IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A PRELIMINARY STUDY ON THE MEDICINAL PLANTS OF ANNALLUR KOLE LANDS, CHALAKUDY, THRISSUR, KERALA

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Abstract:

A work was carried out to study the diversity of medicinal plant at Annallur Kole lands of Chalakudy, Thrissur. The main aim of the study was to identify the medicinal plants of the kole land , their uses , wetland plant diversity, importance of wetlands and to create awareness about it. Work was done from the period of September to December 2019. Frequent field visit were made, plants were collected and identified with the help of standard flora and with the help of experts from the field of taxonomy. It was observed that the area is rich in plant diversity . We observed 53 plants belonging to 25 families. The medicinal use of each plant were also examined and tabulated. In the present analysis of kole land flora, members of the family Asteraceae were predominant with Eight genus then Convolvulaceae followed by Fabaceae with five and four members respectively.. Then by Cyperaceae,Amaranthaceae, Onagraceae ,Acanthaceae,Euphorbiaceae and Malvaceae members were also there. The data compiled in this study highlights the diversity and abundance of plants with medicinal properties in this wetland system. This necessarily leads to create a better understanding of medicinal plants of kole lands to the present community.

Index Terms **– Wetland, medicinal plants, diversity, koleland, taxonomy.**

I. INTRODUCTION

Kole wetlands are a type of wetland which support varied spectrum of biodiversity. They form vital ecosystems providing response for the livelihood concerns of thousands of inhabitants in and around this area . Several species of aquatic and semi aquatic medicinal flora make use of the outstanding habitat Kole wetland ecosystem. The plants of this area are being used by local community for healing purposes. More than that the varying conditions due to anthropogenic activities these flora are very subtle to fluctuations in the normal physiochemical parameters of the wetland, results in the extirpation of these plants. This may lead to the ultimate end of the medicinal products. Considerable attempts have to be made to record the availability of medicinal plants and to spotlight the known therapeutic properties of the wetland plants of this important zone. It was reported that the local inhabitants have been using wetland plants against many diseases traditionally. We have to realize the importance of traditional medicine which provides about 80% of health service to world population to an extent that deserves (Marini, 1980). India, has greater potentials to increase its share in the world market, as having excellent traditional knowledge in the herbal medicine,. In the form of food, fodder and medicine, plants of kole wetland ecosystem played engrossing role in the life of humankind in earlier days. But the changed life style, reduced the worth of these wetland plants, and they are treated as weeds. Protection and conservation of wetland is a important matter

Inspite of forming the rich repositories of various plant species, attempts has not been undertaken to itemize the food values and medicinal uses of them. It is a matter of urgent need to record the present status of medicinal plants in this unique ecosystem for their conservation and utilization for sustainable development. In this context a preliminary study has been carried out for the documentation of availability and medicinal potential of plants that grow as weeds in Annallur Kole lands.

II.LITERATURE REVIEW

Many works were carried out by scientists from different part of the world on various aspects of wetland plant which clearly indicates the importance of wetland plant. In India, Kerala is having the largest area under wetlands (Nayar and Nayar, 1997). Using IRS satellite data Nair and Sankar (2002) recently mapped the wetland systems of Kerala and reported that the state has a total of 217 wetland units out of which only 157 units are having an area greater than 56.25ha.

In the Kole land area moderate climatic conditions prevailed. A minimum temperature of 21^{o} C and a maximum of 38^{o} C has a recorded in this area. Air is humid (85-95% during June -September and 70% during January). The southwest and North-west Monsoons are the rainy seasons in Kole lands.

Kole lands are having rich in floristic and faunal diversity than any other fresh water ecosystems. All taxonomic groups including algae, mosses, ferns and flowering plants including many medicinal plants are represented in such areas.. Ecological status of an ecosystem can be evaluated with a knowledge of the major plant communities and their relative importance. depending on the availability of water many aquatic macrophytes grows either submerged or floating on the surface, continuously or periodically. They provides habitat and refuge of the aquatic communities and contribute biomass and nutrients to various trophic levels in the ecosystem, there by helping to maintain the structure and function of aquatic ecosystem. Changes in the community composition or alteration in the abundance of individual species provide valuable information on how and why an ecosystem might be changing (Scott et al., 2002). According to Kelly and Whitton, 1998 a progressive change in species composition can result in the eventual loss of species diversity due to eutrophication. Beside this they also favour periphytic growth, enrich various aquatic fauna and serve as a breeding ground for associated fauna (Mitra, 1997).

Jayson and Sivaperuman (2005), stated that the Kole wetlands act as feeding, roosting and breeding ground for many species of migratory and resident birds and they reported 182 species of birds, 13 species of fishes from the Thrissur Kole wetlands.

III.RESEARCH METHODOLOGY

Study area

The present study is based on the wetland plants collected from Annallur Kole land. Collection was done during the period of September-December 2019.Annalur is a village of Thrissur District near Kottat, Chalakkudy. And this place is 6 km away from Chalakkudy National Highway. The factory Thomson Tiles is running near to this paddy field. The main cultivation of this area is paddy. And the non cultivated area is rich with plant diversity including both aquatic and terrestrial. In this study an attempt was carried out to explore wetland diversity of Annallur paddy field during post monsoon season.

Collection of specimen

The plants were collected from the Annallur Koleland and observed as well as the colour photographs were taken with the help of digital camera in their material habitat. The specific plants in that area were collected along with their flowers taken for further analysis and herbarium preparation. The specimens collected from the wetland were brought in to the laboratory for further analysis. The plants were examined starting from stalk through the calyx corolla, androecium up to the tips of stigma using hand lens. Then record the observed characters in a note book. Flowers were sectioned with help of razor or sharp blade, one horizontally and the other down the middle, for know about placentation and to complete floral diagram and for understanding the status.

Preparation of field book

During the collection, the specimens were collected and tagged within the field number. Filed observation such as habitat, flower colour etc. were entered in the field book. The specimens of appropriate size with relevant parts were collected from the field for herbarium preparation.

Identification of family

On the basis of examined characters, the families of the specimens were identified .As well as the software “flowering plants of Kerala ver.2.0 (Dr.sasidharan , KFRI. Peechi), under biodiversity portal (India biodiversity.org.) and experts in the field of taxonomy were also helped in the identification of plant specimens.

Preparation of herbarium

The collected specimens, were cut or dug, and pressed as soon as possible. After that specimens placed carefully on a pressing sheet. (Newsprint sheet or a blotter) without no folding or overlapping of parts .After drying and pressing specimens were affixed on the herbarium sheet. Then the binomial, family, habitat etc. were recorded on the sheet.

IV. RESULTS AND DISCUSSION

Kole lands in Annallur serve as an excellent habitat for numerous medicinal herbs which can be harvested for economic benefits. This investigation on the availability and abundance of medicinal herbs in the Annallur kole revealed the presence of 44 species under 40 genera and 22 families (Table 1). In the present analysis of kole land flora, members of the family Asteraceae were predominant with Eight genus and Convolvulaceae followed by Fabaceae and convolvulaceae with five and four members respectively.. Then by Cyperaceae,Amaranthaceae, onagraceae ,Acanthaceae,Euphorbiaceae Malvaceae members are also there. Among this three ferns were also noticed during the study time. *Ludwigia octovalvis Ludwigia adscendens ,Merrimia hederacea ,M. tridentata ,Ipomea aquatic, Hygrophylla schulli ,Kyllinga squamulata* Monochoria vaginalis, and *Schoenoplectus articulatus* are frequent in all seasons in the study area. The study area contains saline tolerant species like *Acanthus ilicifolius* with different medicinal values were also come across. The observed species were found to be used in in curation of gastrointestinal disorders, respiratory ailments, dermatological snags, urinogenital illnesses, cardiovascular problems and neuro disorders (Table 1). They were also used for different applications including decoction, extraction, infusion and paste preparation. It was also observed that methods of application of medicine like oral administration, local application, inhalation or smoking and massaging is in practice.

The data compiled in this study highlights the diversity and abundance of plants with medicinal properties in this wetland system. So it is necessary to create a better understanding of medicinal plants of kole lands to the present community. We can change the status of the plants from worst weed to useful medicines for mankind by providing basic information to the local community on the medicinal attributes of these plants. The economic importance of river vegetation of Kerala including both wetland species and bank species was analyzed Maya *et al*., (2003). A review on the utility of Indian wetland plant species as food and medicine by incorporating the traditional knowledge of local communities was made by Swapna *et al.*, (2011).

People have open access to collect and utilize the aquatic medicinal plants in kolelands as most of them are grown in wild and them. Beside this the koleland plants of the region can provide high income generating opportunities to local communities.

Almost all the medicinal plants found in Annallur kolelands are commonly seen in rivers, ponds and paddy fields all over Kerala, however, kolelands offer plenty of space for its feasible agriculture and sustainable exploitation. Some of the therapeutic usages of such species are very unique to the traditional medicinal knowledge system of the locality.

According to Kairo *et al*., 2000, major impediments in the protection of wetland resources are the lack of community participations in management efforts, source of revenue, and dearth of awareness amongst decision makers on the exact values of

wetland. Therefore in this kole wetland region for sustainable management a complete and comprehensive management strategy, based on ethnic, ecological and financial principles, is need to be planned by the whole participation of local stakeholders

Table 1-Table showing the name family and uses of plants reported from the Koleland area

NO	NAME	FAMILY	MEDICINAL USE
1	*Ludwigia octovalvis*	Onagraceae	Used in the treatment of diarrhoea, dysentery, nervous diseases
2	*Ludwigia adscendens*	Onagraceae	A decoction of the aerial parts is used as a treatment for dysentery, fever, cough and ophthalmia.
3	*Ipomea alba*	Convolvulaceae	The whole herb is used in treating snakebite
4	*Merrimia hederacea*	Convolvulaceae	Juice of the leaves, used to heal cracks in the hands and feet
5	*Merrimia tridentata*	Convolvulaceae	A decoction of the whole plant -various ophthalmias.
6	*Ipomea aquatica*	Convolvulaceae	The young shoots used by diabetic patients
7	*Cuscuta chinensis*	Convolvulaceae	A lotion from the stems for sore heads and inflamed eyes.
8	*Ziziphus jujuba*	Rhamnaceae	Used for improving muscular strength and weight, for preventing liver and bladder diseases and stress ulcers.
9	*Physalis minima*	Solanaceae	Appetizing, tonic, diuretic, laxative, useful in inflammations, enlargement of the spleen and abdominal troubles.
10	*Polygonum pencilvanicum*	Polygonaceae	For hair-blacking, liver and kidney-tonifying and anti-aging effects as well as low toxicity.
11	*Eicchhornia crassipes*	Pontederiaceae	The weed biomass can be used for antimicrobial, antifungal activities
12	*Monochoria vaginalis*	Pontederiaceae	Plant is considered alterative, tonic and cooling. Juice of leaves is applied to boils.
13	*Gomphrena decumbens*	Amaranthaceae	Antiasthmatic, abti oxidant properties
14	*Alternanthera philoxeroides*	Amaranthaceae	n extract of the plant is used medicinally in India to treat 'female diseases
15	*Lindernia diffusa*	Scropulariaceae	Leaf paste with lemon juice is given orally to cure excess bile secretion; also applied externally on ringworm and boils.
16	*Urena lobata*	Malvaceae	The leaves are diuretic, emollient, refrigerant, styptic, vulnerary
17	*Sida accuta*	Malvaceae	decoction of the whole plant is used as a treatment for feversThe juice of the plant is used to treat indigestion
18	*Commelina diffusa*	Commelinaceae	The leaves are diuretic and febrifuge The crushed leaves and stems are used as a remedy for irregular menstruation
19	*Cleome viscosa*	Capparadaceae	Anthelmintic, antimicrobial, analgesic, antiinflammatory, immunomodulatory, antipyretic and psychopharmacological, antidiarrheal
20	*Emelia sonchifolia*	Asteraceae	A tea made from the leaves is used in the treatment of dysentery.
21	*Vernonia cinerea*	Asteraceae	Seeds Cures diseases caused by roundworms and threadworms, coughs, flatulence, intestinal colic, and other chronic skin-diseases.
22	*Sphagneticola trilobata*	Asteraceae	A strong decoction of the whole plant is used to treat chest colds. Combined with Lantana camara, as a tea or syrup, as a remedy for colds
23	*Tridax procumbens*	Asteraceae	The leaves are antiseptic, haemostatic and parasiticide.
24	*Mikania michrantha*	Asteraceae	Juice of leaves is applied to boils.
25	*Sphaeranthus indicus*	Asteraceae	widely used in Ayurvedic system of medicine to treat vitiated conditions of epilepsy, mental illness, hemicrania, jaundice, hepatopathy, diabetes, and skin diseases
26	*Phyllanthus amarus*	Euphorbiaceae	Phyllanthus amarus is widely used as a medicinal plant and is considered to be a good tonic, diuretic and febrifuge
27	*Bridelia ovata*	Euphorbiaceae	The leaves are purgative,Another report says that they are a mild laxative.
28	*Alysicarpus vaginalis*	Fabaceae	decoction of the roots is used as a treatment against coughs
29	*Senna tora*	Fabaceae	The seeds are diuretic and purgative.The leaves are purgative
30	*Mimosa pudica*	Fabaceae	The leaves are bitter, mildly sudorific, tonic.A leaf tincture is given by teetotallers to drunkards to remedy drunkenness
31	*Centrosema molle*	Fabaceae	medicin**e** as a toxic, alternative, diaphoretic, blood purifier, in rheumatism
32	*Setaria lucopila*	Poaceae	The germinated seed of yellow-seeded cultivars is astringent, digestive, emollient and stomachic
33	*Eragrostis tenella*	Poaceae	This **Plant** has an extensive property of acting as anticancerous, antimicrobial and antioxidant agents
34	*Ficus sps*	Moraceae	**Ficus** species is used medicinally, mainly to cover and cure

			wounds, boils and sores, but also as an antirheumatic
35	*Acanthus ilicifolius*	Acanthaceae	Diuretic and is used as a cure for dropsy and bilious swellings.
36	*Hygrophylla schulli*	Acantahceae	The plant is often used in traditional medicine, being valued especially as a diuretic.
37	*Kyllinga squamulata*	Cyperaceae	The leaves, stems and rhizomes are analgesic, antiinflammatory, antimalarial, decongestant, diuretic, febrifuge and sudorific.
38	*Cyperus rotundus*	Cyperaceae	Traditional herbal medicine used widely as analgesic, sedative, antispasmodic, antimalarial, stomach disorders and to relieve diarrhoea
39	*Schoenoplectus articulatus*	Cyperaceae	Excellengt souirce of phenolic compounds and anti oxidants.
40	*Ichnocarpus frutescens*	Apocyanaceae	Whole plant is used as tribal medicine in atrophy, bleeding gums, convulsions, cough, delirium, heamaturia etc.,
41	*Corchorus olitorius*	Tiliaceae	Folk remedy for aches and pains, dysentery, enteritis, fever, pectoral pains, and tumors.
42	*Hydrolea zeylanicus*	Hydrophyllaceae	The leaves, beaten into pulp and applied as a poultice, are considered to have a cleansing and healing effect on neglected and callous ulcers.
43	*Ceratopteris thalictroides*	Pteridaceae	In traditional **medicine**, the plant is used as a poultice for skin problems, as a styptic to stop bleeding.
44	*Pteris vittata*	Pteridaceae	The leaves possess astringent **properties**, and a decoction of the fresh leaves is given in dysentery
45	*Salvinia molesta*	Salviniaceae	Known for antioxidant properties, flavonoids, free radicals and phenolic compounds,
46	*Poa bulbosa*	Poaceae	Good fodder for animals
47	*Leucas aspera*	Lamiaceae	Antifungal, prostaglandin inhibitory, antioxidant, antimicrobial, antinociceptive and cytotoxic activities
48	*Hyptis suaveolens*	Lamiaceae	Possess antifertility, antiinflammatory, and antiplasmodial properties.
49	*Ageratum conyzoides*	Asteraceae	Utilized for the treatment of various ailments, such as burns and wounds, headaches
50	*Synedrella nodiflora*	Asteraceae	*Synedrella nodiflora* leaves can be used as Pregnant Mare Serum Gonadotrophin supplier in animal husbandry to improve reproductive parameters in females.
51	*Desmodium triflorum*	Fabaceae	Analgesic and anti-inflammatory activities
52	*Nymphaea nouchali*	Nymphaceae	Used for the treatment of diabetes, liver disorders, urinary disorders, menorrhagia, blenorrhagia, menstruation problem
53	*Cyperus polystachyos*	Cyperaceae	Rhizomes are considered astringent, diaphoretic, diuretic, sedative, stimulant, stomachic, vermifuge, tonic and antibacterial. T

Photographs of plants reported from the study area


Ludwigia octovalvis


Ludwigia adsc


Ipomea alba


Merrimia hederacea


Pteris vittata


Ziziphus jujuba


Polygonum pencilvanicum


Physalis minima


Mikania michrantha


Eicchhornia crassipes





Gomphrena decumbens *Merrimia tridentata* *A. philoxeroides* *Lindernia diffusa* *Sida accuta*





Commelina diffusa *Cleome viscosa* *Urena lobata* *Emelia sonchifolia* *Vernonia cinerea*





Phyllanthus amarus *Ficus sps* *Senna tora* *Sphagneticola Trilobata* *Tridax procumbens*





Salvinia molesta *Schoenoplectus articulatus* *Kyllinga squamulata* *Cyperus rotundus* *Eragrostis tenella*





Ipomea aquatica *Sphaeranthus indicus* *Alysicarpus vaginalis* *Ichnocarpus frutescens* *Corchorus olitorius*


Mimosa pudica


Centrosema molle


Bridelia ovata


Hygrophylla schulli


Hydrolea zeylanicus


Monochoria vaginalis


Cuscuta chinensis


Setaria lucopila


Acanthus ilicifolius


Ceratopteris thalictroide


Poabulbosa


Hyptis suaveolens


Leucas aspera


Ageratum conyzoides


Synedrella nodiflora


Desmodium triflorum


Nymphaea noucha


Cyperus polystachyos

V.CONCLUSION

As a conclusion we can say that this study is a preliminary step for the identification of valuable medicinal plants in the wetlands of Annallur area. Along with the understanding of the traditional medicines and beliefs we have to develop scientific awareness for protection and conservation of our wetlands, so this study was conducted. High value medicinal plants are in pressur and their biodiversity is in high risk due to huge demand for plant derived drugs. From this minor study 50 genus of wetland plants belonging to 25 families were recorded to be used by the traditional medicine practitioners. In developing countries increasing populations, urbanization and deforestation are contributing to species endangerment. Over exploitation and unsustainable development leads to the decrease or elimination of medicinal plants. These medicinal plants are easily accessible and affordable to rural community and such remedies have certain advantages also. The wetlands have a vast wealth of, of medicinal plants which are sources useful compounds. On the other hand loss of important floral diversity also leads to declining of it. Hence conservation of floral diversity will be important tool to sustain and carry such important knowledge to the future generation. The flora is the most important factor to maintain the biodiversity of an area.

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