dry state, which allowed their utilization throughout the year.

Table 1 List of Ethnomedicinal plants used by the Malayali Tribes of Kalrayan hill

Botanical name and common names of medicinal plants and their respective families	Vernacular names (Tamil name)	Part(s) used	Mode of preparation of medicines	Corresponding diseases
<i>Abrus precatorius</i> L. (Crab's Eye) Fabaceae	Kundumani	Root	Paste (E)	Jaundice
<i>Abutilon indicum</i> L.Sweet. (Country Mallow) Malvaceae	Thutthi	Leaf and Fruit	Juice (I)	Piles
<i>Acacia leucophloea</i> (Roxb.) Wild. (White Babul) Mimosaceae	Vellavelan	Bark	Paste (E)	Skin diseases
<i>Acalypha indica</i> L. (Indian Acalypha) Euphorbiaceae	Kuppaimeni	Leaf	Paste (E)	Scabies
<i>Achyranthes aspera</i> Blume. (Prickly Chaff Flower) Amaranthaceae	Naayuruvi	Leaf and Stem	Paste (E)	Wound
<i>Acorus calamus</i> L. (Sweet Flag) Araceae	Vasambu	Rhizome	Paste (I)	Stomachache
<i>Aegle marmelos</i> (L.) Correa ex Roxb (Vilvam) Rutaceae	Bael tree	Half-ripe fruits	Decoction (I)	Diabetes
<i>Alangium salviifolium</i> L.f. (Sage- Leaf Alangium) Alangiaceae	Alangi	Root bark	Decoction (I)	Fever
<i>Allium cepa</i> L. (Onion) Liliaceae	Venkayam	Underground bulb	Paste (E)	Headache
<i>Aloe vera</i> (L.) Burm.f. (Indian Aloe) Liliaceae	Sotthukatthalai	Leaf	Paste (I)	Body cooling
<i>Alpinia officinarum</i> Hance. (Lesser Galangal) Zingiberaceae	Chitrattai	Rhizome	Powder (I)	Phlem
<i>Alternanthera sessilis</i> (L.) R.Br.exDc. (Alligator Weed) Amaranthaceae	Ponnonkanni	Stem and Leaves	Juice (I)	Snake bite
<i>Amaranthus spinosus</i> L. (Prickly Amaranth) Amaranthaceae	Mullukeerai	Leaf	Decoction (I)	Stomachache
<i>Andrographis paniculata</i> (Burm.f.) Wall. (Creat) Acanthaceae	Nilavembu	Whole plant	Powder (I)	Diabetes
<i>Aristolochia bracteolata</i> Lam. (Braeteated Birthwort)	Aaduthinna chedi	Leaf	Paste (E)	Fungal diseases

Aristolochiaceae				
<i>Aristolochia tagala</i> Cham. (Birthwort) Aristolochiaceae	Keradalum	Whole plant	Paste (I)	Stomachache
<i>Artemisia nilagirica</i> (C.B. Clarke) Pamp. (Indian Wormwood) Asteraceae	Masipattari	Leaf	Juice (I)	Antileprotic
<i>Asparagus racemosus</i> Willd. (Wild Asparagus) Asparagaceae	Thanneervitan- kizhangu	Tuber	Juice (I)	Digestion
<i>Azadirachta indica</i> A. Juss. (Neem Tree) Meliaceae	Vembu	Leaf	Paste (E)	Small pox
<i>Azima tetracantha</i> Lam. (Needle Bush) Salvadoraceae	Sangumullu	Root	Paste (E)	Wound
<i>Bambusa arundinacea</i> (Retz.) Willd. (Bamboo) Poaceae	Moongil	Leaf	Paste (E)	Body cooling
<i>Cardiospermum halicacabum</i> L. (Balloon Vine) Sapindaceae	Mudukottan	Leaf	Decoction (I)	Joint pain
<i>Caesalpinia bonducella</i> (L.) Flem. (Fever Nut) Caesalpiniaceae	Kazharchikkaai	seed	Juice (I)	Diuretic
<i>Calendula officinalis</i> L. (Calendula) Asteraceae	Marikollundhu	Flower	Juice (I)	Stomachache
<i>Calotropis gigantea</i> (L.) R. Br. (Bowstring Hemp) Asclepiadaceae	Erukku	Latex	Latex (E)	Scorpion sting
<i>Carica papaya</i> L. (Papaya) Caricaceae	Pappaali	Latex	Latex (I)	Scorpion sting
<i>Cassia auriculata</i> L. (Tanner's Cassia) Caesalpiniaceae	Avaaram	Leaf	Paste (I)	Body cooling
<i>Cassia tora</i> L. (Sickleenna) Caesalpiniaceae	Thagarai	Leaf and Seed	Paste (E)	Skin disease
<i>Catharanthus roseus</i> (L.) G. Don. (Madagascar Periwinkle) Apocynaceae	Nithya kalyani	Whole plant	Juice (I)	Anticancer
<i>Centella asiatica</i> (L.) Urban. (Asiatic Pennywort) Apiaceae	Vallarai	Leaf	Paste (I)	Fever
<i>Cinnamomum tamala</i> Nees & Eberm. (Indian Cassia,) Lauraceae	Lavangapatri	Leaf and Bark	Decoction (I)	Diaphoretic
<i>Cinnamomum zeylanicum</i> Breyn. (Cinnamon) Lauraceae	Pattai	Bark	Decoction (I)	Stimulant
<i>Cissus quadrangularis</i> L. (Adament vine) Vitaceae	Perandai	Shoot and leaf	Fresh (I)	Stimulate
<i>Citrus limon</i> (L.) Burm. f. (Lemon) Rutaceae	Elumichai	Ripe skin	Fresh (E)	Skin disease
<i>Clerodendrum serratum</i> (Linn.) Moon. (Butterfly Pea) Verbenaceae	Sirutekku	Leaf and Root	Decoction (I)	Stimulant
<i>Coleus aromaticus</i> Benth. (Indian Borage) Lamiaceae	Karpuravalli	Leaf	Juice (I)	Urinary diseases
<i>Commiphora caudate</i> Wight & Arn. (Mullukiluvai) Burseraceae	Hill mango	Latex	Paste (E)	Rheumatism
<i>Cynodon dactylon</i> (L.) Pers. (Bermudagrass) Poaceae	Arugampullu	Whole plant	Paste (E)	Rheumatism
<i>Datura metel</i> L. (Dhatura) Solanaceae	Karuoomatthai	Leaf	Paste (E)	Swelling
<i>Delonix elata</i> L. (White Gulmohur) Caesalpiniaceae	Vadanarayan	Young twig	Juice (I)	Cold
<i>Drymaria cordata</i> L. (Tropical chickweed) Caryophyllaceae	Puliarai	Leaf	Paste (I)	Headache
<i>Eclipta prostrata</i> L.	Karisalankanni	Leaf	Paste (E)	Hairdose

(Eclipta) Asteraceae				
<i>Euphorbia hirta</i> L. (Euphorbia) Euphorbiaceae	Ammanpacharisi	Whole plant	Paste (E)	Wound
<i>Gadenia gummifera</i> L. (Gummy Gardenia) Rubiaceae	Kambil	Resin	Resin (E)	Headache
<i>Gloriosa superba</i> L. (Super Lilly) Liliaceae	Kalappaih kilangu	Leaf	Powder (E)	Skin disease
<i>Glycyrrhiza glabra</i> Linn. (Licorice) Fabaceae	Athimathuram	Root	Decoction (I)	Ulcer
<i>Gymnema sylvestre</i> (Retz) R. Br. (Ipecacuanha) Asclepiadaceae	Sirukurinja	Leaf and Root	Decoction (I)	Diabetes
<i>Hemidesmus indicus</i> (L.) R.Br. (Indian Sarsaparilla) Asclepiadaceae	Nannari	Root	Juice (I)	Fever
<i>Hibiscus abelmoschus</i> Linn. (Musk Seed) Malvaceae	Kasturi vendai	Flower	Paste (E)	Skin disease
<i>Kalanchoe pinnata</i> Lam. Pers. (Air plant) Crassulaceae	Kuttipodum chedi	Leaf	Decoction (I)	Body cooling
<i>Lantana camara</i> L. (Lantana) Verbenaceae	Unnichedi	Leaf	Paste (E)	Wound
<i>Leucas aspera</i> (Willd.) Link. (Common Leucas) Lamiaceae	Thumbai	Leaf	Paste (I)	Headache
<i>Madhuca longifoila</i> (L.) JFMabr. (South Indian Mahuna) Sapotaceae	Ellupai	Leaf	Paste (E)	Skin disease
<i>Mimosa pudica</i> L. (Sensitive- Plant) Mimosaceae	Thottalsurungi	Leaf	Paste (E)	Cold
<i>Mucuna pruriens</i> (Linn.) DC. (Cowhage) Fabaceae	Poonai kali	Leaf	Powder (I)	Urinary diseases
<i>Musa paradisiaca</i> L. (Banana) Musaceae	Valaimaram	Skin bark	Juice (I)	Stone disorder
<i>Nerium oleander</i> L. (Oleander) Apocynaceae	Aralli	Seed	Paste (E)	Poisonous
<i>Ocimum basilicum</i> L. (Sweet Basil) Lamiaceae	Tiruneetrup- pachhilai	Whole plant	Decoction (I)	Cold
<i>Ocimum sanctum</i> L. (Tulsi) Lamiaceae	Thulasi	Leaf	Juice (I)	Cold
<i>Pergularia daemia</i> (Forssk.) Chiov. (Trellis-Vine) Asclepiadaceae	Veliparutthi	Leaf	Powder (E)	Cough and chest pain
<i>Phyllanthus amarus</i> Schum. & Thonn. (Stone Breaker) Euphorbiaceae	Keelanelli	Leaf	Paste (I)	Jaundice
<i>Piper longum</i> L. (Long Pepper) Piperaceae	Thippili	Seed	Decoction (I)	Fever
<i>Piper nigrum</i> L. (Black Pepper) Piperaceae	Milaku	Seed	Paste (I)	Fever
<i>Pluchea indica</i> (L.) Less. (Indian Camphorweed) Asteraceae	Andhimandari	Seed and Flower	Paste (I)	Body cooling
<i>Plumbago zeylanica</i> L. (White Leadwort) Plumbaginaceae	Chittramoolam	Latex	Latex (E)	Ophthalmia
<i>Pterocarpus marsupium</i> Roxb. (Indian Kinotree) Fabaceae	Vengaimaram	Stem bark	Decoction (I)	Stomachache
<i>Punica granatum</i> L. (Pomegranate) Punicaceae	Madhulai	Bark	Paste (E)	White low
<i>Rauvolfia serpentina</i> L. (Snake Root) Apocynaceae	Sarpagandha	Root	Paste (E)	Snake bite
<i>Rubia cordifolia</i> Linn. (Indian Madder) Rubiaceae	Sevalaikodi	Stem and Root	Powder (I)	Diabetes
<i>Santaium album</i> L.	Santhanam	Stem	Paste (E)	Body cooling

(Sandal Tree) Santalaceae				
<i>Sida cordifolia</i> L. (Country Mallow) Malvaceae	Valvaluppaichadi	Leaf	Paste (E)	Body cooling
<i>Solanum surattense</i> Burm.f. (Yellow Berried Nightshade) Solanaceae	Kandankattiri	Fruit	Paste (I)	White low
<i>Solanum trilobatum</i> L. (Purple Fruited Pea Eggplant) Solanaceae	Toothuvilai	Leaf	Powder (I)	Cold
<i>Sonchus oleraces</i> L. (Milk Thistle) Asteraceae	Karpooravalli	Leaf	Paste (E)	Skin disease
<i>Strychnos nux-vomica</i> L. (Nux Vomica) Loganiaceae	Etti	Seed	Decoction (I)	Wound
<i>Terminalia bellirica</i> Roxb. (Belliric) Combretaceae	Thanrikkaai	Seed	Powder (I)	Dysentery
<i>Terminalia chebula</i> Retz. (Chebulic) Combretaceae	Kadukkai	Seed	Decoction (I)	Digestive disorder
<i>Tribulus terrestris</i> L. (Gokshura) Zygophyllaceae	Nerunchi	Whole plant	Powder (E)	Fever
<i>Tridax procumbens</i> L. (Tridax) Asteraceae	Vettukaya poondu	Leaf and root	Paste (E)	Wound

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