

Aquatic Medicinal Plants in Ponds of Palakkad, Kerala, India

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Abstract : Palakkad is a district which contain more number of ponds in kerala. Most of them are covered by means of weeds and plants, and becomes useless.The present study is to analyse the medicinal use of such weeds and plants and make aware the public about the importance of pond plants.

Key words: Aquatic plants, medicinal, ponds, Palakkad, Kerala, India.

I. Introduction

Aquatic ecosystems are important one which provide livelihoods for the millions of people who live around them .Man depends ponds for most of his needs like fishing, agriculture, irrigation, and other domestic purposes. Ponds are playing a very good role in rain harvesting, storage of water and regulation of ground water level. So in order to maintain the ground water level we must conserve ponds and pond habitat. In earlier days aquatic plants are used as food, fodder, medicine etc. but with the advancement in life styles the uses of aquatic plants are foregone and are treated as mere weeds which are making the ponds useless.

Though the aquatic situations of india are rich repositories of various plant species, not much work has been under taken to enumerate the medicinal uses of them. Maya et al.(2003) analyzed the economic importance of river vegetation of kerala and gave the uses of 35 species including the bank specie apart from the aquatic/wetland species. Panda and Misra (2011) provided information about ethno medicinal uses of 48 wetland plant species of South Orissa and discussed their conservation. Swapna M.M et al (2011) made a review on the medicinal and edible aspects of aquatic and wetland plants of India. In this review they includes 70 species.

The present work reviews the medicinal use of aquatic plants with the help of authentic publications and by incorporating the traditional knowledge of local communities in this aspect.

II. Aeschynomene aspera Linn. (Fabaceae)

It is commonly known as Pith plant; found throughout in India; growing in and along tanks and lakes or trailing and floating, stems thick and spongy, paripinnately compound leaves, leaflets glabrous on both sides; flowers yellow and sepals hairy. Aerial part juice is given to cure cough and cold, fever Aerial part juice is given to cure cough and cold fever. Dried young shoot powder with half teaspoon powdered sugar candy is given to increase the consistency of semen (Panda and Misra, 2011).

III. Alternanthera sessilis R. Brown Ex Dc. (Amaranthaceae)

It is known as Kozhuppa in Malayalam. In India widely distributed; terrestrial plant found in seasonally water logged soil, but particularly common at the edges of tanks, rivers, canals and ditches; Flowers white, small, in dense globose heads . In Nigeria, it is used to relieve head ache and dizziness, and it is considered to be a viable treatment for snakebites and to stop the vomiting of blood. In Taiwan, it is often combined with other medicinal herbs to treat bronchitis, asthma and hepatitis. In Thailand and Sri Lanka, the leaves are boiled and ingested to treat hypertension. The plant enhances secretion of milk in new mothers (Naples, 2005) and it is used as a remedy against intestinal cramps, diarrhea and dysentery (intestinal disorder), and externally as a cooling agent to treat fever.

IV. Centella asiatica Urban (Apiaceae)

It is known as Kudangal in Malayalam. In India it is widely distributed. It is a prostrate perennial aromatic herb growing wild along stream sides, paddy fields and other wet places; stem reddish, leaves in rosettes, inflorescence single and axillary umbel. Fresh plant dissolved in dry vegetable preparation or salad is used to increase memory power. It is also commonly used as porridge for feeding pre-school children in combating nutritional deficiencies (Cox et al., 1993). Fresh plant ground to make a paste, which is boiled in 1 glass of cow milk and taken in the early morning for 7 days to cure jaundice and leucorrhea. Fresh tender leaves are chewed and taken to relieve from acidity and peptic ulcer (Pers. Obs. Rajith). Infusion of the plant is used in India and Madagascar in the treatment of leprosy. It is one of the local herbs that is claimed to possess various physiological effects and it occupies an important place in the indigenous system of medicine as a tonic in skin diseases and leprosy (Chopra et al., 1956). It is commonly used for wound healing in many places (Hong et al.,

2005; Shetty et al., 2006), memory improvement, treatment of mental fatigue, bronchitis, asthma, dysentery, kidney trouble, urethritis, allergy, leucorrhoea and toxic fever (Kan, 1986) and it is also used as a constituent of brain tonics for the mentally retarded (Kartnig et al., 1988). It is having the property to promote fibroblast proliferation and collagen synthesis (Maquart et al., 1990). Abdulla et al. (2010) suggested that *C. asiatica* leaf extract promote ulcer protection as ascertained grossly and histologically compared to the ulcer control group.

V. Coix lachryma – Jobi Linn.(Poaceae)

It is commonly known as Pochakkal. It is distributed almost throughout in India. It is an annual, common in and around marshes, along water courses, and rice fields; culms tufted, leaves linear – lanceolate, spikelet's terete or partly flattened, white – yellowish white or bluish grey. The roots are used in the treatment of menstrual disorder and chickenpox (Santhoshkumar and Satyanarain, 2010).

VI. Colocasia esculenta Scott.(Araceae)

It is commonly known as Chembu in Malayalam. In India, this species is distributed in Kerala, Karnataka, Goa, Maharashtra, Assam, Delhi, Manipur, Mizoram, Rajasthan, Sikkim and West Bengal; Perennial herbs with tuberous stems and stolons found in marshy places, streams, rivers and ponds, in deep water it may develop floating leaves; Inflorescence axillary, differentiated in to basal green convolute tube and upper, expanded, yellow limbs. Widely cultivated for its starchy rhizome. The leaves are rich in vitamins and minerals and hence used as vegetable. The leaf made into dry vegetable preparation is useful for the relief from constipation. The toxin, calcium oxalate present in the plant can be destroyed by cooking (Thomas, 2008). The outer skin of fresh petiole is peeled and tied on the affected part against cracked feet (Pers. Obs. Rajith).

VII. Commelina benghalensis Linn. (Commelinaceae)

In Malayalam it is known as Kanavazhai. It is widely distributed in India. It is a Perennial or annual. It is a widespread weed not confined to wetlands but often found in ditches, wet field and places subjected to flooding. Diffuse herbs, rooting at lower nodes rootstock with cleistogamous flowers and flowers are blue. Fried leaves are given as leafy vegetable to cure constipation. Warm leaf juice is dropped in ear to get relief from earache. Leaf juice with coconut oil is applied externally to cure leprosy and skin inflammations. Warm dried leaves are given to cure rheumatic pain (Panda and Misra, 2011).

VIII. Commelina diffusa N. L. Burman(Commelinaceae)

Common weed usually found in damp shady places near water, open swamps and marshes; Trailing or diffuse herbs, rooting at lower nodes, leaf sheath ciliate, flowers blue. The bruised plant is used locally against burns, itches and boils (Panda and Misra, 2011).

IX. Commelina erecta Linn.(Commelinaceae)

It is distributed almost throughout in India; found in grasslands and moist deciduous forests; stems erect or ascending, with reddish purple striations, flowers in terminal cymes and blue. Leaf pasted along with seeds of *Brassica campestris* var. sarson is applied on the affected area to subside rheumatic swelling (Panda and Misra, 2011). As a refrigerant for skin inflammation, leprosy and constipation (Santhoshkumar and Satyanarain, 2010).

X. Cyanotis axillaris Sweet(Commelinaceae)

It is an annual or perennial found in swamps and marshes, abundant in rice fields and irrigation ditches; Stem creeping, ascending or erect, leaf sheath inflated, glabrous or hairy, margin ciliate, inflorescence, a dense cyme with 3 to 6 flowers, embedded in the hollow axil of a swollen leaf sheath. It is used locally in medicine for ascites and abortions (Cook, 1996). Warm leaf juice is dropped into the ear to get relief from inflammation in the eardrum.

XI. Cyperus iria Linn. (Cyperaceae)

In India, it is widely distributed; Annual or perennial, a common weed of cultivated ground, found also in marshes and ditches; Culms triquetrous, leaves few, sheaths purplish brown, inflorescence compound and spikelets yellowish. Fresh plants, particularly the roots are aromatic and used locally in medicine (Cook, 1996). In India the juice of the plant is used as a tonic and to treat stomach complaints (Usher, 1984).

XII. Cyperus rotundus Linn.(Cyperaceae)

It is commonly known as Muthanga. Widely distributed in South India; Rhizome stoloniferous, leaves few basal, inflorescence simple or compound, spikelets compressed, brown; Perennial, found on river banks, dried up pools and ditches and in rice fields. Tubers are collected, roasted and eaten. The tubers contain

cyperene, cyperone, cyperol and 1- pinene which are used for spasms or as an emmenagogue. It is also used in cooling indigenous medicines (Cook, 1996). The fresh rhizome ground and boiled with cow milk is given to children to get relief from stomach ache (Pers. Obs. Rajith). The decoction of the roots and tubers are excellent antidote to all poisons. A paste of the fresh tubers applied to the breast acts as an effective galactagogue. The root is often used for developing high memory. This herb also harmonizes the liver, spleen, and pancreas. The grass is anthelmintic, anti-fungal, anti-parasitic, anti-rheumatic, antispasmodic, aphrodisiac and astringent. It cures kapha and pitta disorders, dyspepsia, vomiting, indigestion, thirst, worm troubles, cough, bronchitis, dysuria, and poisonous affections. It is used as an insect repellent, for perfuming clothing.

XIII. *Eclipta prostrata* (Linn.) Linn.(Asteraceae)

In Malayalam it is known as Kaiyuni. In India it is widely distributed; usually annual. It is growing in very wet conditions also. It will perennate by rooting at the nodes, common in and along the edges of pools, tanks, canals, ditches and rice fields. Diffuse or ascending herbs, stem and leaves sparsely strigose with bulbous based hairs and the head is white. Fresh plant crushed and expressed juice is taken against ulcer. A preparation obtained from the juice of the leaves boiled with Sesamum or coconut oil is used for anointing the head to render the hair black and luxuriant. The herb is used as tonic and deobstruent in hepatic and spleen enlargements, and in skin diseases, the plant juice is administered in combination with aromatics for catarrhal jaundice, the expressed leaf juice, along with honey is a popular remedy for catarrhal in infants, the fresh plant rubbed on the gums to get relief from tooth ache and applied with a little oil for relieving head ache (Wealth of India Vol.3). Leaf juice is applied directly on scalp for better hair growth and darkening of hair. Leaf juice is prescribed to cure mental disorders; poured into the nostril (Nasyam) to get relief from head ache. A mixture of leaf juice and a pinch of table salt are applied on eczema for healing. Leaf decoction is applied on the affected area to relief pain of scorpion sting (Panda and Misra, 2011).

XIV. *Glinus oppositifolius* (Linn.) A. DC.(Molluginaceae)

It is known as Kaipacheera in Malayalam. It is distributed almost throughout in India; found along open areas, lake shores, stream banks; prostrate herbs, leaves in apparent whorls, flowers white in axillary fascicles. The leaves are used as vegetable for cooking purposes, as well as an expectorant and antipyretic agent (Sahakitpichan et al, 2010). The plant is used against various types of illnesses related to the immune response, like joint pains, inflammations, fever, malaria and wounds (Inngjerdingen et al., 2005). Whole plant paste is applied externally against various types of skin diseases such as scabies, itches, etc. (Panda and Misra, 2011).

XV. *Heliotropium indicum* Linn.(Boraginaceae)

It is widely distributed in India; Annual, found in seasonally flooded places, in rice fields, on sandy riverbanks and along streams, also found in roadsides and waste lands; A coarse foetid herb, branches hirsute, flowers in bristly scorpioid cymes. Reported to possess emollient, vulnerary and diuretic properties. A decoction of the tender shoots is reported to be pectoral and antiscabious. The flowers are considered as emmenagogue in small doses and abortifacient in large doses (Wealth of India Vol. V). Fresh whole plant ground and made in the form of paste is applied on the affected area against scorpion sting. Leaf juice is dropped into eyes to cure cataract, redness and conjunctivitis. Whole plant paste is tied up the minor cuts and wounds as antiseptic for healing (Panda and Misra, 2011).

XVI. *Hydrolea zeylanica* Vahl. (Hydrophyllaceae)

In India it is widely distributed; Perennial or annual, seasonally submerged, emergent or helophytic; an erect or diffuse, succulent herb, flowers blue, glandular hairy, seeds numerous and minute. Young shoots are eaten as vegetable and are reported to have antiseptic properties and are used in medicine (Cook, 1996). Young leaves are eaten with rice in Java (Usher, 1984). The leaves are considered to possess cleansing and antiseptic properties. Paste of whole plant with coconut oil is applied in minor cuts, wounds and boils as antiseptic for quick healing (Panda and Misra, 2011).

XVII. *Hygrophila schulli* (F. Hamilton) M. R. and S. M Almeida (Acanthaceae)

It is known as Vayalchulli. It is a perennial, found in swamps, temporary pools, at the edges of tanks, canals and ditches and in rice fields; subshrubby herbs with axillary spines, stems hispid, flowers in axillary whorls, surrounded by spines, blue, purple or pink in color. Seed powder mixed with raw cow milk is taken in the morning for treating impotency. Leaf juice is given to patients of anemia. Dry seed powder mixed with milk and sugar candy is taken to cure spermatorrhoea (Panda and Misra, 2011). The whole plant, roots, seeds, and ashes of the plant are extensively used in traditional system of medicine for various ailments like rheumatism, inflammation, jaundice, hepatic obstruction, pain, urinary infections, oedema and gout (Shanmugasundaram and Venkataraman, 2005).

XVIII. *Hygroryza aristata* (Retzius) Nees ex Wt. and Arn. (Poaceae)

It is known as Neervallipullu in Malayalam. It is distributed throughout in India. Annual floating glabrous grass; culms creeping or trailing, floating, rooting at internodes, leaf sheath inflated, inflorescence a pyramidal panicle and spikelets solitary. The grains are eaten by the poor people (Cook, 1996). They are reported to be sweet, digestible and cooling and useful in biliousness (Wealth of India, Vol. V). Chung et al. (2011) isolated and tested the anti-inflammatory and antioxidant components from the plant which showed significant activity.

XIX. *Ipomoea aquatica* Forsskal (Convolvulaceae)

It is Kozhuppa in Malayalam. It is widely distributed in India; Perennial, usually floating on stagnant water but sometimes found in the banks of pools, canals and rivers; An aquatic, trailing or floating, Herbaceous perennial with long, hollow stem rooting at the nodes, flowers white or pale purple with dark purple eye. The young terminal shoots and leaves are used as vegetable and in salad. The stems are sometimes pickled. The Burmese use the juice as an emetic in case of opium and arsenical poisoning. Dried juice has purgative properties. Leaves and stems are said to be cooling. The buds are used in the treatment of ring worm. In Assam, the plant is given for nervous and general debility. Fried leaves are taken to cure head reeling. Leaf juice along with cow ghee is given to cure gonorrhoea; is a purgative and acts as blood purifier (Panda and Misra, 2011).

XX. *Limnophila indica* (L.) Druce (Scrophulariaceae)

It is distributed throughout India; aerial stems erect or creeping below, with or without eglandular hairs, heterophyllous, flowers pedicellate, solitary, white, pale yellow or blue – purple. Juice of aerial part of plant with ginger and cumin is prescribed to cure dysentery. The same is applied externally on cuts and wounds as antiseptic (Panda and Misra, 2011).

XXI. *Lindernia anagallis* (Burm. F.) Pennell (Scrophulariaceae)

It is found throughout India; gregarious and locally abundant in marshy places, banks of pond and rivers and wet rice fields; stems glabrous, creeping and rooting at nodes, flowers solitary in the axils of leaf like bracts, white to pink or purple with or without white flashes on the lip. Whole plant paste along with black pepper is given for gonorrhoea (Panda and Misra, 2011).

XXII. *Lindernia ciliata* (Colsmann) Pennell (Scrophulariaceae)

It is distributed throughout in India; stems erect or ascendant, leaves glabrous, margins saw – like, flowers in terminal lax – flowered racemes, white to pink or blue with a blue or purple throat; annuals, found along the banks of streams after monsoon, rice fields, damp rocks and in wet grass lands. It is used as a remedy for gonorrhoea (Santhoshkumar and Satyanrain, 2010)

XXIII. *Lindernia crustacea* (Linn.) F. von Mueller (Scrophulariaceae)

It is widely distributed in India; Found in low lying pastures, river banks, rice fields after the harvest and drying out tanks; A glabrous, diffusely branched annual, leaves small, ovate, entire or serrate, flowers purple or blue-violet. It is used for biliousness affections and dysentery in Indo-China and in poultices for boils, sores, ring worm and itches. In some parts of Kerala, the plant is crushed and the expressed juice is taken in early morning in empty stomach to clear stomach (Pers. Obs. Rajith). Leaf paste with lemon juice is given orally to cure excess bile secretion; also applied externally on ringworm and boils (Panda and Misra, 2011).

XXIV. *Lindernia oppositifolia* (Retzius) Mukherjee (Scrophulariaceae)

It is found in wet low lands, scrub jungle and in rice fields after harvest; stem erect, leaves sessile or sub sessile, flowers pinkish with or without a yellow fleck at the throat. The roots are used locally for fevers (pers.obs. Swapna).

XXV. *Ludwigia adscendens* (Linn.) Hara (Onagraceae)

It is found almost throughout India; it is found in wet swampy places, ponds and ditches; stems prostrate or ascending, bearing silver- white, spongy, spindle- shaped pneumatophores, flowers solitary in leaf axils, creamy white, but yellowish near the base. The Whole plant paste is applied against ulcers and skin diseases (Panda and Misra, 2011).

XXVI. *Ludwigia octovalvis* (Jacq.) Raven (Onagraceae)

It is found throughout in India; stems robust, much branched, woody at the base, flowers solitary in leaf axils, yellow, capsules terete; found in wet and swampy places, rivers, ditches, canals or tanks, mostly near cultivated land. The whole plant is given in fever, toxemia, boiled plant is applied on body in fever to reduce body ache (Santhoshkumar and Satyanrain, 2010).

XXVII. Marsilea minuta Linn.(Marsiliaceae)

It is aquatic or semi aquatic in ponds, paddy fields and marshy places; rhizome long creeping, leaves four, sessile, arranged in clover leaf model, sporocarps borne at the nodes in clusters alternatively. Raw leaf paste is applied on forehead to cure headache and for head cooling. Leaves fried in cow ghee are taken regularly as curry to cure biliousness. Leaf juice along with root extract of *Asparagus racemosus* and sugar candy powder is taken orally or leaf juice with ginger juice and honey is also taken to increase sperm formation. Warm root paste with black pepper is applied around boils as suppurate (Panda and Misra, 2011). Plants are used in cough, spastic condition of leg muscles, etc. and also in sedatum and insomnia. The leaves and sprouts are cooked as vegetable and sold in the market (Dixit and Vohra, 1984).

XXVIII. Monochoria hastata (Linn.) Solms-Laubach (Pontederiaceae)

It is known as Kola chembu in Malayalam; widely distributed in India A perennial herb grows in clumps at the edges of pools, tanks and canals and in ditches. Attains a height of 2 to 3 m during the rains, adjusting its height with the rise in water level; Plant with elongate, creeping, spongy rootstock, leaves long petioled, sagittate, hastate, flowers purplish blue or violet. Tender stalk and leaves are eaten as vegetable in Bengal. Considered as alternative tonic and cooling. Juice of leaves is applied to boils (Wealth of India, Vol. VI).

XXIX. Monochoria vaginalis (N. L. Burman) Kunth (Pontederiaceae)

Widely distributed in India; Highly gregarious in inundated places, in swamps or at the edges of pools, ditches, canals and rice fields; Leaves long petioled, ovate-cordate, or subreniform, flowers blue, capsules ellipsoid. The entire plant except the roots is eaten as vegetable. In Java, the juice of leaves is taken for coughs and that of roots for stomach and liver complaints, asthma and tooth ache (Wealth of India, Vol. VI). Leaves with ginger juice and honey are taken to cure cough and cold. Root is chewed to cure toothache (Panda and Misra, 2011).

XXX. Murdannia nudiflora Brenan(Commelinaceae)

Widely distributed in India; found in wet places, paddy fields, marshes, along ditches and in shady, grassy places, Stems decumbent below and ascending above, branchlets reddish with white nodes, flowers clustered in terminal or axillary cymes, blue or pinkish. Used locally in the treatment of asthma, leprosy and piles. Root paste with goat milk is prescribed orally to cure asthma. Whole plant paste with common salt is applied on the affected area to cure leprosy (Panda and Misra, 2011).

XXXI. Nelumbo nucifera Gaertner(Nelumbonaceae)

It is the *Thamara*, Lotus; It is Widely distributed in India; cultivated as a crop, found growing in ponds, tanks, etc; A handsome aquatic herb with stout, creeping rhizome, leaves peltate, glaucous, petioles long, smooth or with small prickles, flowers large, white or rosy. The fruiting torus is sold for the edible carpels embedded on it and are considered superior to cereals in nutritive value. *Nelumbo* honey is much in demand. A paste of the rhizome is applied in ring worm and other cutaneous affections. Carpels are demulcent and used to check vomiting. The milky viscid juice of leaves and flowers bacteriostatic action against Gram positive and Gram negative bacteria (Wealth of India, Vol. VII). The rhizomes are eaten as vegetable or preserved in sugar. They are also ground as a starch (Lotus meal). The seed kernels are also used as a source of starch or eaten dry (Usher, 1984). The peduncle and petiole are cut into small pieces, dried and fried in oil is a delicious food item and is sold in the name, 'vattal' in Kerala (Pers. Obs. Swapna). Paste of young leaf, along with fruits of *Emblica myrobalan* is applied on forehead to get relief from headache. Flower petal decoction is given against diarrhea. Young flower paste is prescribed as cardiac tonic and also in fever and liver ailments. Young seed powder is taken along with fresh cow milk against headache. Young seed paste is used externally as a cooling medicine for skin diseases. Powdered root is taken for expelling ring worms. Root paste kept in a fine cloth and rolled to a thread and dipped in cow ghee is inserted inside the nostril of the unconscious patient suffering from fits and kept till the patient becomes conscious. Root paste in lemon juice is taken for the treatment of piles (Panda and Misra, 2011).

XXXII. Nymphaea nouchali N.L.Burman (Nymphaeaceae)

It is *Vellambel*, Indian Water lily. Widely distributed in India; common and locally dominant in permanent and temporary water; A large, aquatic herb with tuberous rhizome and peltate leaves, flowers solitary, fragrant, variable in colour, deep red to pure white, fruit a spongy berry. All parts of the plant are eaten in times of scarcity. The rhizome is considered demulcent and used for dysentery and dyspepsia. Flowers are astringent and cardiotoxic. Seeds are used as a cooling medicine in cutaneous diseases (Wealth of India, Vol. VII). Rhizome along with roots of *Lawsonia inermis* grinded in rice washed water is taken to cure diabetes.

Flowers are soaked in water overnight; decanted water is drunk for various cardiac problems. Seed decoction soaked in cloth is applied for the treatment of skin infection. Raw rhizome is the best medicine for dysentery (Panda and Misra, 2011).

XXXIII. *Nymphaea pubescens* Willd.(Nymphaeaceae)

It is distributed throughout in India; Leaf blades green above, brownish or purplish below, lower surface pubescent, flowers white to pink or deep red. Seeds almost black with a white aril. Decoction of rhizome of red flowered plant is given for blood dysentery. Rhizome juice is prescribed against leucorrhoea. Powdered rhizome with honey is given for piles, dysentery and dyspepsia. Root juice is drunk to keep stomach cool and to get relief from burning sensation during urination. Root paste of the red flowered plant is given for treating menorrhagia. Paste of root of the plant with flowers of *Hibiscus rosa-sinensis*, bark of *Ficus religiosa* and seeds of *Sesamum indicum* is taken for abortion (Panda and Misra, 2011).

XXXIV. *Pistia stratiotes* Linn.(Araceae)

It is known as Muttapayal, Water lettuce; Free floating rosettes with emergent leaves in tanks, lagoons and rice fields. Forms a dense mat on water surface and cause serious clogging of water ways; a floating, stoloniferous herb, leaves sessile, densely pubescent, flowers creamy white, minute and sessile on a spadix. The plant is eaten in parts of Tropical Africa and in India, in times of famine. Young leaves are cooked and eaten by the Chinese. Used as an antiseptic, antidysentric, insecticide and for ear complaints. In Gambia, the plant is used as an anodyne for eyewash. The ashes of the plant are applied to the ring worm of the scalp. The leaves are used in eczema, leprosy, ulcers, piles and syphilis. With rose water and sugar, they are given for cough and asthma. Juice of the leaves boiled in coconut oil and applied externally to cure chronic skin diseases. Whole plant is boiled and tied at the rheumatic swollen parts of the body to reduce the swelling. Leaf juice boiled with coconut oil is applied externally to cure skin diseases, leprosy and eczema. Plant decoction is taken to cure irregular urination (Panda and Misra, 2011).

XXXV. *Sphaeranthus indicus* Linn. (Asteraceae)

It is known as Adakkamaniyan, Indian Globe Flower; distributed throughout in India; Common in and around irrigation ditches and rice fields; an aromatic herb, stems with toothed wings, flowers in heads and purple in color. The leaves are eaten as a pot herb. The juice of the plant is styptic and said to be useful in liver and gastric disorders. The paste of the herb, made with oil is applied in itch. The powdered seeds and roots are given as an anthelmintic. A decoction of the root is used in chest pains and bowel complaints. The bark, ground and mixed with whey, is said to be a useful application in piles. Flowers are credited with alterative, depurative and tonic properties. Leaf juice boiled with milk and sugar-candy is prescribed for cough (Wealth of India, Vol. X). The leaves are used to treat intestinal worms, the plant cooked in butter, flour and sugar is a tonic and fried or boiled seeds are used as an aphrodisiac. In Java, the plants are used as a diuretic (Usher, 1984). Paste prepared from inflorescence is given in empty stomach for curing excess bile. Whole plant paste with a pinch of common salt is taken as an anthelmintic. Stem with leaf is chewed to get relief from toothache.

XXXVI. *Spilanthes calva* A. P. de Candolle (Asteraceae)

It is found in boggy ground, margins of pools, marshes along water courses, in rice fields and in wet areas ; stem trailing or ascending, flowering heads long pedunculate, solitary, flowers yellow. The leaves are eaten raw or as a vegetable (Usher, 1984). The flower heads are chewed to relieve toothache and affections of throat and gums and paralysis of the tongue. They are also said to be a popular remedy for stammering in children in Western India. The plant is boiled in water and the liquid as well as solid is given in dysentery. The decoction is employed as a bath for rheumatism and as a lotion in scabies and psoriasis. The root is used as a purgative (Wealth of India, Vol. X). It is used locally to cure tooth ache (Pers. Obs. Swapna).

XXXVII. *Trapa natans* Linn. (Trapaceae)

It is known as Water Chestnut; found in still or slowly flowing water, cultivated in tanks, lakes, ponds, etc.; a very variable, rooted aquatic herb, stem elongate and submerged, leaves dimorphic, flowers solitary, white or lilac. The fruits are eaten raw or cooked. In China, they are also used for making flour. It is cultivated in Asia (Singhara in India) and elsewhere where it is a staple food (Cook, 1996).

XXXVIII. *Typha angustata* Bory & Chaub.(Typhaceae)

Cosmopolitan in distribution; dominant in fresh and brackish marshes, back waters, lagoons pools and along water courses; a gigantic, gregarious marshy plant, female inflorescences light cinnamon brown. The immature inflorescence is used as food (Cook, 1996). The starchy rhizomes and pollen are also eaten. The rhizomes are astringent and diuretic and are reported to be employed in dysentery, gonorrhoea and measles. Rhizome decoction is used as an astringent (Panda and Misra, 2011).

XXXIX. Vallisneria spiralis Linn. (Hydrocharitaceae)

It is widely distributed in India; grows in still and flowing water; a submerged, tufted, dioecious aquatic herb, stem very short, leaves totally submerged, linear, varying in length with the depth of water. The young leaves are eaten in salads in Japan (Cook, 1996; Usher, 1984). They are rich source of phosphorous, calcium and iron and the plant is used as a stomachic and for leucorrhoea (Wealth of India, Vol. X).

XL. Conclusion

Each and every plant in the world is useful in some way or other. Earlier, the plants are utilized based on the "Doctrine of Signature" that is, God wood mark or sign each plant in some way or the other to indicate its medicinal property. Cook (1996) in his aquatic and wetland plants of India gave some short notes on the utility of the plants. The present work describes the edible and medicinal properties of aquatic plant species in ponds of Palakkad district, Kerala. Present study reveals that the plants in ponds which is becoming serious weeds in the water bodies of the country, can be effectively utilized for their food and medicine attributes, which will change the status of the plants from worst weed to important medicines or food which are useful for mankind. The nutritive values of some of the plants have been studied by various authors and the present work emphasize the usefulness of the Aquatic plants wealth which in turn may form another criteria to conserve the delicate ecosystems considering the services they provide to the mankind.

XLI. Acknowledgements

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References

- [1] Kamble SY, Patil SR, Sawant PS, Sawant S, Pawar SG, Singh EA (2010). Studies on Plants used in traditional medicine by Bhilla tribes of Maharashtra. *Ind. J. Trad. Know.*, 9(3): 591- 598.
- [2] Madhusoodanan PV, Kumar KGA (1993). *Alternanthera philoxeroides* Griseb. – Alligator weed - A fast spreading aquatic weed in Kerala, South India. *J. Econ. Taxon. Bot.*, 17: 651-654.
- [3] Hong SS, Kim JH, Shim CK (2005). Advanced formulation and pharmacological activity of hydrogel of titrated extract of *C. asiatica*. *Arch. Pharm. Res.*, 28: 502-508.
- [4] Maya S, Menon SV, Nair SG (2003). Economic importance of river vegetation of Kerala – A case study. *J. Econ. Taxon. Bot.*, 27(4): 796- 803.
- [5] Panda A, Misra MK (2011). Ethnomedicinal survey of some wetland plants of South Orissa and their conservation. *Ind. J. Trad. Knowl.*, 10(2): 296–303.
- [6] Santhoshkumar B, Satyanarain S (2010) Herbal remedies of wetlands macrophytes in India. *Int. J. Pharm. Biosci.*, 2: 1-12.
- [7] Shanmugasundaram P, Venkataraman S (2005). Anti-nociceptive activity of *Hygrophila auriculata* (Schum.) Heine. *Afr. J. Trad. C.A.M.*, 2(1): 62- 69.
- [8] Ravikanth V, Ramesh P, Diwan PV, Venkateswarlu Y (2000). Halleridone and Hallerone from *Phyla nodiflora* (L.) Greene. *Biochem. Syst. Ecol.*, 28: 905-906.
- [9] Shetty BS, Udupa SL, Udupa AL, Somayaji SN (2006). Effect of *C. asiatica* Linn. on normal and dexamethasone-suppressed woundhealing in Wistar Albino rats. *Int. J. Low Extrem. Wounds*, 5: 137-143.
- [10] Grosvenor PW, Suptino A, Gray DO (1995). Medicinal plants from Rian province, Sumatra, Indonesia, Part 2; antibacterial and antifungal activity. *J. Ethnopharmacol.*, 45: 97-111.
- [11] Swapna M. M, Prakashkumar R, Anoop K. P, Manju C. N. and Rajith N. P. A review on the medicinal and edible aspects of aquatic and wetland plants of India. *Journal of Medicinal Plants Research Vol. 5(33), pp. 7163-7176, 31 December, 2011.*
- [12] Chopra RN, Nayar SL, Chopra IC (1956). *Glossary of Indian Medicinal Plants*. CSIR, New Delhi, p. 58.
- [13] Anonymous (1976). *Wealth of India*, C.S.I.R., Vol. 1–10, New Delhi.
- [14] *Gazetteer of Palakkad* (1976)
- [15] Usher G (1984). *A Dictionary of Plants*. CBS Publishers and Distributors, New Delhi.
- [16] Kan WS (1986). *Pharmaceutical botany*, National Research Institute of Chinese Medicine, Taipei, Taiwan, pp. 416-417.
- [17] Cook CDK (1996). *Aquatic and wetland plants of India*. Oxford University press Inc., New York.
- [18] Chung YM, Lan YH, Hwang TL, Leu YL (2011). *Anti-Inflammatory and Antioxidant Components from Hygryza aristata. Molecules*, 16: 1917-1927; doi:10.3390/molecules16031917.
- [19] Lewis WH, Lewis MPFE (2003). *Medical Botany: Plants affecting human health*. Wiley Publishers, New Jersey, p. 112