



Ethnobotanical Survey of Medicinal Plants in Urdhook hills, Kuttiady, Kozhikode District, Kerala

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Abstract: The study carried out to document the diversity of plants of the Urdhook hills, Kuttiady, Kozhikode district, Kerala. The present study reported 75 plant species belonging to 33 families. A total of around 26 people was interviewed in more than one times in the age of 30-70 years and the data are collected from them. The medicinal plants are mainly used for diarrhoea, fever, cold, cough, snake bites, wound healing, diabetes, female disorders and asthma. Some plants such as *Hamelia patens*, *Psidium guajava*, *Plectranthus amboinicus*, *Alternanthera sessilis*, *Lawsonia inermis*, *Clitoria ternatea*, *Adhatoda vasica*, and *Cyathillium cinereum* are used to treat menstrual problems. Some plants are used local people to treat snake bites. The plants are used to treat snake bites such as *Anacardium occidentale*, *Asystasia gangetica*, *Blepharis maderaspatensis*, *Cassia tora*, *Clitoria ternata*, *Leucas aspera*, *Urena lobata* and *Centrosema pubescens*. Medicinal plants are documented along with their binomial name, local name, family and medicinal uses. Medicinal plants include herbs (41), shrubs (15), trees (9), climbers (8) and subshrubs (2). In the study leaves are mainly used for the preparation of medicines. Among the 75 plant species some plants are listed to the categories of Rare Endangered Threatened (RET). Conservation and knowledge of RET plants are helps for the sustainable development.

Index Terms - Urdhook hills, Traditional healers, RET plants, Medicinal plants

I. INTRODUCTION

Ethnobotany is focus on plants and their uses via the traditional knowledge of local people and their culture. The term ethnobotany was coined by John William Hershberger in the year 1890s. Identification of flora is necessary it is important to maintain the national reserves of the area. This knowledge of flora is important in the study of biodiversity and understanding the environment (Takur et al., 2012). Floristic study is a taxonomic study in a specified area of a major division of flora (Panda et al., 2014). The sustainable use and conservation of medicinal plants may benefit and improve the living standards for each people (Ripu and Rainer, 2008) for several thousand years the plants are used in traditional medicine.

WHO defined ethnobotany as traditional medicine as the health practices, approaches, knowledge and beliefs incorporating plants, animals and mineral based medicines, spiritual therapies and exercises applied singularly or in combination to treat (Johnson Gritto, 2015). Ethnomedicinal studies are significant value to discover the drugs from indigenous plant resources. There is some source of information about the useful medicinal plant species. WHO encourages the traditional drugs because of less side effects and most of the European countries expanding towards Ayurvedic medicine. The knowledge of the native plant species has contributed many vital drugs. The traditional knowledge is very important for future study of sustainable utilization of natural resources. Local communities are play an important role in the control of biodiversity. The knowledge of local people in the use and management of natural resources are important part in the management of both development and conservation of protected areas. Local people are highly knowledgeable about plants and their medicinal values. The cultures of local people possess unreported traditional knowledge of herbal remedies in the treatment of diseases. Now it is very important to record and conserve the traditional knowledge on medicinal plants. Record the results of traditional medicine also help conserve an important part of indigenous people's cultural heritage for future generations. The need of ethnobotanical study to find and record important medicinal plants cannot be over accent.

Biodiversity is the most complex and important characteristics of our planet. India is rich in biodiversity that changes with latitude or altitude. Biodiversity is not distributed evenly on earth and is richer the tropics. It is least at the poles and most near or at equator. It includes number of different organisms and their comparative frequencies in an ecosystem. India is a valuable heritage of tribal knowledge due to its abundant cultural diversity and out of the 16,000 species of higher plants occur in India, around 9,000 are known to be economically useful.

Today, as a result of human activities the frequency, intensity, fire events, hurricanes, droughts, ice storms and insect outbreaks fluctuating. The global climate change, making forest ecosystem even prone to damage. Currently, floristic survey, conservation and management of diversity, prevention of the destruction of habitats and determining the native endangered species is very important. Floristic studies are the backbone of the evaluation of Phyto diversity (Saranya Ravi, 2016). The area of flora is not

constant as it changes time to time. Floristic studies are essential to give the idea about the plants and the utilization of plants. The identification of plants along with their description of area it provides species, growing seasons and climate.

II. STUDY AREA

The present study was conducted in Urdhook hills, Kuttiady, Kozhikode district, Kerala with the latitude of 11.7153°N, longitude of 75.7753°E, covers 241.9 square kilometers (km). Climate is tropical with average minimum temperature 8-15 and average maximum temperature varies from 24-29. Urdhook hill is situated 2700 feet above sea level in the Western Ghats. There are different types of soil in the area such as red soil, blackish soil, clay loam and sandy loam. A resort is situated near the hill. Floristically the area has a rich vegetation. Floristic diversity it includes large trees, shrubs, herbs, climber. The present study is the first report regarding ethnobotanical survey of medicinal plants in Urdhook hills. These areas have underprivileged communities and local people who are depended on nature for their needs like poultry farm and agriculture.



Figure showing. Map of Study area

III. MATERIALS AND METHOD

DATA COLLECTION

The extensive and repeated field survey is carried out during the month of July- December. Data is collected based on personal observation and interviews with the local people. information is collected after confirmation through two or more people. The plants are enumerated alphabetically with their binomial name with author citation, family name, habit, plant parts used, mode of preparation are identified by the help of Flora of Presidency of Madras (Gamble 1935) and Flora of Presidency of Tamil Nadu Carnatic (Mathew 1983). The local name of plants is documented from the field was verified two or more times with different persons. All the data of the hill are collected by the help of the local people and herbal practitioners by direct questionnaires method (Latheef *et al.*, 2014).

A standard method is used for the collection of plant specimen, mounting, drying and preservation. The collected plants arranged in alphabetically by botanical name, family, common name, useful part and medicinal uses to the help of Flora of Presidency of Madras (Gamble 1935) and Flora of Presidency of Tamil Nadu (Mathew 1983).

A total of around 26 people was interviewed in more than one times in the age of 30-70 years and the data are collected from them. The red listed plants are confirmed for the conservation status by using IUCN 2020.

CATEGORIZATION OF MEDICINALLY IMPORTANT PLANTS

The medicinal plants in the present study are cultivated and grown in the hills. These plants are classified into different types of habits such as tree, herbs, climber, shrubs and also classified according to the plant parts used as follows -leaves, root, whole plant, stem, bark, flower, seed and tuber. These plants are used in different forms like decoction, infusion, paste, powder, extracts, crushed form and juice. The local name of these medicinally important plant species were collected with the help of local people which paved a way to identify plants used for various ailments. Out of these plants some are red listed ones, they are also identified and categorized. The plant species are used for preliminary health care are collected by the local people.

IV. RESULTS AND DISCUSSION

The present study deals with the local people of Urdhook hills were using 75 species of medicinally important species belonging to 33 families. Plants and their medicinal values for the treatment of various ailments are presented in (Table 1). This area is a rich source of primary health care. In these 75 plant species the family Fabaceae (13) has high number of species followed by Asteraceae (8), (5) species from the family Amaranthaceae, Apocynaceae and Lamiaceae; (4) species from the family Acanthaceae and Malvaceae; (3) species from the family Rubiaceae; 2 species from the family Euphorbiaceae, Poaceae, Convolvulaceae. As per habit plant used in herb (41), shrub (15), trees (9), climbers (8) and subshrubs (2) (figure 1). The different parts of medicinal plants are used to prepare medicines by local traditional healers. Among them leaves are (44%) followed by roots (17%), whole plants (16%), seeds (7%), bark (6%), fruits (5%), stem (3%), flower (1%) and tuber (1%) (figure 2). Method of preparation of medicines involve decoction (37%), juice (20%), infusion (14%), paste (10%), powder (8%), crushed form (6%) and extracts (5%) (figure 3). In these *Amorphophallus commutatus*, *Cynodon dactylon*, *Cyperus mindorensis* and *Eleusine indica* are monocots the remaining species are dicots. Certain plants are used in this study to treat various ailments are to prepare Ayurvedic medicines. Traditional peoples are using these plants to cure diseases related to diarrhoea, jaundice, fever, cold, cough, rheumatism, snake bites, wounds, diabetes, female disorders and asthma. Some plants are used to treat wound healing such as *Achyranthes aspera*, *Alternanthera brasiliana*, *Biophytum sensitivum*, *Cassia fistula*, *Chrozophora rotteleri*, *Crassocephalum crepioides*, *Mimosa pudica*. A single plant is used for more than one disease for example *Achyranthes aspera* (wound healing, improve digestion), *Azadiracta indica* (tooth pain, blood purification), *Adhatoda vasica* (cough, sore throat, bleeding disorders) and *Clitoria ternatea* (eye problems, menstrual problems, snake bites). Some plants are used to treat menstrual problems such as *Hamelia patens*, *Psidium guajava*, *Plectranthus amboinicus*, *Alternanthera sessilis*, *Lawsonia inermis*, *Clitoria ternatea*, *Adhatoda vasica*, and *Cyathillium cinereum*.

Leaves are the mainly used plant part which is followed by roots, whole plant, seeds, bark, fruits, stem, flower and tubers. Similar type of results is also obtained by other researches (Morvin Yabesh et al., 2014, Muniappan 2011). Leaf is the main organ that containing photosynthesis which is responsible for medicinal value. Majority of the plants are used to treat cough, cold, stomach ache, sore throat, wounds, rheumatic pain. In this study herbs are more dominant than shrubs, trees, climbers and sub-shrubs similar results are obtained by Saranya Ravi et al., 2016.

The medicines are prepared by them with single plant or in combination of two or more other plants or combination of other parts of same plant (Latheef et al., 2014). Ingredients and mode of application of drugs are varied which depends on the plant species and plant part used. In the present study majority of the plants are prepared in the form of decoction is obtained from the leaves, roots, stem, bark of *Adhatoda vasica*, *Asystasia gangetica*, *Eleusine indica*, *Ipomoea obscura*. The same results are also obtained by other researchers (Sankaranarayanan et., al 2010). The knowledge is passed in to generation to generation only by the verbal communications. Generally, the medicinal uses of the plants are not been reported whereas the present study documented. Among this documented plants species some of them are in red list. They are *Biophytum sensitivum* LC (Least Concern), *Commelina banghalensis* LC (Least Concern), *Crotalaria pallida* LC (Least Concern), *Ipomoea hederifolia* NT (Near Threatened) and *Rauvolfia serpentina* E (Endangered) are reported in (Table 2). Conservation, propagation and cultivation of these endangered plants are important. The link for digital herbarium of collected medicinal plants in the study area is <https://forms.gle/CJPt4DpQvLmZPdFb7>

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Table 1: List of medicinal plants and uses of Urdhook hills, Kuttiady, Kozhikode, Kerala

Sl. no	BINOMIAL NAME	FAMILY	LOCAL NAME	HABIT	USEFUL PARTS	MEDICINAL USES
1	<i>Abrus precatorius</i> L.	Fabaceae	Kunni kuru	Climber	Roots Leaves Seeds	A paste of the roots is applied to boils. The seeds prepared with water is used for paralytic disorders for massage of affected parts. For mouth ulcer apply the green leaf juice.
2	<i>Achyranthes aspera</i> L	Amaranthaceae	Kadaladi	Herb	Whole plant	The whole plant powder with honey helps improve digestion. Applying the juice of leaves at the affected area help in wound healing.
3	<i>Adhatoda vasica</i> L.	Acanthaceae	Adalodakam	Shrub	Leaves	Decoction of leaves reduces inflammation, cough, common cold, sore throat wheezing and it eases in breathing. It is beneficial in bleeding disorders. It reduces acid formation in stomach.
4	<i>Ageratum conyzoides</i> (L).	Asteraceae	Muriyan	Herb	Leaves	A paste of the leaves is used as a poultice to remove thorns from the skin. The leaves are used externally in the treatment of ague. It is used to treat constipation, infective hepatitis, epilepsy, wounds, sore eyes, fever, headache and vomiting.
5	<i>Allamanda cathartica</i> L.	Apocynaceae	Manjakolam bi	Shrub	Whole plant	A decoction of leaves in small doses is used as an antidote to poisoning and as a treatment for colic. It is used to treat liver tumor, jaundice and malaria. It used as a purgative.
6	<i>Albizia lebeck</i> (L.) Benth	Fabaceae	Vaga	Tree	Bark Leaves	Leaves and seeds are used in the treatment of eye problems such as ophthalmia. The bark is astringent it is taken internally to treat diarrhoea dysentery and piles. The bark is used externally to treat boils.
7	<i>Alstonia scholaris</i> L.	Apocynaceae	Ezhilampala	Tree	Bark	The milky juice of <i>Alstonia scholaris</i> has been applied to treat ulcers. The bark is used in Ayurvedic medicine to treat fever, malaria, troubles in digestion, tumors, asthma. The leaves and latex are applied externally to treat tumor.
8	<i>Alternanthera brasiliana</i> L.	Amaranthaceae	Chuvanna cheera	Herb	Leaves	The leaf juice is squeezed into vinegar and drunk as a refreshing, antidiarrhoeic infusion. To cure inflammation, wound healing.
9	<i>Alternanthera ficoidea</i> (L.) Sm	Amaranthaceae	Joseph's coat	Herb	Leaves	The plant is traditionally used as diuretic, antiseptic, anti-diarrheal agent and anti-inflammatory.
10	<i>Alternanthera sessilis</i> (L.) R.Br. ex DC.	Amaranthaceae	Ponnanganni	Herb	Leaves	An infusion of the entire plant is used as a remedy against intestinal cramps, fever, diarrhoea and dysentery. The juice of the plant is used to treat white discharge in the urine. Mixed with corn flour and baked, it is eaten to treat menstrual disorders.

11	<i>Amaranthus spinosus</i> L.	Amaranthaceae	Cheru cheera	Herb	Leaves Stem Root	The juice of root is used to treat fever, urinary troubles, diarrhoea and dysentery. The sap is used as an eye wash to treat ophthalmia and convulsion in children.
12	<i>Amorphophallus commutatus</i> (Schott)	Araceae	Kattuchena	Herb	Fruits	Tuber paste is applied externally to cure scabies. Their fruits are edible. It is used as a remedy against various bacterial infections.
13	<i>Anacardium occidentale</i> L.	Anacardiaceae	Kasu mavu	Tree	Leaves Bark Fruits	The bark having the ability to reduce blood sugar level. The bark is used in Ayurvedic medicine to detoxify snake bites. Leaf and bark infusion are used in the treatment of toothache and sore gums. Cashew syrup is good remedy for coughs and colds. Cashew juice is effective for the treatment of syphilis, cholera and kidney troubles.
14	<i>Asystasia gangetica</i> (L.) T. Anderson	Acanthaceae	Thuppalam potti	Herb	Leaves Roots	Leaf decoction is used in the treatment of fever, epilepsy, stomach-pains. The powdered root is a remedy for stomach-pains and are used as an emetic in treating snake-bite. The juice of the plant combined with lime or onion juice is a remedy for dry cough with an irritated throat and discomfort in the chest.
15	<i>Azadirachta indica</i> A. Juss.	Meliaceae	Ariyaveppu	Tree	Leaves Bark Seeds	The leaf is used for eye disorders, bloody nose, stomach upset, skin ulcers, fever. The bark is used for malaria, skin disease, pain and fever. The seed and seed oil are used for leprosy and intestinal worms. It is also used as tooth pain and blood purification.
16	<i>Biophytum sensitivum</i> (L.) DC	Oxalidaceae	Mukkutti	Herb	Whole plant	The whole plant crushed and mixed with honey can cure coughing. The decoction of root is given in fever, gonorrhoea and lithiasis. Decoction of leaves is used as an expectorant and is given in asthma and phthisis. The powdered seeds are applied to wounds (with butter) to abscesses to promote suppuration.
17	<i>Blepharis maderaspatensis</i> (L.) Heyne ex Roth	Acanthaceae	Elumbotti	Herb	Leaves	The juice extracted from the leaf is heated with gingelly oil and applied on affected places to heal wound. Seeds are used as dysuria, disease of nervous system, diuretic. Traditionally it is used for the treatment of snake-bites.
18	<i>Boerhaavia diffusa</i> L. nom. Cons	Nyctaginaceae	Thazhuthama	Herb	Whole plant	A decoction of the leaves is used to treat jaundice. The leaves are used in a cataplasm for treating indurated liver. The root can be used in a decoction to treat dysentery. The boiled roots are applied to ulcers. It is used in the treatment of gastric disturbance, asthma, anaemia and internal inflammation.
19	<i>Calotropis gigantea</i> (L.) Dryand	Apocynaceae	Erukku	Shrub	Whole plant	An infusion of leaves is used to treat severe chest colds and heart conditions. The leaf juice is used in the treatment of intermittent fever.

						The powdered flowers are valued for treating coughs, colds, asthma. The powdered bark is used to diarrhoea, dysentery and leprosy.
20	<i>Carallia brachiata</i> Lour.	Rhizophoraceae	Vallabham	Tree	Bark	The juice from the macerated leaves is used in the treatment of fevers. The pulverized bark is rubbed on the body in the treatment of smallpox. The leaves and bark are used in local medicine to treat septic poisoning and itch.
21	<i>Cardiospermum halicacabum</i> L.	Sapindaceae	Karuthakunni	Herb	Whole plant	The leaves are rubefacient, they are applied as a poultice in the treatment of rheumatism. Salted leaves are used as a poultice on swellings. The leaf juice has been used as a treatment for earache. The root is used in the treatment nervous diseases, urinary tract.
22	<i>Cassia fistula</i> L.	Fabaceae	Kanikkonna	Tree	Leaves Bark	The bark or leaves are widely applied to skin problems. Decoction of the root is applied to purify wounds and ulcers. It also used to treat fevers. The pods are used as a remedy for malaria, blood poisoning, anthrax, diabetes and dysentery.
23	<i>Cassia tora</i> (L.) Roxb.	Fabaceae	Thakara	Herb	Leaves Roots Seeds	The roasted seeds are excellent diuretic. A decoction of the powdered seeds is a mild purgative. Leaves of the plant are used in the treatment of malaria, ring worm, chronic inflammation of the skin and other skin disease. Roots are used for curing snake-bite.
24	<i>Centratherum punctatum</i> Cassini	Asteraceae	Keshavardhini	Herb	Leaves Roots	The leaf extract exhibits antimicrobial, antioxidant and antiproliferative properties. Flowers are used for the treatment of wound healing.
25	<i>Centrosema pubescens</i> Benth.	Fabaceae	Kattupayar	Climber	Leaves	It is used as anesthetic agent for scorpion and snake bites. It is used for curing wound healing.
26	<i>Chromolaena odorata</i> (L.) R. M. King & H. Rob.	Asteraceae	Communist-pacha	Shrub	Leaves Roots	An infusion of leaf is taken to cleanse the blood. The young leaves are crushed and the resulting liquid can used to treat skin wounds and eye pains.
27	<i>Chrozophora rotteieri</i> L.	Euphorbiaceae	Suryavarti	Herb	Leaves	The powdered stem or whole plant are applied to wounds to improve healing. The plant is also used in the treatment of jaundice and to purify the blood. An infusion of the seeds and leaves is taken as a laxative.
28	<i>Cleome rutidosperma</i> DC	Cleomaceae	Neelavela	Herb	Leaves	A decoction is used to treat malaria. A leaf extract is used to treat convulsions. The leaf sap is used in ear-instillations to treat inflammation and deafness. A leaf extract is made in to a lotion that is applied to soothe irritable skin conditions, prickly heat.
29	<i>Clitoria ternatea</i> L.	Fabaceae	Sankhupushpam	Climber	Whole plant	The flowers are mixed with water in a preparation used to treat eye problems, menstrual problems. The powdered, ripe seeds are purgative. The roots are diuretic. It is used in the treatment of snake-bite.

30	<i>Commelina banghalensis</i> L.	Commelinaceae	Kanavazha	Herb	Whole plant	The leaves are pounded and soaked in warm water and then the solution is drunk to treat diarrhoea. A decoction of the root is used for the relief of stomach disorders. The liquid contained in the flowering spathe is used to treat eye complaints.
31	<i>Corchorus aestuans</i> L.	Tiliaceae	Jute	Herb	Leaves Seeds	It is used as a stomachic, anti-inflammatory and as a treatment for pneumonia in India. They can be eaten in salads, used as a vegetable. It is one of the jutes fibre plant. It is used for making strings.
32	<i>Crassocephalum crepidioides</i> (Benth.) S. Moore	Asteraceae	Appuppanthadi	Herb	Leaves Stem	The leaves are used to treat indigestion, stomach upset. A leaf lotion or decoction is used to treat headache. Apply externally the leaf sap is used as a treatment for fresh wounds. The dried leaves powder is applied as a snuff to stop nose bleeding.
33	<i>Crotalaria pallida</i> Aiton	Fabaceae	Kilukkachedi	Herb	Leaves	The plant is used in traditional medicine to treat urinary problems, to reduce fever. An infusion of the plant is used to bathe children to prevent skin infections. The leaves are used to treat wounds.
34	<i>Crotalaria verrucosa</i> L.	Fabaceae	Kilukiluppa	Herb	Leaves	The roots are used as a treatment against fever and stomach pains. It is used to purify the blood and to cure skin diseases.
35	<i>Cyathillium cinereum</i> (L.) H. Rob	Asteraceae	Poovamkurnnila	Herb	Whole plant	A decoction of the whole plant is used to promote perspiration in the treatment of fevers. The juice of the plant is used to treat piles. Decoction of leaves and stem is used to treat swellings, inflammation, menstrual pains. The seed are made into paste with lime juice to use for destroying lice. Juice of root is used in the treatment of diarrhoea, stomach disorders.
36	<i>Cyclea peltata</i> Hook. f. & Thoms.	Menispermaceae	Padathali	Climber	Leaves Roots	Paste of the roots and leaves is extremely beneficial in infected wounds and skin diseases. The roots are used to treat jaundice, stomach ache, fever and asthma.
37	<i>Cynodon dactylon</i> L.	Poaceae	Karukapullu	Shrub	Leaves	A decoction of the whole plant is used as a treatment for conditions such as cough, diarrhoea, dysentery, epilepsy. The crushed leaves are applied to minor wounds to stop bleeding
38	<i>Cyperus mindorensis</i> (Steud.) Huygh	Cyperaceae	Vallimuthanga	Herb	Seeds Tubers	The fresh tubers are made in to paste and eaten with rice; is a treatment for diarrhoea. Decoction of all plant is used as a treatment of malaria, colds with fever, whooping cough.
39	<i>Desmodium triflorum</i> (L.) DC.	Fabaceae	Nilamparanda	Herb	Leaves	A decoction of leaves is used to treat diarrhoea and dysentery. The crushed plant is applied externally on wounds, ulcers and for skin problems. The whole plant is used medicinally for inducing sweat and promoting digestion.
40	<i>Eclipta prostrata</i> (L.)	Asteraceae	Kannunni	Herb	Leaves	Externally the plant is used as an oil to treat hair loss. A decoction of leaves is used to treat cancer. Leaves are also used to treat cuts, sores, pimples, rashes.

						The stem and leaves are used to treat anaemia and dysentery.
41	<i>Eleusine indica</i> (L.)	Poaceae	Kattuthina	Herb	Leaves Root	The fresh leaf juice is used as an anthelmintic, is also prescribed for women after giving birth. Decoction of the macerated leaves is used to treat skin rashes. Decoction of root is used to treat fevers and asthma.
42	<i>Erigeron canadensis</i> L.	Asteraceae	Horseweed	Herb	Leaves Seed	An infusion of the plant has been used to treat diarrhoea and internal haemorrhages and is drunk as a tea to treat hangovers caused by drinking too much alcohol. Applied externally the plant is used to treat gonorrhoea and bleeding piles.
43	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Murikooti	Herb	Leaves Stem	The whole plant is decocted and used in the treatment of athlete's foot, dysentery and skin conditions. Stem is traditionally used to treat respiratory system disorders including bronchitis, asthma, fever, cough, cold.
44	<i>Hamelia patens</i> Jacq.	Rubiaceae	Vidarapoo vu	Shrub	Leaves Fruits	The extract of leaves and stems to treat all kinds of skin disease including rashes, skin fungus, sores. It is used as a treatment of menstrual cramps, headache, fever and dysentery.
45	<i>Hyptis suaveolens</i> (L.) Poir.	Lamiaceae	Nattapooche di	Herb	Whole plant	A decoction of the root is valued as an appetizer. The juice of leaves mixed with lime juice is drunk for stomach ache. The leaf paste is applied on sores and fungal skin infection. The juice of leaves is applied daily between the toes as a treatment for athlete's foot.
46	<i>Ipomoea hederifolia</i> L.	Convolvulaceae	Theepori mulla	Climber	Roots	It possesses anticancer, anti-psychotic, anti-inflammatory, anti-oxidant and antimicrobial properties.
47	<i>Ipomoea obscura</i> (L.) Ker Gawl.	Convolvulaceae	Thirutali	Climber	Roots Leaves	Paste of the leaves, combined with the leaves of <i>Argyrea mollis</i> and alcohol is applied to open sores and pustules. The dried and powdered leaves are used to treat aphthae. A root decoction is drunk against dysentery.
48	<i>Ixora finlaysoniana</i> Wall. Ex G. Don	Rubiaceae	Vellathetchi	Shrub	Leaves	Paste prepared from the leaves of the plant is applied on the boils twice a day. Leaves of the plant are used for the treatment of fever.
49	<i>Justicia japonica</i> Thunb., Fl. Jap.	Acanthaceae	Water- willow	Herb	Whole plant	It is alternative and expectorant and is given in the form of infusion in asthma, coughs and rheumatism. The juice of the leaf is squeezed into the eyes in cases of ophthalmia.
50	<i>Lantana camara</i> L.	Verbenaceae	Aripoo	Shrub	Whole plant	A decoction of root is used to treat cough, high fever, malaria, asthma, toothache, headache, inflammation.
51	<i>Lawsonia inermis</i> L.	Lythraceae	Mailanchi	Shrub	Leaves	The leaves are taken internally in the treatment of diarrhoea and to promote menstrual flow. For external use against skin and nail complaints. It is used for the treatment of wounds, ulcers. An infusion of leaves is mixed with tobacco and salt used as a mouthwash.

52	<i>Leucas aspera</i> (Wild.) Link	Lamiaceae	Thumba	Herb	Leaves	The juice of the plant is used in the treatment of fever, coughs and colds. A decoction of the leaves is considered a good stomachic and is applied internally and externally to treat colic of children. The crushed leaves are used to treat mild fevers, colds and snake bites.
53	<i>Melastoma malabathricum</i> L.	Melastomataceae	Athirani	Shrub	Leaves	A decoction of the leaves alone or in combination with other plants is used in the treatment of stomach aches, indigestion, diarrhoea, dysentery. The leaves are applied externally as a compress to cuts, wounds and swellings. Decoction of leaves is applied painful arthritic joints.
54	<i>Melissa officinalis</i> L.	Lamiaceae	Leman mintu	Herb	Leaves	In Traditional medicine the leaves have been used for internal use as a tea in external use as an essential oil for the treatment of disorders of gastrointestinal tract, nervous system, liver.
55	<i>Mimosa pudica</i> L.	Fabaceae	Thottavadi	Herb	Leaves Roots	The root is used in the treatment of dysentery, inflammations, asthma, blood diseases. The root is used to control alcoholism. Decoction of the leaves is used for treating wounds, toe infection, depression.
56	<i>Mitracarpus hirtus</i> (L.) DC.	Rubiaceae	Thaval	Herb	Leaves	The dried leaves are healing ulcers. The plant is an antidote for arrow poison. The leaves are used in traditional medicine for the management of toothaches, sore throat, skin diseases, wound dressing.
57	<i>Murraya paniculata</i> (L.) Jack	Rutaceae	Maramulla	Tree	Leaves Bark Fruits	A decoction of leaves is used as mouthwash for toothaches. The powdered leaves are applied externally to fresh cuts. The leaves are used in the treatment of diarrhoea and dysentery. The bark of the stem and root is used in the treatment of diarrhoea.
58	<i>Myristica fragrans</i> Houtt.	Myristicaceae	Jathi	Tree	Seeds	The seed is taken internally in the treatment of diarrhoea, dysentery, vomiting. Externally the seed is used to treat toothache and abdominal pains. Seed is used in Ayurveda to treat poor digestion, insomnia and premature ejaculation.
59	<i>Ocimum sanctum</i> L.	Lamiaceae	Tulasi	Herb	Whole plant	It relieves headache, fever. It protects against infection, lower blood sugar, ease joint pain, bronchitis, skin diseases.
60	<i>Parietaria officinalis</i> L.	Utricaceae	Neykuppa	Herb	Leaves	It is a soother of chronic coughs and as a balm for wounds and burns. It is an efficacious remedy for kidney and bladder stones and other complaints of the urinary system.
61	<i>Phaseolus coccineus</i> L.	Fabaceae	Perumpayar	Climber	Root Seeds	A root decoction is taken against malaria or applied to swollen eyes. The seeds are used as a vegetable.
62	<i>Phyllanthus niruri</i> L.	Phyllanthaceae	Kizharnelli	Herb	Whole plant	It is used in traditional medicine such as jaundice, chronic dysentery, cough, diabetes, urinary tract diseases, skin diseases, ulcer, sores and swellings.
63	<i>Plectranthus amboinicus</i> (Lour.) spreng.	Lamiaceae	Panikoorka	Herb	Whole plant	An infusion or syrup made from the aromatic leaves is used to treat coughs and also used for the treatment of fever, colds, bronchitis, asthma, menstrual pain, urinary diseases, headache, inflammations, wounds, skin allergies.

64	<i>Psidium guajava</i> L.	Myrtaceae	Pera	Tree	Whole plant	Taking guava leaf extract daily may help decrease symptoms of painful menstruation, reduce diarrhoea. The fruit or leaf extract is lowering blood pressure.
65	<i>Pueraria phaseoloides</i> (Roxb.) Benth.	Fabaceae	Thotta-payar	Climber	Root	A decoction of the plant is used as an anti-infective agent. A poultice of the plant is applied to ulcers and boils.
66	<i>Rauvolfia serpentina</i> (L.) Benth. ex Kurz	Apocynaceae	Sarpagandhi	Shrub	Leaves Roots	The juice of leaves is used to remove opacities of the cornea of the eyes and also treat wounds and itches. The bark, leaves and root are used against snake and scorpion poisoning. The roots are hypnotic, hypotensive and sedative. They are used in the treatment of hypertension.
67	<i>Scoparia dulcis</i> L.	Plantaginaceae	Kallurukki	Herb	Whole plant	The whole plant is used for treating diabetes, coughs, cold, fever and an antidote for snake bites. A decoction of the plant is drunk as a treatment for remittent fever and gonorrhoea. The fresh or dried plants are used externally to treat skin problems.
68	<i>Sida acuta</i> Burm.f.	Malvaceae	Anakuruthotti	Shrub	Leaves Root	A decoction of the whole plant is used as a treatment for fevers. The juice of the plant is used to treat indigestion. An infusion of leaves is used to treat dysentery. The juice of leaves is mixed with vinegar to make anti-inflammatory and digestive remedy. The root is chewed to relieve toothache.
69	<i>Sida rhombifolia</i> L.	Malvaceae	Vellooram	Sub Shrub	Whole plant	As a milk decoction with sugar, it is a very good nutritive supplement for strength and health. The juice of whole plant is pounded with water is a remedy for rheumatism, gonorrhoea. An infusion of leaves is used to treat fever. Infusion of root is useful in bleeding piles, gonorrhoea.
70	<i>Solanum torvum</i> Sw.	Solanaceae	Chundaikka	Shrub	Leaves Fruits	The juice of the plant is used to treat fevers, coughs, asthma, sore throats, stomach ache. The juice of flower with salt added is used as eye drops. The leaves are dried and ground to powder is used as a medicine for diabetic patients. The fruit is diuretic.
71	<i>Synedrella nodiflora</i> (L.) Gaertn.	Asteraceae	Mudianpacha	Herb	Leaves	Crushed leaves have been used as a treatment for rheumatism. Leaves is applied externally to soothe inflammation. Infusion of young leaves is used as a laxative. Decoction of the pounded and cooked roots is drunk as a cough-mixture.
72	<i>Tabernaemontana divaricata</i> R.Br. ex Roem. & Schult.	Apocynaceae	Nandyarvattam	Shrub	Root Flower	A decoction of root is used in the treatment of diarrhoea and various abdominal complaints. The roots are used to treat hypertension, headache. The flowers mixed with oil are applied to sore eyes.
73	<i>Tadehagi triquetrum</i> (L.) H. Ohashi	Fabaceae (Papilionaceae)	Kattarali	Herb	Leaves Root	An infusion of leaves is used to treat stomach discomfort. Decoction of leaves is used to treat haemorrhoids. A decoction or infusion of root is used as a treatment of chronic coughs and to treat kidney complaints.

74	<i>Triumfetta rhomboidea</i> Jacq.	Malvaceae	Oorpam	Shrub	Leaves	A decoction of plant in rice water is used to treat diarrhoea, dysentery. The leaves and flowers are used as a treatment against leprosy.
75	<i>Urena lobata</i> L.	Malvaceae	Uram	Sub Shrub	Leaves Roots	A decoction of leaves and roots is drunk to relieve pains all over the body due to excessive exertion. The whole plant is macerated and used externally for treating fractures, wounds and snake bites. Decoction of root is used to treat colds, dysentery, malaria, rheumatism.

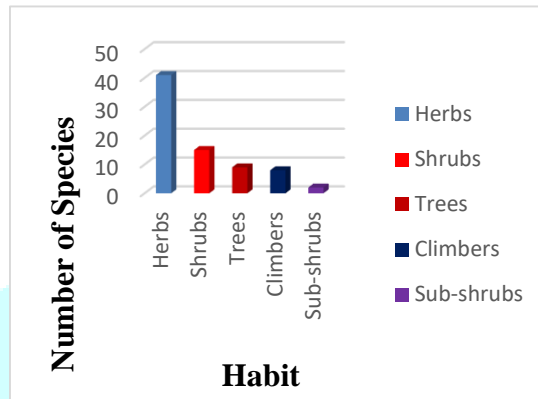


Fig-1: Representation of plant habits

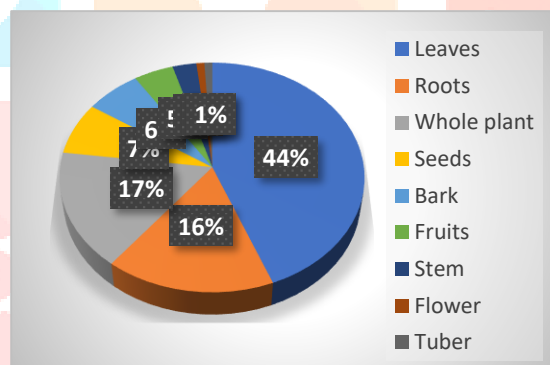


Fig-2: Representation of plant parts

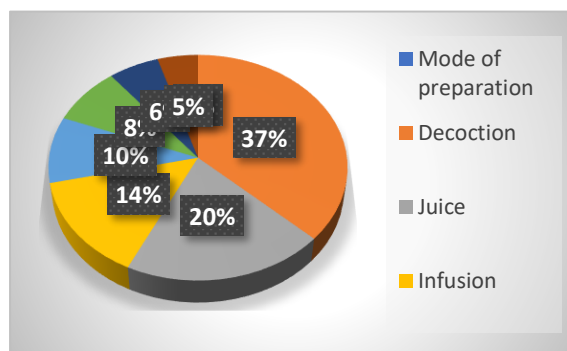


Fig-3: Mode of preparation of drugs

Table 2: Red listed plants in the study area

SPECIES	STATUS
<i>Biophytum sensitivum</i> (L.) DC.	Least concern
<i>Commelina banghalensis</i> L.	Least concern
<i>Crotalaria pallida</i> Aiton	Least concern
<i>Ipomoea hederifolia</i> L.	Near Threatened
<i>Rauvolfia serpentina</i> (L.) Benth. ex Kurz	Endangered

VI. CONCLUSION

The study carried out in Urdhook hills has documented 75 plant species belonging to 33 families. The survey is playing an important role in the knowledge of medicinal plants that are used for curing various diseases. Some plants are categorized in RET list. These plants are need urgent conservation. It is therefore important to understand the need for conservation and to propagate and nurture it. Conservation of these medicinal plants are benefits for future generations for further studies and the plants play an important role in the development of human cultures around the whole world.

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