Ethnomedicinal aspects of angiospermic epiphytes and parasites of Kerala, India

AE Shanavaskhan,1,2 M Sivadasan,3* Ahmed H Alfarhan,3 & Jacob Thomas3
1Tropical Botanic Garden & Research Institute, Palode P O, Thiruvananthapuram 695 562, Kerala, India
2Present address: Natural Resources and Environment Research Institute, King Abdulaziz City for Science and Technology, Riyadh, Kingdom of Saudi Arabia
3Department of Botany & Microbiology, College of Science, King Saud University, P O Box 2455, Riyadh 11451 Kingdom of Saudi Arabia
*E-mail: drmsivadasan@rediffmail.com

Received 15.07.2009; revised 10.03.2010

Studies on ethnomedicinal aspects of epiphytes and parasites of Kerala have been conducted and it revealed that as the tribes of Kerala have a lot of terrestrial medicinal plants available around their premises, they seldom resorted to the epiphytic and parasitic medicinal plants occurring on tall trees for their use as drugs for the treatment of ailments. Hence, their knowledge on epiphytes and parasites was found to be very limited, especially among the young generation of the tribes. The present study reported the use of 28 species (16 epiphytes and 12 parasites), which represent about 13.4% of the total epiphytes and parasites present in Kerala, and they are of valuable properties and uses and are used for curing or corrective measures for several diseases. Majority of the properties and uses recorded are first reports pertaining to these special groups of plants. A thorough investigation on the phytochemistry and therapeutic values of the bioactive compounds contained in these epiphytes and parasites would result in the discovery of new and valuable drugs of high potentials and of interest to the Nutraceutical and Pharmaceutical industries.

Keywords: Epiphytes, Parasites, Ethnomedicine, Traditional knowledge, Indigenous knowledge, Kerala, India

IPC Int. Cl.: A61K 36/00, A01H 5/00, A01N 3/00, A01H 17/00

Tribal communities depend on wild plants for food, medicine, construction materials, fuel wood, and nearly for all other material uses and cultures. Their interactions with the ambient vegetation for centuries helped them evolve a sound oral knowledge system on the utility of plants, which remained unrecorded until recently, when ethnobotanists started systematically documenting them. Since such oral traditions are based on local plant resources, they are different from region to region as well as from tribe to tribe of the same region. Ethnobotanical investigations conducted among the traditional communities in different parts of the world have greatly helped the modern world benefit from the traditional and indigenous knowledge systems. This has been acknowledged, mainly in the fields of developing promising life saving drugs including psychotomimetic drugs of plant origin1-4, gaining knowledge on traditional land and plant utilization pattern5,6, evolving strategies for conservation of biological diversities and policies for environment management7, and searching out promising new economically important plants and land races8. The anthropologists referred to Kerala as a museum of diverse ethnic groups and a variety of traditional systems of medicine. The forests of Western Ghats of Kerala are endowed with a very rich collection of rare medicinal plants, of which many are endemic to the region9. The tribes, living in this region are known to possess great knowledge on the medicinal uses of many of these plants. Several studies have been carried out in the past on various ethnobotanical aspects including the two recent ones pertaining to Kerala75,76. But no efforts have so far been made to record the ethnobotanical and ethnomedicinal information exclusively on the epiphytes and parasites of Kerala.

An exhaustive survey of literature revealed that studies on the epiphytes and parasites which are special groups of plants are comparatively limited. Several work on various aspects of ethnobotany pertaining to various regions and various tribes of

*Corresponding author
Kerala and on various plants of ethnobotanical and ethnomedical significance9-21 have been undertaken earlier, and their references are given here for the benefit of the future workers.

**Epiphytes and Parasites**

Epiphytes are extreme specialists adapted to climatically and ecologically harsh conditions in the canopy; they represent an important and interesting plant group28. A global assessment of the uses and misuses of orchids including epiphytic species in medicine was made29 and summarized some important uses of orchids in controlling fevers, curing eye diseases, treating fatigue, headaches and their function as anticancer agents. Even though there are several scattered works on the ethnobotanical and ethnomedical aspects related to the epiphytes of several other parts of India and neighbouring areas30-34, only a few are available on those of Kerala35-38.

Parasitic flowering plants which live on the host plants with the help of haustoria are classified according to the location of penetration of haustoria on the host and are broadly classified as aerial parasites and root parasites39. A recent survey of the parasites of Kerala40 revealed that majority of the parasites are aerial parasites. Since time immemorial, many species of Loranthus have been used medicinally by the Brazilians41. The leaves of Loranthus rotundifolius Engl. cooked in milk have been used to cure chest diseases. An ointment prepared from the young shoots and leaves of L. citrocolus is a remedy of repute for oedematous tumours. Similar cases of usage of Dendrophthoe falcata, Helicanthus elasta, and Macrosolen cochinchinensis are common in India42. Dendrophthoe falcata is employed as an antisyphilitic agent43. In India, Dendrophthoe grandifrons (King) Dans. is used against ring worm infestation, D. pentandra (L.) Miq. in childbirth, Macrosolen cochinchinensis in childbirth and headache, and Scurrula ferruginea (Jack.) Dans. in childbirth, snakebites, wounds, fever, and berberi43. Experiments conducted on animals showed that the extract of Phrygilanthus flagellaris Eichler raises blood pressure and facilitate coagulation44. Moreover, it has useful veterinary properties45. In Australia and New Zealand, several species of Loranthus are eaten by cattle, sheep and camels46-48. In the book Mistletoes of Africa49 the authors recorded some mistletoes as respected palliatives for the most feared diseases including cancer, with their connotations in sympathetic medicines of abnormal growth.

In the Indian subcontinent, probably due to their parasitic nature and strange growth habit mistletoes have been revered, feared or thought to have magical properties by many ethnic communities. Ethnobotanical information on various members of the families Loranthaceae and Viscaceae appeared in scattered literature50-56. But very little is known on those of Kerala which harbours rich collection of epiphytes and parasites. The ethnic communities living in this area rely on these specialized groups of plants for curing their various ailments. The present study is a new venture to collect and identify the epiphytes and parasites of Kerala and to record their ethnomedical information, which are of great significance today.

**Study area**

The region designated as Kerala state of India, lies between 8° 20’ and 12° 30’ N and 75° 0’ and 77° 15’ E. On the western side, it fully stretches along the coast of Arabian Sea and the eastern side is guarded by the Western Ghats. Owing to its isolation from the Deccan Plateau by the Western Ghats, the tiny state of Kerala possesses a diverse vista of climatic conditions harbouring varied types of vegetation. Occurrence of the epiphytes and parasites has been observed from the sea level to the highest peak (2695 m). The generic and specific representation is maximum in the middle zone (700-1500 m), followed by the uppermost zone (1500-2695 m)40.

In accordance with the vast variation of geography and climate, Kerala is inhabited by diverse ethnic groups, from the most civilized society to the most primitive, cave-dwelling society with stone age culture. The forests of Western Ghats region in Kerala are inhabited by the tribes of mixed origin. As per 2001 census report, the tribal population in Kerala is 364189 which represented 1.14% of the total population. They belong to 35 distinct tribal communities. Cholanaika, Kattunaika, Kadar, Kurumba and Koraga are the primitive tribes of Kerala and they constitute nearly 4.8% of the total tribal population of the state. Irula, Adiya, Kuruma, and Paniya are other forest tribes which are seminomadic, and form the majority of population of the tribes of Kerala. Kurichya, yet another interesting tribe, observe very rigid rituals and taboos. Kanikkar, Koraga, Kurava, Mala-araya, Malakurava,
**Malappandaram, Malavedan, Muthuva, Nayadi and Ulladar** are some of the other tribes of Kerala.

**Methodology**

Several field explorations were conducted in 28 tribal settlements, located at the dense forests of Western Ghats in Kerala. At each settlement, three knowledgeable persons and local healers mostly above the age of 60 years who have precise information regarding their traditional medicinal and indigenous uses of plants were interviewed to know the plants, the plant parts they used for the preparation of remedies, diseases treated, and regime of drugs. With the help of these tribal people, plant specimens were collected and information related to the specimens were gathered and recorded with their consent. *Ethnobotany - A Method Manual* was followed as a general source of guidelines for the present study. Several literature pertaining to the districts, people, tribes, vegetation, forest types and flora were surveyed to gain a preliminary knowledge about the respective aspects. Review of literature was carried out to interpret and analyze the data collected during the study. The voucher specimens collected by one of the authors (A E Shanavakshan – AESK) are deposited in the Tropical Botanic Garden and Research Institute Herbarium (TBGT).

**Results**

During the course of the present study a total of 28 species including 16 species of epiphytes and 12 species of parasites have been found to be of medicinal use and utilized by the tribes of Kerala Table 1. The species studied are enumerated in alphabetic sequence. Each species is provided with an updated correct botanical name with author citation, followed by the name of family in parenthesis and the collection number of the voucher specimens. After a short synoptic description of the species, local name of the plant and the name of the tribe who use the name separated by a colon are given in Italics, followed by the name of the district to which the tribe belongs in parenthesis. If more than one tribe uses it, and the use is different, the names of those tribes, the name they use and the uses of the plants are also given. The ethnomedicinal data including the method of application or administration as a medicine recorded during the study are provided under each. The details of earlier published works, if any available on the use of the species, are also provided along with their references. Folkloric information, if any available, are collected during the present study on these species, and provided under respective species.

*Acampe praemorsa* (Roxb.) Blatt. & McCann (Orchidaceae). (AESK 7290, 7368): Epiphytes with simple, non-pseudobulbous stem. *Maravazha: Kanikkar* (Thiruvananthapuram): Seeds are directly applied on the old wounds as an antibiotic. Leaf juice is applied over the nipple for stomachache. It is also used for earache and it reduces body temperature (folk information: Alappuzha). Plant is used as a tonic and used in the treatment of rheumatism.

*Balanophora fungosa* J. R. Forst. & G. Forst. subsp. *indica* (Am.) Hansen var. *indica* (Balanophoraceae). (AESK 7432): Root parasites with sub-spherical or obovoid, reddish-pink coloured inflorescences. *Nilachakka: Paniya* (Wayanad): The whole plant dried, powdered and is taken internally with honey to cure piles. It is also used along with other herbs in many preparations for curing internal hemorrhages.


*Cassyytha filiformis* L. (Cassythaceae) (AESK 17359): A profusely twining parasite with ca. 3 mm thick stems. *Moodillathali: Kurava* (Kollam): The whole plant is used to wash hair and considered to promote hair growth. A pudding made of the plant extract, rice powder and jaggery is considered to be a good health restorer. Fresh extract of the plant is given in coconut milk to cure leucorrhoea and other venereal diseases. *Moodillathali: Kanikkar* (Thiruvananthapuram): Vines are collected and macerated. The paste is tied in cotton cloth and dipped in warm neem oil and applied over joints in the case of sprain.

*Cleisostoma tenuifolium* (L.) Garay (Orchidaceae) (AESK 13206, 42190): Non-pseudobulbous, hanging epiphytes with flattened stem. *Pannivalan: Malappandaram* (Pathanamthitta): Whole plant paste in water is mixed with the supernatant of rice gruel and is consumed as a drink by anaemic patients. Salt and spices are avoided during medication.
**Table 1—Properties and uses of angiospermic epiphytes and parasites**

<table>
<thead>
<tr>
<th>Name of species</th>
<th>Epiphyte (E)/Parasite (P)</th>
<th>Uses/properties</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Acampe praemorsa</em></td>
<td>E</td>
<td>Antibiotic, Tonic, Stomach-ache, Ear-ache, Reduces body temperature, Rheumatism</td>
</tr>
<tr>
<td><em>Balanophora fungosa ssp. indica</em></td>
<td>P</td>
<td>Piles, Internal hemorrhage</td>
</tr>
<tr>
<td><em>Bulbophyllum sterile</em></td>
<td>E</td>
<td>Rheumatism, Inflammation</td>
</tr>
<tr>
<td><em>Cassytha filiformis</em></td>
<td>P</td>
<td>Health restorer, Hair growth, Leucorrhea, Veneral diseases, Sprain</td>
</tr>
<tr>
<td><em>Cleisostoma tenuifolium</em></td>
<td>E</td>
<td>Anaemia</td>
</tr>
<tr>
<td><em>Cuscuta reflexa</em></td>
<td>P</td>
<td>Purgative, Dandruff, Hair fall, Flatulence, Coagulation of milk, Birth control, Spermetorrhoea, Edible, Cattle feed, Haematuria</td>
</tr>
<tr>
<td><em>Cymbidium aloifolium</em></td>
<td>E</td>
<td>Emetic, Purgative, Ear-ache, Salep used as Nutrient and Demulcent</td>
</tr>
<tr>
<td><em>Dendrobium ovatum</em></td>
<td>E</td>
<td>Laxative, Emollient, Stomachic, Bile flow increase</td>
</tr>
<tr>
<td><em>Dendrophthoe falcata</em></td>
<td>P</td>
<td>Aphrodisiac, Astringent, Narcotic, Placental expulsion, Dye (Nail polish), Inflammation, Uterine disorders, Small pox, Rheumatic complaints, Cholesterol reduction, Diarrhoea, Impotency, Menstrual troubles, Tuberculosis, Tannin source for softening leather, Betel-nut substitute, Malarial fever, Small pox, Chicken pox, Leucorrhoea, Ingredient of <em>Mutравirecаниya kasaya</em></td>
</tr>
<tr>
<td><em>Flickingeria nodosa</em></td>
<td>E</td>
<td>Stimulant, Demulcent, Tonic, Alterative, Astringent, Aphrodisiac, Expectorant, Asthma, Bronchitis, Consumption, Fever, Burning sensation, Bilioussness, Blood diseases, Ingredient of <em>Jeevanti</em></td>
</tr>
<tr>
<td><em>Helicanthes elastica</em></td>
<td>P</td>
<td>Supernatural powers, Antidote for poison, Check abortion, Removal of Urinary bladder and Kidney stones</td>
</tr>
<tr>
<td><em>Luisia zeylanica</em></td>
<td>E</td>
<td>Emollient, Boils, Abscesses, Tumours</td>
</tr>
<tr>
<td><em>Medinilla beddomei</em></td>
<td>E</td>
<td>Reducing body heat</td>
</tr>
<tr>
<td><em>Pholidota imbricata</em></td>
<td>E</td>
<td>Spine expulsion, Reduce swelling &amp; Inflammation</td>
</tr>
<tr>
<td><em>Remusatia vivipara</em></td>
<td>E</td>
<td>Alexipharmic, Cytotoxic, Anti-tumour, Heal wounds, Breast tumour, Itching &amp; Soil borne diseases (Skin diseases), Brain power</td>
</tr>
<tr>
<td><em>Rhaphidophora pertusa</em></td>
<td>E</td>
<td>Skin diseases, Intestinal ulcers, Body inflammation</td>
</tr>
<tr>
<td><em>Rhynchostylis retusa</em></td>
<td>E</td>
<td>Emollient, Throat inflammation</td>
</tr>
<tr>
<td><em>Scurrula parasitica</em></td>
<td>P</td>
<td>Internal bleeding</td>
</tr>
<tr>
<td><em>Sirhookera lanceolata</em></td>
<td>E</td>
<td>Antidote for poisonous bites</td>
</tr>
<tr>
<td><em>Taxillus cuneatus</em></td>
<td>P</td>
<td>Small pox, For rituals</td>
</tr>
<tr>
<td><em>Taxillus tomentosus</em></td>
<td>P</td>
<td>De-worming</td>
</tr>
<tr>
<td><em>Tolypanthes lageniferus</em></td>
<td>P</td>
<td>Menstural disorders, Check excess bleeding, Rheumatism, Antidote for poisonous bites</td>
</tr>
<tr>
<td><em>Vanda spathulata</em></td>
<td>E</td>
<td>Frenzy, Consumption, Asthma, Mania</td>
</tr>
<tr>
<td><em>Vanda tessellata</em></td>
<td>E</td>
<td>Alexiteric, Antipyretic, Sexual stimulant, Ear-ache, Sprains, Lumbago, Back pain, Fever, Otitis media, Nervous disorders, Rheumatism, Bronchitis, Inflammation, Hiccups, Piles, Boils on the scalp</td>
</tr>
<tr>
<td><em>Vanda testacea</em></td>
<td>E</td>
<td>Asthma, Malaria, Rheumatism, Nervous disorders</td>
</tr>
<tr>
<td><em>Viscum angulatum</em></td>
<td>P</td>
<td>Body inflammation</td>
</tr>
<tr>
<td><em>Viscum articulatum</em></td>
<td>P</td>
<td>Cooling, Alexipharmic, Aphrodisiac, Alterative, Fever, Blood diseases, Ulcers, Epilepy, Bilioussness</td>
</tr>
<tr>
<td><em>Viscum monoicum</em></td>
<td>P</td>
<td>Jaundice, Fever, Typhoid, Stomach disorders, Fungal infection, Hip inflammation, Substitute for Strychnine and Brucine</td>
</tr>
</tbody>
</table>

*Cuscuta reflexa* Roxb. (Cuscutaceae) (AESK 25446, 44206) : Leafless twining parasitic herbs, pale green or yellowish green. *Akasavalli: Kurichya* (Wayanad): The whole plant is crushed well and the extract is used as a shampoo for washing hair. Checks dandruff and prevents hair fall. Taken internally as a purgative and to relieve flatulence. *Kaithankodi: Mathuva* (Idukki): The juice extracted from the stem is poured into boiled milk for the easy coagulation of milk. The whole plant is used to control child-birth. The plant and black pepper in 2:1 ratio are crushed and the aqueous extract is taken orally twice a day for
spermatorrhoea. Plant is edible. About 500 gm of fresh plant mixed with cattle feed is given to cattle and yak suffering from haematuria.

_Cymbidium aloifolium_ (L.) Sw. (Orchidaceae) (AESK 7370, 7379): Tufted epiphytes with short, fleshy stems, clothed by membranous sheaths. _Chakampothi_: _Muthuva_ (Idukki): Juice of the leaves mixed with salt is used for earache. _Seguttu ola_: _Irula_ (Palakkad): Leaves are gently heated and squeezed to extract juice and a drop is applied to the ear for severe ear-ache. Plant is emetic and purgative. Furnishes salep which is used as nutrient and demulcent. The juice from the pod is used against earache.

_Dendrobium ovatum_ Kraenzl. (Orchidaceae) (AESK 15022, 15613): Tufted epiphytes with elongated stems. Flowers creamy white, sweet smelling. _Unnesh chedi_: _Paniya_ (Wayanad): Juice expressed from the pseudostem is given internally as a laxative. Plant is emollient. Plant juice is stomachic and laxative. It excites a flow of bile.

_Dendrophthoe falcata_ (L.f.) Etting. (Loranthaceae) (AESK 7213, 7226, 8451, 37665): Large aerial parasites on many host plants. Leaves highly variable in shape. Inflorescence curved many flowered racemes. _Ottu_: _Irula_ (Palakkad): The leaf paste is given internally in lukewarm water for the easy delivery of placenta (after birth). _Ittil_: _Cholanaika_ (Malappuram): A dye obtained from the base of the flower is applied as a nail polish. Twigs are used to prepare a _khaki_-coloured biological dye (personal observation). Plants collected from _Artocarpus heterophyllus_ Lam. is dried and powdered. This is given internally with honey to reduce inflammation on the body. It is aphrodisiac and good for uterine disorders (folk information: Kollam). Plants collected from _Careya arborea_ L. is good for treating smallpox and rheumatic complaints (folk information: Alappuzha). It reduces cholesterol level in the blood, when 5 gm of the plant is given with the decoction of _Phyllanthus amarus_ Schum. & Thonn. (folk information: Alappuzha). Plants collected from _Albizzia lebbek_ (L.) Willd. cures diarrhea (folk information: Alappuzha). Bark is astringent and narcotic. Plants collected from _Tamarindus indica_ L. is valuable for treating impotency. Bark is used to treat menstrual troubles, tuberculosis and asthma. The tender shoots of _D. falcata_ (L.f.) Etting. contain 10% tannins, which are used as finishing tan stuff for softening leather. The bark is used as a substitute for betel nut. About 5 gm of powdered flower is given 2-3 times a day in malarial fever, small pox and chicken pox. The extract obtained by crushing the plant is given as a drink, twice a day. It is continued for a week to cure leucorrhoea. One of the ingredients of the ayurvedic preparation ‘Mutravirecaniya Kasaya Curra’ is the stolon of _D. falcata_ (L.f.) Etting.

_Flickingeria nodosa_ (Dalzell) Seidenf. (Orchidaceae) (AESK 7378, 7403): A profusely branched epiphytic herb. _Chakakkampothi_: _Muthuva_ (Idukki): Juice of the pseudobulb and leaves is given internally for asthma. Plant is stimulant, demulcent and tonic, alterative, astringent to the bowels, aphrodisiac and expectorant. Fruit is aphrodisiac. The plant is used for the treatment of asthma, bronchitis, consumption, fever, burning sensation, biliousness and diseases of the blood. This plant is regarded as _Jeevanti_, a herbal drug mentioned in the _Charaka-Samhita_.

_Helicanthes elastica_ (Desr.) Danser (Loranthaceae) (AESK 13216, 19133): Aerial parasites, often covering a large portion of the host plants with dichotomous branches and opposite leaves. _Alottu_: _Irula_ (Palakkad): There is a strange belief among the tribals of Palakkad district, that keeping twigs of this plant and _Muthuva_ while attending the court helps win their legal cases. Plants collected from _Samadera indica_ Gaertn. is believed to be highly poisonous (folk information: Thiruvananthapuram). Leaves are used for checking abortion and also for removing stones in the urinary bladder and kidney.

_Luisia zeylanica_ Lindl. (Orchidaceae) (AESK 13245, 15652): Erect epiphytic herbs, up to 15 cm long. Leaves terete, green with purple spots. _Maravazha_: _Kanikkar_ (Thiruvananthapuram). Plant is emollient. Plant is applied as poultice to boils, abscesses and tumors.

_Medinilla beddomei_ C. B. Clarke (Melastomataceae) (AESK 2508, 5208): Epiphytic fleshy shrub, rooting from the nodes. _Thali_: _Muthuva_ (Idukki): Leaves of the plant are eaten fresh for reducing body heat.

_Pholidota imbricata_ Hook. (Orchidaceae) (AESK 13277, 25470): Epiphytic herbs with large oblong-conical pseudobulbs. Leaf single per pseudobulb, dark green. _Mulluthuppi_: _Muthuva_ (Idukki): Crushed pseudobulbs are applied on the body to expel the spines. _Neervazhakam_: _Ulladar_ (Pathanamthitta): Pseudobulbs are collected fresh and made into a paste in the juice expressed from coconut kernel. This paste...
is applied on the inflamed areas until the swelling or inflammation subsides.

*Remusatia vivipara* (Roxb.) Schott (Araceae) (AESK 5415): Epiphytic herbs with depressed globose, reddish tubers. *Kattu chembu: Muthuva* (Idukki): Tubers are made into a paste and applied to heal wounds. *Kattu chembu: Adiya* (Wayanad): Tuber-paste is applied on the breast, in case of breast-tumour. *Mara chembu: Malappandaram* (Pathanamthitta): Tubers are cut into small pieces and boiled in water. Then it is cooled down to a tolerable heat, and is poured on the affected areas of itching and soil borne diseases. *Mara chembu: Koraga* (Kasaragode): Leaves are made into a paste and mixed with rice and cooked. This is given to children once in a year during festival to make them brilliant. Juice of the plant mixed with cow’s urine is considered to be alexipharmic. The root with turmeric is made into an ointment and used as a remedy for itching. Phytochemical studies conducted at the Ethnopharmacology Division, Tropical Botanic Garden and Research Institute, Palode, Thiruvananthapuram confirmed the cytotoxic and anti-tumour properties of the plant.

*Rhaphidophora pertusa* (Roxb.) Schott (Araceae) (AESK 7506): Epiphytic or lithophytic climbers with thick stems. *Velleli thandu: Muthuva* (Idukki): Macerated stem is applied for skin diseases. *Elithandan, Neeruvalu: Kanikkar* (Thiruvananthapuram): Stem chopped into small pieces and boiled with rice and given internally thrice a day for curing intestinal ulcers. *Elithandan: Mala-araya* (Ernakulam): For inflammation on the body, the patients are advised to take bath in the medicated water, prepared by boiling the leaves and stem of the plant, twice a day for seven days.

*Rhynchosstylis retusa* Blume (Orchidaceae) (AESK 5231, 7406): Epiphytic or lithophytic climbers with thick stems. *Velleli thandu: Muthuva* (Idukki): Macerated stem is applied for skin diseases. *Elithandan, Neeruvalu: Kanikkar* (Thiruvananthapuram): Stem chopped into small pieces and boiled with rice and given internally thrice a day for curing intestinal ulcers. *Elithandan: Mala-araya* (Ernakulam): For inflammation on the body, the patients are advised to take bath in the medicated water, prepared by boiling the leaves and stem of the plant, twice a day for seven days.

*Scyrrella parasitica* L. (Loranthaceae) (AESK 4275, 44212): Aerial parasites forming large bunches on the host plant, haustoria bearing surface-runners absent. *Ottumaram: Irula* (Palakkad): Leaves and haustoriferous base are dried and made into powder. This is given internally for checking internal bleeding.


*Taxillus cuneatus* Danser (Loranthaceae) (AESK 7282, 7458): Aerial parasites, forming relatively small clusters. Branches greenish brown, terete, lenticellate. *Puluchedi: Irula* (Palakkad): Plants collected from *Moringa oleifera* Lam. is used to prepare medicated oil for small pox. This is also used for rituals (folk information: Thiruvananthapuram).


*Vanda spathulata* Spreng. (Orchidaceae) (AESK 5601, 44204): Scandent epiphytes with keeled, distichous, recurved leaves; bilobed at apex. *Ponnampon Maravazha*: Irula (Palakkad): Plant juice is given to temper bile and to abate frenzy. Flowers are given against consumption, asthma and mania.

*Vanda tessellata* Hook. Ex G. Don (Orchidaceae) (AESK 7395, 7427): Stout, erect or hanging epiphytic herbs. Leaves strap shaped; bilobed at apex with a mucro in between. *Ottu: Irula* (Palakkad): Leaf juice is applied for ear-ache. *Maravazha: Kurava* (Kollam): Leaf-poultice is applied to relieve sprains, lumbago and back pain. *Maravazha: Nayadi* (Wayanad): Juice of the leaves and aerial roots mixed with neem oil and garlic is used to treat ear-ache. Root is alexiteric and antipyretic. A paste of the leaves is applied to the body during fever. Leaf juice is instilled into the aural meatus as a remedy for otitis media. Root enters into the composition of various medicated oils for external application in nervous disorders and rheumatism. It is used to treat bronchitis, inflammation, hiccup, piles and boils on the scalp, etc. This is regarded as the rasna mentioned in the Sanskrit literature. The alcohol extract of
flowers and roots is found to stimulate the sexual behaviour of male mice.\textsuperscript{36}

\textit{Vanda testacea} Rchb.f. (Orchidaceae) (AESK 7208, 7517): Stout epiphytic herbs. Basal portions of the stem covered with leaf sheaths. \textit{Maravazha: Kanikkar} (Thiruvananthapuram). Leaves are used in asthma, malaria, rheumatism and nervous disorders.\textsuperscript{32}

\textit{Viscum angulatum} Heyne ex DC. (Viscaceae) (AESK 25456, 25463): Aerial parasites, slender, yellowish-green, without leaves. \textit{Mancha ottae: Irula} (Palakkad): Branches are made into a paste and wrapped in cloth. This bundle is put in boiled water and applied over the inflamed body and face after severe jaundice.

\textit{Viscum articulatum} Burm. f. (Viscaceae) (AESK 7224, 7558): Pendulous, aerial parasites with rounded basal nodes and flattened internodes. \textit{Ittil: Kanikkar} (Thiruvananthapuram). It is with cooling, alexipharmic, aphrodisiac and alterative properties. A preparation of the paste of the plant is given in fever, blood diseases, ulcers, epilepsy and biliousness.\textsuperscript{39}

\textit{Viscum monoicum} Roxb. (Viscaceae) (AESK 15615, 15731): Aerial parasites with elliptic-lanceolate leaves. \textit{Ittil: Mathuva} (Idukki): The seeds are boiled in water and the decoction is given to patients suffering from jaundice, fever, typhoid and stomach disorders. Leaf extract is mixed with wild turmeric and applied from jaundice, fever, typhoid and stomach disorders.

The people of the various tribes generally use the term \textit{Ittil} and \textit{Otti, Otti or Ottae} to denote epiphytes and parasites respectively. But in certain cases these terms are used as synonyms as in the case of \textit{Vanda tessellata} which is called as \textit{Otti} by \textit{Irulas} of Palakkad even though it is an epiphyte. The traditional physicians of Kerala invariably use the name \textit{Ittil} for any kind of plant growing on other plants, which are referable to epiphytes or parasites in modern usage. So, according to them both the epiphytes and parasites are \textit{Ittil} and they believe that these epiphytes and parasites growing on various hosts have different properties and uses. During the study, this kind of information has also been recorded.

Conclusion

The centuries old Indian Medical Heritage is being practiced in India through two main streams. The first stream is classical, which is highly codified and supported by countless literature, is taught in many universities. The second stream, which is represented by the folk and tribal system comprises generally of oral traditions is transmitted from generation to generation. Among these, the tribal system is in the crude form and is location-specific and species-specific. The practitioners of the tribal system invariably use many plants for the treatment of various ailments together with taboos and mantras. Tribes of Kerala are generally lazy people and they seldom try to collect epiphytes and parasites from other trees for their medical requirement, because they have so many other herbal drugs available around them on the ground.

The present study reported the use of 28 species (16 epiphytes and 12 parasites), which represent about 13.4\% of the total epiphytes and parasites present in Kerala. The twenty-eight species are of valuable properties and uses and are used for curing or for corrective measures for several diseases. Majority of the properties and uses recorded are first reports pertaining to these special groups of plants. Among the epiphytes \textit{Vanda tessellata} possesses several properties and is used against 13 diseases followed by \textit{Flickingeria nodosa} also having valuable properties and used for the treatment of 7 diseases. Among the parasites \textit{Dendrophthoe falcata} is having maximum properties and used for the treatment of 14 diseases followed by \textit{Cuscuta reflexa} used against 7 diseases. About 40 diseases conditions are treated with one species each and 18 diseases with 2 species each. Inflammation is treated with any of the seven species, whereas Rheumatism is treated with any of the 6 species.

Earlier workers have reported the properties of 15 species and pharmacological studies were conducted on some of these species. Regarding the method of application and administration, the whole plant, pseudostems, tubers, bark, roots, aerial roots, branches, leaves, tender leaves, flowers, fruits, and seeds are used in various forms like paste, dried powder, decoction, etc. They are used as such or mixed with other ingredients such as other herbs, turmeric, warm water, rice gruel, honey, pepper, coconut oil, coconut milk, etc. The present study exclusively on the epiphytes and parasites of Kerala is the first of its kind on such specialized groups of plants. Phytochemical analysis and pharmacological validation of only a very few species have so far been

\[\text{Equation}\]
reported and that of the rest of the species have to be undertaken for a thorough understanding of their valuable bioactive compounds and possible utilization in the nutraceutical and pharmaceutical industries.

Acknowledgement

The first author expresses his thanks towards the Director, Tropical Botanic Garden & Research Institute, Palode, Thrivunanthapuram, Kerala for encouragements and for providing logistics for the study. The services rendered by the people of various tribes of Kerala during the field study, and the knowledge on the botanical and medicinal aspects and uses of the epiphytic and parasitic plants shared by them are acknowledged with sincere gratitude. The authors extend their appreciation to the Deanship of Scientific Research at King Saud University for support through the research group project No. RGP-VPP-135.

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