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RESEARCH ARTICLE

ETHNO MEDICINAL PLANTS USED BY MALAYALI TRIBALS IN YERCAUD HILLS, SALEM DISTRICT, TAMIL NADU, INDIA.

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Abstract

The present study highlights the importance of some medicinal plants in the health care system of Malayali tribals community of Yercaud Hills, Salem district, Tamil Nadu, India. Ethnomedicinal information was collected from malayali tribes through personal interviews and group discussions with 8 randomly selected informants. Use value (UV), fidelity level (FL) and Informant Consensus factor (ICF) were determined. During the data collection 20 species distributed in 16 families for treating 44 different ailments. Ethnomedicinal plants like *Abrus pulchellus*, Wall, *Andrographis paniculata*, Wall.ex.Nees, *Asclepias curassavica*, L, *Asparagus racemosus*, Wild, *Azadirachta indica*, A. Juss, *Cassia fistula*, Linn, *Centella asiatica*, Urb, *Corallocarpus epigaeus*, Hook.f, *Curculigo orchioides*, Gaertn, *Emblica officinalis*, Gaerth,*Enicostemma littirale*, Blume, *Hemidesmus indicus*, R. Br, *Holarrhena pubescens* (Buch.Ham.) Wall.ex.G.Don, *Leucas aspera*, Spreng, *Mimosa pudica*, Linn, *Myrica esculenta*, Buch. Ham, *Pergularia daemia* (Forsk.) chiov,*Terminalia bellerica*, Roxb, *Terminalia chebula*, Retz and *Toddalia asiatica*, Lamk were documented during the study. UV of the encountered plant species ranged from 0.38 to 1.13. The uppermost FCI value is reported for Ejaculation of semen and Bone fracture. In the present investigation, the FL varied from 50 to 100%.

Keywords: Ethnomedicinal plants, Malayali tribals, Yercaud Hills Use value (UV), Fidelity level (FL) and Informant Consensus factor (ICF).

1. Introduction

India is one of the 17th mega biodiversity countries of the world which resides a gargantuan diversity of plants, animals and microbes. When peoples were appearing on this earth has been crucial with the plant kingdom for their day today needs such as food, medicine, clothing, shelter and other requirements. Now days in many developing countries peoples are take modern medicine for their illnesses, but in many rural areas indigenous medicine based folk remedies has been played an important role in the health care system. In India the indigenous people are exercise a divergence of herbals for impressive curing of various diseases (1,-2) and it is known that India has the second largest tribal population in the world after Africa (3). Today traditional medicine and ethnobotanical information play an important role in scientific research and conservation programs in different parts of the world (4).

Eastern Ghats ecosystem contains more than 2500 species of angiosperms which compose about 13 % of the flowering plants in India (5). Yercaud hills is the major point in the Eastern Ghats, located in the forest types range from evergreen to moist deciduous with the altitude of 1515 meters (4970 Ft). The temperature ranges from 13^0 C to 29^0 C on the peaks and 25^0 C to 40^0 C at the foot hills. The average annual rainfall is around 1500 mm – 1750 mm (6). The soil is deep and non-calcareoces (7). Malayali tribals are typically hill tribals present in the foot hills of Yercaud hills. The main aim of the present study is highlights the importance of some medicinal plants in the health care system of Malayali tribals community of Yercaud Hills.

2. Material and Methods

Frequent field surveys were carried out in Yercaud hills in different seasons during 2014 - 2016. Interview and data gathering methods were followed by Schultes (1962)[(8)] and Jain (1989)[(9)];

Jain and Rao (1977)[10]. The voucher specimens were collected and identified by referring to standard floras (11-12).

2.1. Data analysis

2.1.1. Use Value (UV)

The relative importance of each species used in the study area was quantitatively evaluated following the method developed by Phillips and Gentry (1993a, 1993 b) [13-14].

UV = ∑U/ N, Where, UV is the use value of species; U is the number of use reports cited for a particular species and n is the total number of informants interviewed. In general, UV is high, if there are more use report citations (When there are more uses and all the informants agree with it) for a given species and low when there are few reports.

2.1.2. Informant consensus factor (ICF)

Informant consensus factor (ICF) was calculated to evaluate if there was a consensus in the knowledge of plants used in the ailment group between healers in the study area. The ICF was calculated using the following formula (15)

ICF = Nur - Nt/Nur-1 where Nur refers to the number of use reports for a particular ailment category and Nt refers for a particular ailment category by all informants.

2.1.3. Fidelity level (FL)

The fidelity level (FL), the percentage of informants claiming the use of a certain plants for the same major purpose, was calculated according to the following formula (16)

FL (%) = Np / N × 100. Where Np is the number of informants that calming a use of a plant species to treat particular diseases and N is the number of informants that use the plants as a medicine to treat any given disease.

3. Results and Observations

3.1. Utilization of plant species as traditional medicine by Malayali tribes in Yercaud Hills

The investigation revealed that the traditional healers of Yercaud hills used 20 species of plants encompassing to 16 families to treat 44 different types of ailments. Most of the recorded medicinal herbs are harvested from natural environment in the different location of the yercaud hills by traditional healers. The day before they collect the plants, they pray to the plant and tie a thread that has been dipped in turmeric around the plant. The next day, they hymn a mantra before harvesting. The reported twenty important medicinal herbs in the present survey were arranged in alphabetical order according to their botanical name. The botanical name of each plant is followed by the local name, family and ethnomedicinal uses are listed in the table 1.

During the survey we noted single plant may use for curing many ailments such as *Abrus pulchellus* is used to treat female infertility, easy delivery and rashes, *Andrographis paniculata* is used to treat centipede bite, scorpion sting, snake bite, diabetes, fever, small pox and cure blister. *Asclepias curassavia* used for curing migraine pain, cycosis, normal delivery, lumbago, dysentery and excessive bleeding after delivery. *Asparagus racemous* used for increase the sperms count, epididymitis and diabetes. *Azadirachta indica* recommended for female infertility, snake bite, mosaic and small pox, *Cassia fistula* used for curing snake bite, chest pain, diabetes and blister, *Centella asiatica* used for body pain, diabetes, menstrual disorder, increase sexual capacity and sperm count, female infertility, hemorrhoids, *Corallocarpus epigaeus* is used for treating antidote for beetle bite, centipede bite, scorpion sting and snake bite, *Curculigo orchioides* oral administration of rhizome powder can used for curing diabetes, neurotic problems, ejaculation of semen, epididymitis, increase sperm count, erysipelas and kidney stone, *Emblica officinalis* used to cure dental ache, whoop cough, diabetes, liver problem and reduces the weight, *Enicostemma littorale* to treat the body pain, fever, beetle bite, centipede bite, snake bite, chest pain, dymenorrhoea and blister, *Hemidesmus indicus* is consumed for curing constipation, abdominal pain, kidney stone, chest pain and snake bite, bark of *Holarrhena pubescens* administer orally to cure hemorrhoids, trismus and bone fracture, *Leucas aspera* Oral administration to cure paralysis, migraine pain, rashes, chest pain ear ache. *Mimosa pudica* consumed to cure wound, beetle bite, female infertility, epididymitis and hemorrhoids. *Myrica esculenta* Oral administration of bark powder good for bone fracture, diabetes, female infertility and over bleeding during menstruation period. Consumption of leaves of *Pergularia daemia* to cure body pain, snake bite, irregular menstruation, normal delivery and lumbago. Fruit powder of *Terminalia bellerica* administers orally to cure diabetes, dysentery, colitis and reduce the Weight. Oral administration of fruit powder of *Terminalia chebula* used to treat diabetes, colitis, dysentery, hemorrhoids, dental ache, chest pain, whoop cough and reduce weight and *Toddalia asiatica* is used to cure snake bite, centipede bite, chest pain, cold, erysipelas leprosy.

3.2. Data analysis:

The present work was the first ever study to record quantitative data of the medicinal flora of the region, including Use Value, Informant Consensus Factor and Fidelity Level.

3.2.1. Use Value (UV):

As indicated in table 2, UV of the encountered plant species ranged from 0.38 to 1.13. The highest UV was found for *Centella asiatica* (1.13) while

lowest was for Abrus pulchellus, Asparagas racemous and Holarrhena pubescens (0.38). Other important plant species with high use value were Curculigo orchioides (1), Enicostemma littorale (1), Terminalia chebula, Andrographis paniculata (0.88), Asclepias curassavia (0.75), Leucas aspera (0.75), Toddalia asiatica (0.75), Emblica officinalis (0.63), Hemidesmus indica (0.63), Terminalia bellerica (0.5), Myrica esculenta (0.5), Mimosa pudica (0.5), Corallocarpus epigaeus (0.5) and Cassia fistula (0.5). It was also observed that the highest use values were due to the high number of use reports in the study area.

3.2.2. Informant Consensus Factor:

The inhabitants used medicinal plants in the treatment of 44 different types of ailments. The important disorders were Ejaculation of semen, Bone fracture, snake bite, Chest pain, Female infertility, skin diseases, diabetes, Menstrual disorder, Hemorrhoids, Body pain and sperm count. To determine the informant consensus factor (FCI), all the reported ailments were first grouped into 11 different disease categories on the basis of their use reports (Table 3). The uppermost FCI value is reported for Ejaculation of semen and Bone fracture (1), followed by Snake bite (0.86), chest pain (0.8), female infertility and skin diseases (0.75), Diabetes (0.71), Menstrual disorder and Hemorrhoids (0.66), Body pain and sperm count (0.5). These results show that Ejaculation of semen and Bone fracture were especially common in the study area.

3.2.3. Fidelity level (FL):

Fidelity level highlights the medicinal flora, Medicinal plants with maximum curative properties have the highest fidelity level, i.e., 100%. In the present investigation, the FL varied from 50 to 100%. The plant species most commonly utilized in the research area with 100% fidelity levels were Abrus pulchellus, Andrographis paniculata, Corallocarpus epigaeus, Asparagus racemous, , Curculigo orchioides, which were used to treat Female infertility, snake bite, increase sperm count and ejaculation of semen respectively. The FL determined for *Enicostemma littorale* (Body pain), *Centella asiatica* (Menstrual disorder), *Emblica officinalis* (Whoop cough and diabetes), *Myrica esculenta* (Bone fracture and diabetes), *Toddalia asiatica* (Snake bite), *Holarrhena pubescens* (hemorrhoids), *Pergularia daemia* (Snake bite) and *Leucas aspera* (Rashes) were 93, 88, 75, 75, 71, 60, 60 and 50% respectively (Table: 4).

Table 1 List of Ethnomedicinal plants used by Malayali tribes in Yercaud Hills

S. No	Botanical Name	Local Name	Family	Ethnomedicinal uses
1	*Abrus pulchellus* Wall.	Vellaikuntumani	Fabaceae	Oral administration of seed powder along with the honey to cure the female infertility, Seed paste with a glass of milk it causes easy delivery and Both seeds and leaves paste with hot water administered orally to cure rashes.
2	*Andrographis paniculata* Wall. Ex. Nees.	Siriyananagai	Acanthaceae	Oral administration of whole plant parts powder along with the hot water to cure centipede bite, whole plant parts powder administrated orally to cure scorpion sting, consumption of leaves powder to cure snake bite, Oral administration of leaves powder to reduced the diabetes, Oral administration of leaves decoction to cure fever, consumption of leaves infusion to cure small pox and whole plant parts powder mixed with castor oil applied externally to cure blister.
3	*Asclepias curassavia* L.	Mokkutipoodu	Asclepidaceae	Leaves juice extracts poured in the noise to relief the migraine pain, fresh leaves are added to the boiling water while taking bath to cure cycosis, oral administration of leaves juice to causes normal delivery, crushed leaves along with milk administered orally to cure lumbago, leaves paste administered orally to arrest dysentery and seed paste along with the hot water administered orally to cure excessive bleeding after delivery.
4	*Asparagus racemous* Willd.	Thanerivittankilangu	Liliaceae	Rhizome powder along with milk to increase the sperms count, oral administration of rhizome powder along with pepper and garlic to cure

				epididymitis and consumption of rhizome powder is reduced the diabetes.
5	*Azadirachta indica* A. Juss.	Vembu	Meliaceae	Oral administration of bark powder along with jiggery to cure female infertility, consumption of bark powder to cure snake bite, leaves paste mixed with common salt apply whole body while taking bath; this process continues for one month to cure mosaic and leaves paste administered externally to cure small pox.
6	*Cassia fistula* Linn.	Konnei	Caesalpiniaceae	Oral administration of bark powder along with pepper and garlic with hot water to cure snake bite, infusion of bark is consumed orally to cure chest pain, oral administration of bark powder to reduced diabetes and root powder mixed with castor oil administered externally to cure blister.
7	*Centella asiatica* Urb.	Vallarai	Apiaceae	Leaves are added to the boiling water and the vapor is inhaled to relief the body pain, oral administration of leaves powder can reduce the diabetes, oral administration of leaves powder is used to cure menstrual disorder, oral administration of leaves powder with milk used to cure the lacking in manly sexual capacity, oral administration of whole plant parts powder with cow milk to increase the sperm count, oral administration of whole plant parts powder is used to cure female infertility, consumption of whole plant parts powder with curd to cure burning sensation during urination, oral administration of whole plant parts powder is used to cure hemorrhoids and whole plant parts paste with milk administered orally to cure ejaculation of semen.
8	*Corallocarpus epigaeus* Hook.f.	Keradankilangu	Cucurbitaceae	Oral administration of rhizome powder with hot water to cure beetle bite, consumption of rhizome powder with hot water to cure centipede bite, rhizome powder administered orally to cure scorpion sting and rhizome powder with hot water administered orally to cure snake bite.
9	*Curculigo orchioides* Gaertn.	Nilapanaikilangu	Amaryllidaceae	Oral administration of rhizome powder can reduce diabetes, rhizome powder administered orally to cure neurotic problems, oral administration of rhizome powder with milk to cure ejaculation of semen, Oral administration of rhizome paste is used to cure epididymitis, rhizome powder with milk to administered orally to cure the lacking in manly sexual capacity, oral administration of rhizome powder with cow milk to increase the sperm count, rhizome paste administered externally to cure erysipelas and oral administration of rhizome powder with hot water to cure kidney stone.
10	*Emblica officinalis* Gaertn.	Nelli	Euphorbiaceae	Fruit paste keep inside the mouth to cure whoop cough, fresh fruit placed on the painful teeth to cure dental ache, oral administration of fruit powder can reduce diabetes, bark powder administered orally to cure liver problems and fruit powder with hot water administered orally; it reduces the weight.

11	*Enicostemma littorale* Blume.	Vellaragu	Gentianaceae	Leaves are added to the boiling water and the vapor is inhaled to relief the body pain, oral administration of leaves decoction to cure fever, whole plant parts powder with hot water to administer orally to cure beetle bite, oral administration of whole plant parts powder with hot water to cure centipede bite, whole plant parts powder administered orally to cure snake bite, oral administration of whole plant parts powder with hot water to cure chest pain, whole plant part powder along with pepper and nigella to administered orally to cure dymenorrhoea and oral administration of leaves powder is used to cure blister.
12	*Hemidesmus indicus* R. Br.	Nannari	Asclepidaceae	Oral administration of leaves powder used to cure constipation, entire aerial parts powder administered orally to cure abdominal pain, oral administration of whole plant parts powder with hot water to cure kidney stone, whole plant parts powder with hot water administered orally to cure chest pain and root powder administered orally to cure snake bite.
13	*Holarrhena pubescens* (Buch.Ham.) Wall.ex.G.Don.	Kudasapali	Apocynaceae	Bark powder along with the seeds of cumin and garlic with hot water to administer orally to cure hemorrhoids, consumption of bark paste with mother milk to cure trismus and oral administration of bark powder to cure bone fracture.
14	*Leucas aspera* Spreng	Thumbai	Mimosaceae	Oral administration of whole plant parts powder to cure paralysis, leaves juice poured into the noise to relief the migraine pain, leaves are added to the boiling water and the vapor is inhaled to relief the body pain, leaves paste administered externally to cure rashes, leaves powder with hot water administered orally to cure chest pain and leaves juice extract poured into the ear to cure ear ache.
15	*Mimosa pudica* Linn.	Thottalsurungi	Mimosaceae	Leaves paste is applied over wound, whole plant parts powder along with the turmeric mixed with coconut oil to applied beetle bitten area, oral administration of leaves paste is used to cure female infertility, whole plant parts consumed in the form of pill to cure epididymitis and leaves paste with milk administered orally to cure hemorrhoids.
16	*Myrica esculenta* Buch.Ham.	Kudumaruthamaram	Combretaceae	Oral administration of bark powder with cow milk is good for bone fracture, bark powder with hot water administered orally can reduce the diabetes, bark powder with hot water administered orally to cure female infertility and oral administration of bark powder with hot water is used to cure over bleeding during menstruation period.
17	*Pergularia daemia* (Forsk.) chiov.	Velliparuthi	Asclepidaceae	Leaves are added to the boiling water and the vapor is inhaled to relief the body pain, whole plant parts powder administered orally to cure snake bite, leaves powder administered orally to cure irregular menstruation, leaves juice mixed with castor oil administered orally; it causes normal delivery and

				consumption of leaves juice with milk to cure lumbago.
18	*Terminalia bellerica* Roxb.	Thanrikkai	Combretaceae	Oral administration of fruit powder can reduce diabetes, fruit powder with cow milk to administer orally to arrest dysentery, fruit powder with hot water to administer orally to cure colitis and oral administration of fruit powder is used to reduce the Weight.
19	*Terminalia chebula* Retz.	Kadukkai	Combertaceae	Oral administration of fruit powder can reduce diabetes, fruit powder with hot water to administer orally to cure colitis, fruit powder with cow milk taken orally; it arrest dysentery, fruit powder along with cumin seeds administered orally to cure hemorrhoids, fresh fruit placed on the painful teeth it reduced the dental ache, bark powder administered orally to cure chest pain, fruit paste keep inside the mouth cure whoop cough and fruit powder with hot water is administered orally to reduce weight.
20	*Toddalia asiatica* Lamk.	Mulaikaradanmullu/ Milagaranai	Rutaceae	Oral administration of root powder with hot water is used to cure snake bite, root powder with hot water to administered orally to cure centipede bite, infusion of bark is taken orally good for chest pain, roasted seed paste administered orally for cold, bark paste applied externally for erysipelas and root powder mixed with oil applied externally for leprosy.

Table: 2 Use Value (UV) of ethnomendicinal plants used by Malayali Tribes in Yercaud Hills

S. No	Botanical Name	Vernacular Name	Family	Ailment category	UV value
1	*Abrus pulchellus* Wall.	Vellaikuntumani	Fabaceae	Female infertility, easy delivery and rashes	0.38
2	*Andrographis paniculata* Wall. Ex. Nees.	Siriyananagai	Acanthaceae	Centipede bite, scorpion sting, snake bite, diabetes, fever, small pox and blister	0.88
3	*Asparagus racemous* Willd.	Thanerivittankilangu	Liliaceae	Increase sperm count, epididymitis and diabetes	0.38
4	*Centella asiatica* Urb.	Vallarai	Apiaceae	Body pain, diabetes, menstrual disorder, sexual capacity, sperm count, female infertility, burning sensation during urination, hemorrhoids and ejaculation of semen	1.13
5	*Corallocarpus epigaeus* Hook.f.	Keradankilangu	Cucurbitaceae	Beetle bite, centipede bite, scorpion sting and snake bite	0.5
6	*Curculigo orchioides* Gaertn.	Nilapanaikilangu	Amaryllidaceae	Diabetes, neurotic problem, ejaculation of semen, epididymitis, sexual capacity, increase sperm count, erysipelas and kidney stone	1
7	*Emblica officinalis* Gaertn.	Nelli	Euphorbiaceae	Whoop cough, dental ache, diabetes, liver problem and weight loss	0.63
8	*Enicostemma littorale* Blume.	Vellaragu	Gentianaceae	Body pain, fever, beetle bite, centipede bite, snake bite, chest pain, dymenorrhoea and blister	1

9	*Holarrhena pubescens* (Buch.Ham.) Wall.ex.G.Don.	Kudasapali	Apocynaceae	Hemorrhoids, trismus and bone fracture	0.38
10	*Leucas aspera* Spreng	Thumbai	Mimosaceae	Paralysis, migraine pain, body pain, rashes, chest pain and ear ache.	0.75
11	*Myrica esculenta* Buch.Ham.	Kudumaruthamaram	Combretaceae	Bone fracture, diabetes, female infertility and over bleeding during menstruation	0.5
12	*Pergularia daemia* (Forsk.) chiov.	Velliparuthi	Asclepidaceae	Body pain, snake bite, irregular menstruation, normal delivery and lumbago	0.63
13	*Toddalia asiatica* Lamk.	Mulaikaradanmullu/ Milagaranai	Rutaceae	Snake bite, centipede bite, chest pain, cold, erysipelas and leprosy	0.75

Table:3 Informant Consensus Factor value of Major ailments

S. No	Major ailment	ICF
1	Ejaculation of semen	1
2	Bone fracture	1
3	Snake bite	0.86
4	Chest pain	0.8
5	Female infertility	0.75
6	Skin diseases (Rashes, blister, erysipelas and leprosy)	0.75
7	Diabetes	0.71
8	Menstrual disorder	0.66
9	Hemorrhoids	0.66
10	Body pain	0.5
11	Sperm count	0.50

Table : 4 Most commonly used medicinal plants and their major uses with their fidelity level

S. No	Botanical Name	Major ailment	Fidelity level (%)
1	*Abrus pulchellus* Wall.	Female infertility	100
2	*Andrographis paniculata* Wall. Ex. Nees.	Snake bite	100
3	*Asparagus racemous* Willd.	Increase the sperm count	100
4	*Centella asiatica* Urb.	Menstrual disorder	88
5	*Corallocarpus epigaeus* Hook.f.	Snake bite	100
6	*Curculigo orchioides* Gaertn.	Ejaculation of semen	100
7	*Emblica officinalis* Gaertn.	Whoop cough and Diabetes	75
8	*Enicostemma littorale* Blume.	Body pain	93
9	*Holarrhena pubescens* (Buch.Ham.) Wall.ex.G.Don.	Hemorrhoids and blister	60
10	*Leucas aspera* Spreng	Rashes	50
11	*Myrica esculenta* Buch.Ham.	Bone fracture and diabetes	75
12	*Pergularia daemia* (Forsk.) chiov.	Snake bite	60
13	*Toddalia asiatica* Lamk.	Snake bite, erysipelas and leprosy	71

4. Conclusion

The study depicts Salem district of Tamil Nadu revealed in the field of folk medicine. The survey of the report includes both common and serious health issues such as Diabetes, Body pain, snake bite, Skin diseases and Mensural disorders Therefore, documentation of traditional knowledge is the only way out to preserve the knowledge base protect the medicinal plants resources endemic to this area. Clinical study to prove the validity of the recorded treatments could spread indigenous herbal knowledge worldwide; hence, action should be

taken to conserve herbal knowledge, as well as the medicinal plants.

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