WETLAND PLANTS USED BY INDIGENOUS PEOPLE TO TREAT AGAINST SKIN DISEASES IN AGASTHEESWARAM TALUK, KANYAKUMARI DISTRICT, TAMILNADU, SOUTH INDIA.

[1]Jerlin Deletta. G and [2]. Parthipan

[1]Assistant Professor, Department of Botany, Holy Cross College (Autonomous), Nagercoil-4, Tamilnadu, India. (Affiliation of Manonmaniam Sundaranar University, Abishekapatti, Tirunelveli - 627 012, Tamilnadu, India.)
[2]Associate Professor, P.G & Research Department of Botany, S.T.Hindu College, Nagercoil-2.

ABSTRACT:

Plants which grow in wet places or in water either partly or wholly submerged are called hydrophytes. wetland hydrophytes are very remarkable forms of plant life and they find a more or less precious footing in pond ecosystem. Most of them are covered by means of weeds and plants became useless. The present study is to analyze the medicinal use of such weeds and plants and make aware the public about the importance of pond plants. The main objective was to assess and document the potential of floral resources and how it's used to cure skin diseases. Field study consisted of plant collection and interview with local traditional healers. Botanical name, Tamil name, family, life form, habit, parts used, used in various medicinal system, ailments of species are provided in this paper. The result revealed that 45 wetland medicinal plants under 41 genera and 28 families were under use by the local inhabitants against skin diseases and various ailments too, 7 species used as food, one species used as craft, fodder and ornamental respectively. Out of total taxa, 40 species are Dicotyledons under 36 genera and 23 families, 4 species are monocotyledons under 4 genera and 4 families and only one species Pteridophytes. Further the wetland hydrophytes classified in morphological group viz., under Shore plants (16), Wetland plants (15), Emergent amphibious hydrophytes (10) free floating and Floating submerged anchored hydrophytes (2 species each). The survival of these native wetland species is threatened and hence continuous Monitoring and conservation of wetlands and wetland plants of Agastheeswaram Taluk is important to safe guard the biological wealth of the study area.

Key words: Skin diseases, Agastheeswaram Taluk, wetland hydrophytes.

I. INTRODUCTION

The term 'wetland macrophytes' refers to a diverse group of wetland photosynthetic organisms, all large enough to see with the naked eye. Wetland plants are key components for the well functioning of goods and services for the dependent people. The wetland plants are the most important component of the wetland ecosystem [1]. The knowledge of medical property of plants has been accumulated in the course of many countries [2]. The medicinal value of a particular species of plant differs from one locality to another or from one community to another. Hence, it is highly imperative to document local knowledge on the medicinal properties of plants to gain wider and in depth knowledge on their curative abilities [3]. So far, a systematic work on medicinal uses of these plants has not been done even if, in India, several workers have reported some hydrophytes vegetation of different parts of the country [4,5,6,7,8&9].Before indigenous people lose their knowledge of medicinal value o plants forever, there is an urgent need to record such plants through investigation, documentation, systematic study for the benefit of mankind. Therefore an attempt has been made to conserve and document the vanishing knowledge of the medicinal properties of the wetland plants against skin diseases used by indigenous people of Agastheeswaram Taluk, Kanyakumari district, Tamilnadu, South India.

II. MATERIALS AND METHOD

2.1. Study area

Kanyakumari is the southernmost district of Tamilnadu. This district lies between 77°07'- 77°35' E, 08°05'- 08°35' N, and it occupies an area of about 1672 sq. km. Topographically, the district may be broadly classified as coastal, middle, and mountainous regions[10 &11]. This district is comprised of four Taluks namely, Agastheeshwaram, Thovalai, Kalkulam and Vilavancode. In Agastheeswaram Taluk 183 ponds were located; Out of these only 21 wetlands of Agastheeswaram Taluk were selected for the study area is given (Table 1 and Fig.1).

Table 1 Name of the wetlands and geo co-ordinates in Agastheeswaram Taluk, Kanyakumari District, Tamilnadu

S.No	Name of the wetland	Geo- coordinates	Area of the pond (Ayacut in Ha.)
1	Thalakulam	N 8˚5.290′ - E 77˚30.979′	80.94.0
2	Chenkulam	N 8˚8.621′ - E 77˚32.498′	102.21.5
3	Melakarunkulam	N 8˚8.212′ - E 77˚33.081′	80.94.0
4	Muthaliyarkulam	N 8˚8.800′ - E 77˚34.100′	60.70.0
5	Piranthenerikulam	N 8˚9.047′ - E 77˚34.613′	80.94.0
6	Valasoundarikulam	N 8˚9.157′ - E 77˚33.597′	64.74.5
7	Vaariyoorkulam	N 8˚8.415′ - E 77˚32.964′	141.64.0

8	Kadaankulam	N 8˚10.224′ - E 77˚29.791′	52.73.0
9	Nachimarkulam	N 8˚6.093′ - E 77˚32.923′	60.70.0
10	Narikulam	N 8˚6.619′ - E 77˚32.397′	80.94.0
11	Devakulam	N 8˚7.167′ - E 77˚30.644′	52.61.0
12	Puthanarkulam	N 8˚8.694′ - E 77˚29.880′	81.04.0
13	Ramasamuthiramkulam	N 8˚11.709′ - E 77˚30.044′	80.94.0
14	Nullikulam	N 8˚11.965′ - E 77˚26.750′	75.15.0
15	Thathaiyarkulam	N 8˚11.857′ - E 77˚26.903′	112.99.5
16	Suchindrumkulam	N 8˚8.852′ - E 77˚27.435′	277.99.0
17	Parakkaisouthkulam	N 8˚7.132′ - E 77˚27.448′	178.50.0
18	Andarkulam	N 8˚11.467′ - E 77˚28.791′	62.13.0
19	Maankulam	N 8˚11.007′ - E 77˚29.327′	66.87.0
20	Theroorkulam	N 8˚10.922′ - E 77˚27.406′	647.51.0
21	Kothandaramankulam	N 8˚12.422′ - E77˚27.422′	83.76.0

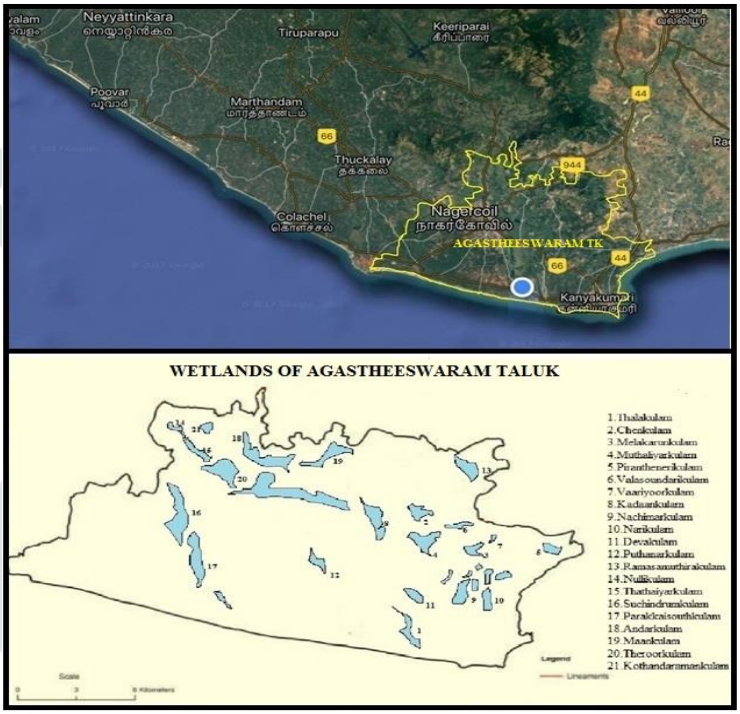

Fig. 1. Satellite map of Kanyakumari District- Agastheeswaram Taluk

2.2. Medicinal plant survey

An extensive systematic field survey of the plants for the period of two years (Oct 2014 to Oct 2016). The plant specimens were collected at various seasons and that different reproductive stages (flower either fruit or both) from their natural habitats, medicinal wetland plants were recorded through interviews, discussion and field observation with herbal healers and knowledgeable experienced people of the study area using semi structured questionnaire.

The information about plants and their local name, parts used for preparation of drug, mode of administration and specific comments were documented in the field survey. The medicinal use of species was cross checked using literature available.

2.3. Preservation and identification of plant materials

The collected specimens are taxonomically identified with the help of various published monographs, taxonomic revisions and floras [12, 13, 14, 15, 16 &17] and by using the field keys devised by [18]. Authentication of the identity of plant species were confirmed by specimens deposited in Botanical Survey of India, Southern Circle, Coimbatore, Jawaharlal Nehru Tropical Botanical Garden and Research Institute (JNTBGRD) Palode, Trivandrum, Kerala and Botany Department of Scott Christian College, Nagercoil. [19] was followed to clarify the species were verified with IPNI (International Plant Name Index). The voucher specimens collected from the field were prepared the herbarium and were deposited in the P.G. & Research Department of Botany, S.T. Hindu College, Nagercoil.

III. RESULTS AND DISCUSSION

The present study revealed the wetland plants to treat against skin diseases in Agastheeswaram Taluk 45 plant species under 41 genera and 28 families were studied. Botanical names of the plants are arranged in alphabetical order followed by family name, life forms, habits are presented in Table 2.

Table 2. List of wetland plants collected from the study area to treat skin diseases

S. No	Botanical name	Families APG IV	Life form	Habit	STHCH No.
1	*Abrus precatorius* L.	Leguminosae	SP	C	4048
2	*Acalypha indica* L.	Euphorbiaceae	SP	H	4013
3	*Acmella paniculata* (Wall.ex.DC.) R.K.Jansen	Compositae	EAH	H	4416
4	*Aeschynomene indica* L.	Leguminosae	EAH	H	4256
5	*Ammannia baccifera* L.	Lythraceae	EAH	H	4068
6	*Asystasia gangetica* (L.) T.Anderson	Acanthaceae	SP	H	4096
7	*Azadirachta indica* A.Juss	Meliaceae	SP	T	4063
8	*Centella asiatica* (L.) Urb.	Apiaceae	WP	H	4122
9	*Cissus quadrangularis* L.	Vitaceae	WP	S	4142
10	*Cleome viscosa* L.	Cleomaceae	WP	H	3969
11	*Clerodendrum inerme* (L.) Gaertn	Lamiaceae	WP	S	4043
12	*Coccinia grandis* (L.)Voigt	Cucurbitaceae	SP	C	4051
13	*Commelina erecta* L.	Commelinaceae	WP	H	4449
14	*Crotalaria verrucosa*.L.	Leguminosae	SP	H	4002
15	*Dalbergia sissoo* DC.	Leguminosae	WP	T	4151
16	*Datura metel* L.	Solanaceae	SP	S	4132
17	*Echinochloa colona* (L.) Link	Poaceae	EAH	H	4529
18	*Eichhornia crassipes* (Mart.) Solms.	Pontederiaceae	FFH	H	4130
19	*Euphorbia hirta* L.	Euphorbiaceae	WP	H	3953
20	*Euphorbia thymifolia* L.	Euphorbiaceae	EAH	H	4363
21	*Glinus oppositifolius* (L.) Aug DC	Molluginaceae	WP	H	4243
22	*Jatropha curcas* L.	Euphorbiaceae	SP	S	4150
23	*Leucas aspera* (Willd.) Link	Lamiaceae	WP	H	4018
24	*Ludwigia adscendens* (L.) H.Hara.	Onagraceae	FSAH	H	4290
25	*Marsilea minuta* L.	Marsileaceae	EAH	H	4080
26	*Melia azedarach* L	Meliaceae	SP	T	4149
27	*Merremia tridentata* (L.) Hallier f.	Convolvulaceae	WP	H	4283
28	*Murraya koenigii (*L.) Spreng	Rutaceae	SP	T	4210
29	*Nymphoides indica* (L.) Kuntze	Menyanthaceae	FSAH	H	4560
30	*Oldenlandia corymbosa* L.	Rubiaceae	EAH	H	4503
31	*Phyllanthus maderaspatensis* L.	Phyllanthaceae	SP	H	4012
32	*Pistia stratiotes* L.	Araceae	FFH	H	4089
33	*Plumbago zeylanica* L.	Plumbaginaceae	SP	S	3988
34	*Polygala arvensis* Willd.	Polygalaceae	EAH	H	4296
35	*Polygala javana* DC.	Polygalaceae	EAH	H	4134
36	*Pongamia pinnata* (L.) Pierre.	Leguminosae	WP	T	4035
37	*Senna alata* (L.) Roxb.	Leguminosae	WP	S	4152
38	*Senna occidentalis* (L.) Link.	Leguminosae	SP	S	3980
39	*Senna tora* (L.) Roxb.	Leguminosae	WP	S	3985
40	*Sesbania grandiflora* (L.) Pers.	Leguminosae	SP	T	4348
41	*Sphaeranthus indicus* L.	Compositae	WP	H	4079
42	*Tephrosia purpurea* (L.) Pers.	Leguminosae	SP	H	3989
43	*Tinospora cordifolia* (Willd.) Miers.	Menispermaceae	SP	C	4332

44	*Vernonia cinerea* (L.) Lees	Compositae	WP	H	3984
45	*Waltheria indica* L.	Malvaceae	EAH	H	4549

Life form: EAH- Emergent Amphibious Hydrophytes, FSAH- Floating Submerged Anchored Hydrophytes, FFH- Free Floating Hydrophytes, SP- Shore Plants, WP-Wetland Plants; **Habit:** C- Climbers, H- Herbs, S-Shrubs, T- Trees. **STHCH -** S. T. Hindu College Herbarium.

A total of 45 species belonging to 41 genera, 28 families and 3 classes according to Angiosperm Phylogeny Group IV Classification were identified. Dicotyledons (40 species) belonging from 36 genera and 23 families was the largest number of plant groups (it includes Polypetalae 21 genera and 24 species followed by gamopetalae 11 genera and 11 species and Monochlamydeae 4 genera and 5 species) followed by Monocotyledons (4 species) belonging from 4 genera and 4 families and only one species Pteridophytes are recorded in ponds of Agastheeswaram Taluk (Fig.2) Dicotyledons are predominant over monocotyledons was reported by [20].

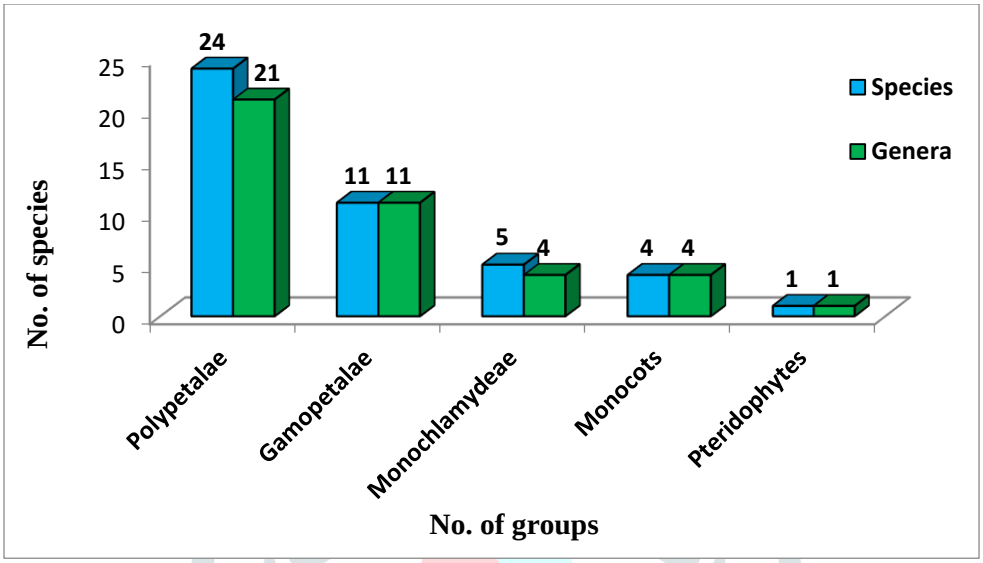

Fig.2 Distribution of species in classes/ subclasses

Of the 45 taxa most dominant plant species are herbs (28 species) followed by shrubs (8 species), trees (6 species) and climbers (3 species) (Fig. 3). In the work of [21], herbs are predominant and it's followed by shrubs, trees, climbers and twiners in AVM Canal Bank in Kanyakumari district.

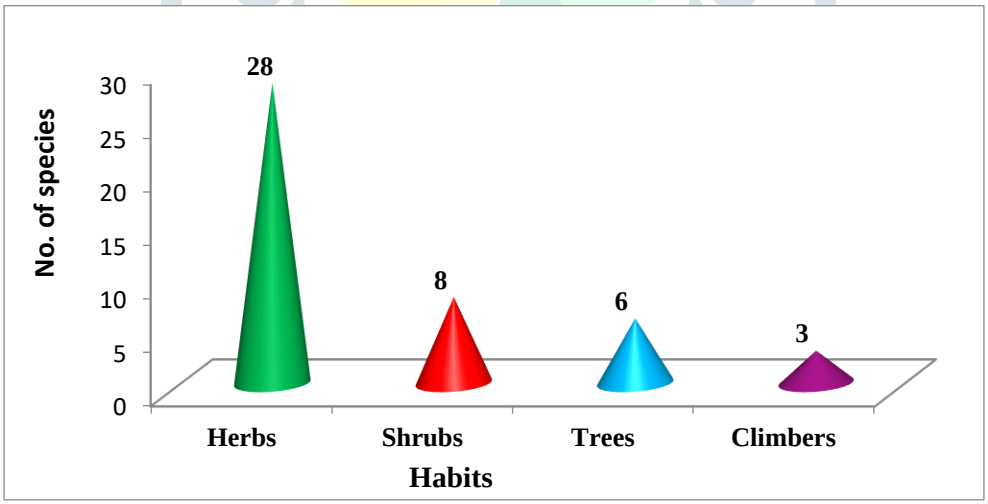

Fig. 3. Habit wise distribution of medicinal wetland plant species

Further medicinal wetland plants classified in morphological group viz., under shore plants (16 species) followed by wetland plants (15 species), emergent amphibious hydrophytes (10 species), floating submerged anchored hydrophytes and free floating hydrophytes (2 species each) (Fig.4). Regarding habitat category, wetland associated plants high among others [22].

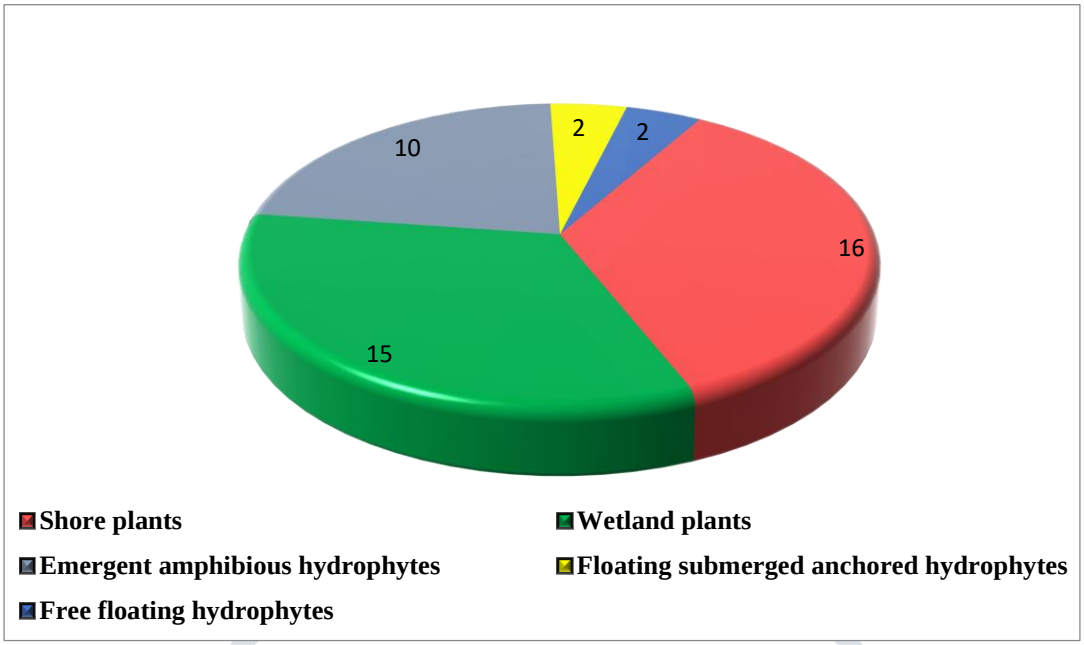

Fig. 4 Life form distribution of plant species in the study area

Information gathered through personal interview and authentication by referring literature revealed that 45 wetland plant species are used to treat skin diseases and various other ailments too. The plant list and its Tamil name, other traditional medicinal system, parts used and mode of medicine preparation is given in Table 3.

Table 3. List of plant species used to treat skin diseases and other various ailments

S. No	Botanical name	Tamil name	Traditional Systems	Parts Used	Mode of Preparation	Ailments
1	*Abrus precatorius* L.	Kundu mani	SD,UN,HP,EM	L, S, R	P	Digestion, aphrodisiac, chronic conjunctivitis, skin rashes, skin diseases, white discharge, aphrodisiac.
2	*Acalypha indica* L.	Kuppaimeni	AY,SD,HP,FL,EM	WP	J	Asthma, bronchitis, cold, cough, skin infections, chest pain, rheumatism
3	*Acmella paniculata* (Wall.ex.DC.) R.K.Jansen	Palluvedanna chedi	EM	F, L	p	Toothache, skin diseases, diuretic, cough, cold, jaundice, sore throat.
4	*Aeschynomene indica* L.	Chatai, kitai, netti	SD,FL,EM	WP	p	Skin diseases
5	*Ammannia baccifera* L.	Neermael Neruppu, Kalluruvi	AY,SD,EM	WP	P	Swellings, dyspepsia, rheumatism, fever, scabies, ringworm, skin itching, typhoid
6	*Asystasia gangetica* (L.) T.Anderson	Miti-kirai	SD,EM	L	J, E	Fever, skin diseases, antibacterial activity
7	*Azadirachta indica* A.Juss	Vaeppamaram	AY,SD,UN,HP,FL,EM	WP	J,O	Helminthic, antifungal, anti-diabetic, eczema, chicken pox, antimicrobial, jaundice, skin diseases, rheumatism, fever, mumps, dog bite, small pox
8	*Centella asiatica* (L.) Urb.	Vallarai	AY,SD,HP,FL,EM	WP	p	Enhance memory power, ulcer, skin diseases, mouth freshness, throat disorders, piles
9	*Cissus quadrangularis* L.	Perandai	AY,SD,UN,FL,EM	WP	J	Piles, worms, ear diseases, ulcers, leucorrhoea, skin diseases, bone

						fracture, digestion
10	*Cleome viscosa* L.	Naikkaduku	AY,SD,UN,FL,EM	L, S	J, p	Earache, skin diseases, inflammations, carminative, arthritis, loss of appetite, constipation, diarrhea
11	*Clerodendrum inerme* (L.) Gaertn	Sangam, Peechangu	AY,SD,FL,EM	L, R	J	Headache, heart burn, swellings, pains, skin diseases
12	*Coccinia grandis* (L.)Voigt	Kovai	AY,UN,EM	Fr, L	P	Fever, bronchitis, skin diseases, eczema, pimples, diabetics, diarrhea, sores of tongue, burning of eyes, jaundice
13	*Commelina erecta* L.	-	AY,SD,FL,EM	L	P	Rheumatic swellings, skin inflammation, leprosy, constipation
14	*Crotalaria verrucosa*.L.	Cankuniti, Salangaichedi	AY,SD,UN,FL,EM	WP	P	Skin infections, dysentery, vomiting, fever
15	*Dalbergia sissoo* DC.	Etti	AY,SD,UN,HP,FL,EM	W, B	D	Skin diseases
16	*Datura metel* L.	Madulam	AY,SD,UN,FL,EM	L, S	P, J	Anti-plasmodic, asthma, skin diseases, cough, bronchitis, head dandruff, lice, dog bites, earache
17	*Echinochloa colona* (L.) Link	Karumpul	AY,UN,FL,EM	R	P	Burning pain on skin
18	*Eichhornia crassipes* (Mart.) Solms.	Venkayatamarai, Agayathamarai	AY,SD,FL,EM	L, R, Fr	J	Skin diseases, toothache, goiter, hair loss
19	*Euphorbia hirta* L.	Ammam patchai-arisi	AY,SD,UN.HP,FL,EM	WP	J	Asthma, cough, bowel complaints, snakebite, diarrhea, dysentery, skin diseases
20	*Euphorbia thymifolia* L.	China amman pacharisi	AY,SD,HP,FL,EM	WP	E	Ringworm, wounds, asthma, skin diseases
21	*Glinus oppositifolius* (L.) Aug DC	Thura poondu	FL,EM	WP	P	Skin diseases, scabies, itches
22	*Jatropha curcas* L.	Kattukkotai	AY,SD,UN,HP,FL,EM	S, P, Tw, S, La	J	Toothache, ulcers, scabies, wounds, cuts, tumors, skin diseases,
23	*Leucas aspera* (Willd.) Link	Thumbai	AY,SD,FL,EM	WP	J	Antifungal, antimicrobial, antinocipetive, antipyretic, headache, intestinal worms, swellings, skin allergy
24	*Ludwigia adscendens* (L.) H.Hara.	Nir-charambu	AY,SD,FL,EM	WP	P	Skin diseases, ulcers
25	*Marsilea minuta* L.	Alankeerai	FL,EM	WP	D	Cough, diabetes, Skin diseases
26	*Melia azedarach* L	Kattu vembhu	AY,SD,FL,EM	B, L, Fr	J	Headache, skin diseases, wounds, ulcers, worm infestations, cough, diabetes, amenorrhoea, rheumatism, stomach pain
27	*Merremia tridentata* (L.) Hallier f.	Tirippanpul	AY,SD,UN,EM	WP	E	Rheumatism, piles, urinary disorders, skin eruption, astringent, laxative
28	*Murraya koenigii (*L.) Spreng	Karivepillai	AY,SD,UN,FL,EM	L, Fr	J	Stomach upsets, insect bites, dog bite, snake bite, cooling carminative, antiseptic, anti-inflammatory, skin diseases, leprosy, leucoderma, dysentery, diarrhea
29	*Nymphoides indica* (L.) Kuntze	Chinnambal	SD,FL,EM	WP	E	Skin rashes, headaches, jaundice, lacrimation, headache, scabies, swellings
30	*Oldenlandia corymbosa* L.	Kattucayaver	EM	WP	P	Fever, jaundice, liver troubles, skin diseases, fever
31	*Phyllanthus*	Nila nelli,	AY,SD,UN,F	WP	E	Menstrual problems, skin eruptions

	maderaspatensis L.	Mela- nelli	L,EM			
32	*Pistia stratiotes* L.	Agasa tamarai	SD,EM	WP	J	Piles, dysentery, coughing, fever, constipation, asthma, cough, skin diseases, swelling, leprosy, eczema, irregular urination
33	*Plumbago zeylanica* L.	Chittiramoolam	AY,FL,EM	R	E	Diuretic, piles, dyspepsia, influenza, fever, skin diseases, leprosy, snake bite, scraping the corns, cancer, rheumatism
34	*Polygala arvensis* Willd.	Milakunankai	AY,UN,FL,EM	L	E	Skin diseases, asthma, catarrhal affection, chronic bronchitis
35	*Polygala javana* DC.	Periyanankai, Selagachedi	AY,SD,UN,FL,EM	WP	E	Snake bite, skin diseases
36	*Pongamia pinnata* (L.) Pierre.	Pungai	AY,SD,UN,EM	S,B	O	Skin diseases, scabies, rheumatism, ulcer problems, swellings
37	*Senna alata* (L.) Roxb.	Seemaiagathi, Vandu kollu	AY,SD,UN,FL,EM	L,S	J	Skin trouble, vermifuge
38	*Senna occidentalis* (L.) Link.	Nattam takarai	AY,SD,UN,HP,FL,EM	L, Fr, S	P	Itching eruption, skin troubles, pimples, antidote for poisons, bodyache, swellings, stomach pains
39	*Senna tora* (L.) Roxb.	Senavu	AY,SD,UN,FL,EM	L, S, R	P	Skin diseases, tumor, leprosy, purgative, ringworm
40	*Sesbania grandiflora* (L.) Pers.	Agathi	EM	L	J	Skin diseases
41	*Sphaeranthus indicus* L.	Kottaikaranthai, Visnukkarantai	EM	WP	P	Skin diseases, anthelimntic, toothache, diuretic, laxative
42	*Tephrosia purpurea* (L.) Pers.	Kolinjii	EM	WP	D	Stomach pain, fish poison, eczema, diarrhea, skin diseases, elephantiasis
43	*Tinospora cordifolia* (Willd.) Miers.	Chintilkodi, Seenthil	SD,EM	WP	E	Urinary disorder, fever, diabetes, dysentery, diuretic, antipyretic, skin diseases, dyspepsia
44	*Vernonia cinerea* (L.) Lees	Kucharipachilai, Neichity	AY,SD,UN,FL,EM	WP	P	Cold, cough, rheumatism, skin diseases, diarrhea, urinary disorder
45	*Waltheria indica* L.	Shembudu	AY,EM	WP	D	Cough, fever, skin diseases, purgative, cough fever

Plant parts used: B- Bark, Fl- Flowers, Fr- Fruits, La- Latex, L- Leaves, P- Petiole, R- Roots, S- Seeds, St- Stem, WP- Whole plant; **Traditional medicines**: AY-Ayurveda; EM- Ethnomedicine; FL- Folklore; HP- Homeopathy; SD- Siddha; UN-Unani; Mode of preparation: D- Decoction, E- Extraction, J- Juice, O-Oil, P- Paste.

All the medicinal plants collected from the present study area are used in Ethnomedicinal preparations by local people. They use not only the edible ones but also numerous medicinal and otherwise economic herbs for curing different diseases, common to the locality. They used for treatment of common diseases like cold, fever, scorpion sting, urinary infections, liver trouble etc., like the same already noted by [23] in District of Jharkhand. The above collected plant species mainly used to treat skin diseases like the same already reported in Kanyakumari District they categorized 30 plant species [24]. Sometimes, the same plant is suggested for more than one disease. In such cases it is very difficult to assess which plant is actually effective in curing a particular disease. Only clinical trials on these plants can give some indications [25]. Total 45 species are used in ethnomedicine and its followed by 33 species are used in Siddha medicines, 32 medicinal plant species are used in Folk medicines and Ayurveda medicines, 21 species are used in Unani medicines and 9 species are used in Homeopathy medicines (Fig. 6).

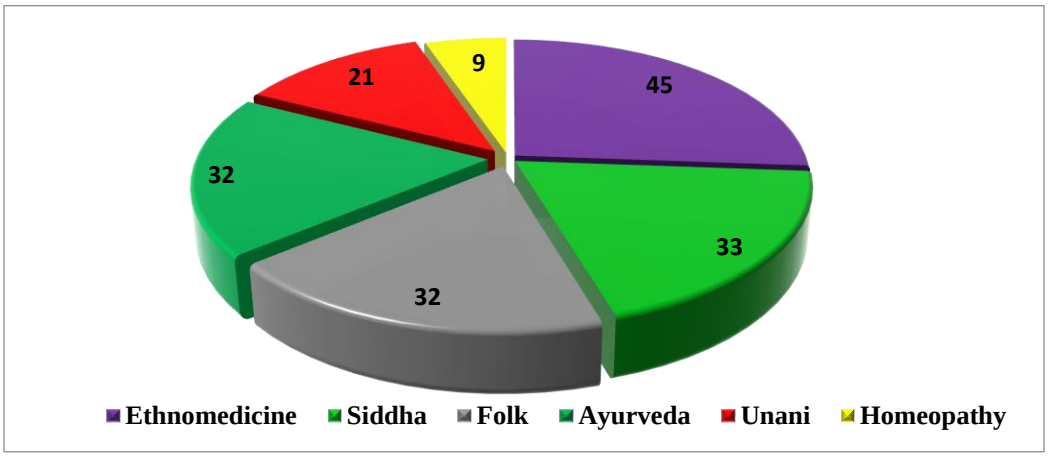

Fig. 6. Number of medicinal plants used in different traditional medicines.

In the study, plant species were used not only for medicinal purposes, it's used for other purposes too viz., were categorized under medicinal (45 species) followed by food (7 species), ornamental, craft and fodder (1 species each) (Fig. 7). Highest utilization of plant resources was observed for medicinal purposes followed by edible vegetables was reported by [26].

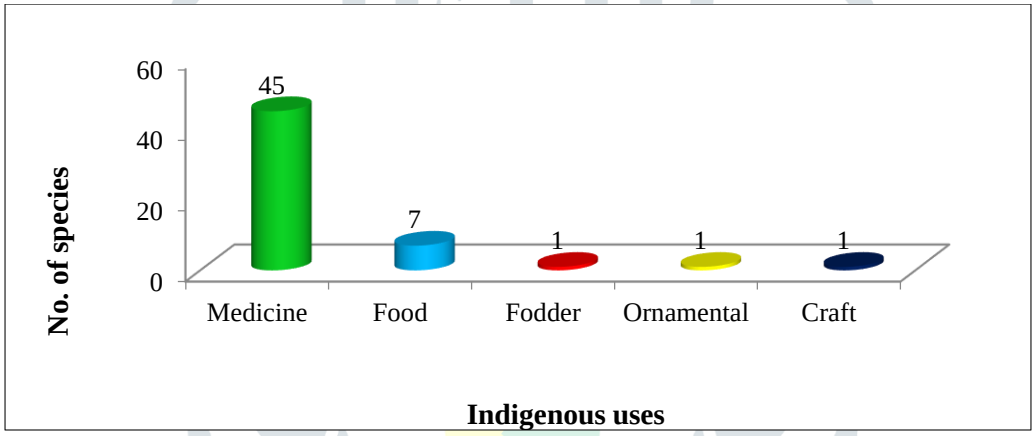

Fig. 7. Plant resource utilization by local communities

Among these 45 medicinally important plant species, different plant parts were used to treat diseases. A maximum plant parts are reported in whole plant (24 species), leaves (16 species), seeds (7 species), roots (6 species) fruits (4 species), bark (3 species) flowers (2 species) and stem and wood (1 species each) (Fig. 8). The whole plant and the leaves were most frequently used for the treatment of different types of diseases was mentioned by [27].

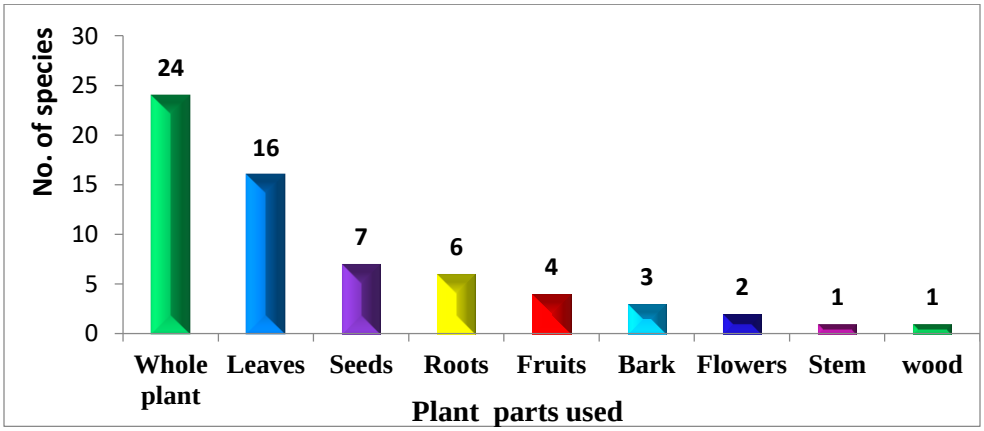

Fig. 8. Morphologically useful plant parts used to treat various diseases

Medicines are prepared in the form of paste from 17 plant species followed by juice from 16 species, extraction from 8 plant species, decoction from 4 plant species and oil from two plant species (Fig.9). Medicines are consumed by different forms like paste, juice and extract etc already it was mentioned by [28]. Plant parts applied as a paste and it's followed by juice, extraction, powder, fresh plant material and decoction etc., was already reported by [29].

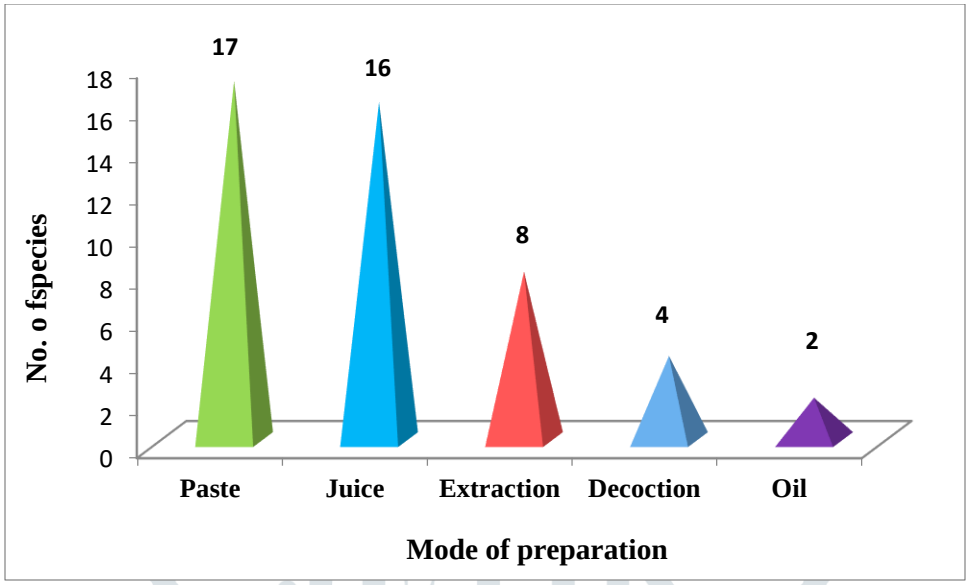

Fig. 9. Analysis of mode of preparation of medicine

The medicinal values of some of the wetland plants have been studied by various authors and the present work emphasize the medicinal uses of the wetland plants against skin diseases which in turn may form another criteria to conserve the delicate ecosystems considering the services they provide to the mankind. The authors are of the view that there are many plants in Agastheeswaram Taluk that can be commercially exploited. However due to anthropogenic activities, these wetlands are disappearing at an alarming rate and most off the area of the ponds has been converted to agriculture fields and residential colonies. Some awareness programmes could be carried out in this rural area about the commercial uses of these wetland plants and their medicinal uses.

IV. CONCLUSION

Global wetlands are shrinking rapidly depleting wetland resources. The survival of native wetland species is threatened and hence attention on the wetland resources especially those having economic value are important. Therefore, measures for conservation of wetlands and wetland resources should be taken up on priority by different government and non-government organizations involving the stakeholders for the benefit of humanity.

V. ACKNOWLEDGEMENT

The authors are grateful to the local traditional healers in the Agastheeswaram Taluk for sharing their knowledge on herbal medicine

REFERENCES:

1. Jespin Ida C and Mary Kensa, V. Diversity of aquatic macrophytes of Muthirai kulaam, Midalam, in Vilavancode, Kanyakumari District, South India. International Journal of Applied and Pure science and Agriculture. 2016; 2(12): 173-180
2. Kirtikar K R and Basu B D, Indian Medicinal plants, (Bishen Singh Mahendra Pal Singh, Dehradum), 1980.
3. Sanilkumar M G and K John Thomas, Indigenous medicinal usages of some macrophytes of the Muriyad wetland in Vembanad- kol, Ramsar site, Kerala. Indian Journal of Traditional Knowledge. 2007; 6(2): 365-367
4. Gaur RD, Flora of District Garhwal: North west Himalaya (with Ethno-botanical notes), Transmedia, Srinagar (Garhwal), 1999.
5. Goel AK, The herbaceous Flora of Tehri District. Unpublished M. Phill Thesis, Garhwal University Srinagar (Garhwal), 1982.
6. Usha Rani CK, and Jeyanthi Y, Medicinal plants used against Jaundice in Thovalai Taluk, Kanyakumari District, Tamilnadu, Interrnatiional Journal of Development Research, 2016;6(3);7038-7040.

7 & 21. Lohidas J, B. Parthipan and A. Bency, Medico- Botanical studies of Angiosperms from AVM Canal Bank in Kanyakumari district, Tamilnadu, India, Plant Archivves, 2015;15(1):93-100.

8 & 23. Kingston C, S. Jeeva, GM. Jeeva, S. Kiruba, BP Mishra, and D. Kannan, Indigenous Knowledge of using medicinal plants in treating skin diseases in Kanyakumari District, Southern India. 2009; 8(2);196-200.

9. Meena R, R. Thirumal Thangam and H. Prabavathy, Indigenous medicinal usages of some Macrophytes of the wetlands in Agastheeswaram, Kanyakumari District, Tamilnadu, Journal of Basic & Applied Biology, 2010;4(3);117-122.
10. Henry A. N and M. S. Swaminathan. Observations on the vegetation of Kanniyakumari District. Bulletin of the Botanical Survey of India., (1981). 23(3&4):135-139.
11. Spillett J.J. A report on Wild Life Surveys in South and West India. J. Bombay Nat. His. SOC., 1968; 65:661.
12. Gamble J. S and Fischer, C.E.C. Flora of the Presidency of Madras (Vol. 1-3), London: Adlord and Sons Ltd. 1915-1935; pp 1389.
13. Nair N.C. and Henry, A.N. Flora of Tamilnadu, India. Series I: Analysis. Volume 1. Coimbatore: Botanical Survey of India, 1983.

14. Henry A.N., Chitra, V. and N.P. Balakrishnan. (1989). Flora of Tamilnadu, India. Series II: Analysis. Volume 3. Coimbatore: Botanical Survey of India. p171.
15. Matthew K.M. The flora of Tamilnadu Carnatic. Vol. I-III. The Rapinat Herbarium, Tiruchirappalli, Tamilnadu, India, 1993.
16. Santapau H. and Henry, A. N. A dictionary of the flowering plants in India. New Delhi: CSIR, 1994; pp 198.
17. Kabeer K. A. A. and Nair, V.J. Flora of Tamilnadu-Grasses. Coimbatore: Botanical Survey of India. 2009; pp 525.
18. Subramanyam K. Aquatic angiosperms. Council of Scientific and Industrial Research. New Delhi, 1962.
19. APG IV. An update of the Angiosperm Phylogeny Group Classification for the orders families of flowering plants. Botanical Journal of Linnean Society., 2016; 181:1-20.
20. Kavya A and G. Jayanthi , Survey of medicinal plants in the coastal areas of Kadalloor Panchayat, Alappuzha District, Journal of Scientific Transaction in Ennvironment and Technovation, 2014,7(3):121-129.
22. Deka Namita and Nilakshee Devi, Wild edible aquatic and marshland angiosperms of Baksa District, BTC area, Assam, India, Pelagia Research Library, 2015;5(1):32-48.
23. Shankar L and Mishra P.K, Study of Aquatic medicinal plants of Hazaribag District of Jharkhand , India, International Research Journal of Pharmacy, 2012; 3(2):405-409.
25. Saharia S, Sarmah CM, Ethno medicinal studies on indigenous wetland plants in the tea garden tribes of Darrang and Udalguri District, Assam, India, NeBio, 2011, 2(1); 27-33.
26. Talukdar Dibyendu and Talukdar Tulika, Floral diversity and its indigenous use in old basin of riverAtreyee at Balurghat block of Dakshin Dinajpur district, West Bengal, NeBio, 2012;3(2):26-32.
27. Chakraborthy Rudrajit M.S. Mondal and Sobhan Kr. Mukherjee, Ethnobotanical information on some aquatic plants of South 24 Parganas, West Bengal, Plant Science Today, 2016;3(2):109-114.
28. Singh A, Manavendra Kumar Singh, Dharmendra Kumar Singh and Ritesh singh, Ethnomedicinal studies on wetland plant diversity of District Buxar, Unique Journal of Pharmaceutical and Biological Sciences, 2013;01(02):18-20.
29. Muthu C., Muniappan Ayyanar, Nagappan Raja and Savarimuthu, Medicinal plants used by traditional healers in Kancheepuram Diastrict of Tamilnadu, India, Journal of Ethnobiology and Ethnomedicine; 2006: 2(43);1-10.

.