



## HERBAL REMEDIES OF WETLANDS MACROPHYTES IN INDIA

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### **ABSTRACT**

Wetlands provide a unique habitat for several medicinal plants. In spite of their commercial value, the local community utilizes good number of these plants for various curative purposes. A number of these plants are very sensitive to the fluctuation in the normal physico-chemical parameter of the wetland. A slight alteration of the wetland may result in the disappearance or the extinction of these plants. This will ultimately result in large scale economic loss in terms of the medicinal product. Apart from the loss of plants, this will also result in the loss of local knowledge on the medicinal properties of these plants which very often can't be retrieved. Attempt has been made to document some of the little known medicinal properties of wetland plants used by local community of India.

### **KEYWORDS**

Aquatic angiosperms, Biodiversity, Medicinal value and Wetlands of India.

### **INTRODUCTION**

Wetlands are considered the most biologically diverse form of the ecosystem. Under the Ramsar international wetland conservation treaty, wetlands are defined as – Art.1.1 “Wetlands are areas of marsh, fen, peat land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including area of marine water, the depth of which at low tide

does not exceeds six meters.” For the study of herbal remedies of wetlands of north central India of Indo-Nepalese border has been selected in which river Ganga, Yamuna and their tributaries Ghaghra, Gomti, Saryu, Betwa, Ken, Sai, Sharda and Gandak are flowing. Major wetland of Dudhwa National Park and some bird sanctuaries, lakes like Chandra Prabha, Kishan Pur, Katarniaghat Wild life Sanctuary and Rani Pur, Mahaveer Swami, Kaimoor, National Chambal, Hastina Pur, Sohagi Barwa, Suhelwa, Kachhuwa, Nawabganj, Samas



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Pur, Lakh Bahosi, Sandi, Bakhira, Okhla, Saman, Parvati Arga, Vijay Sagar, Patna, Surha Tal and Sur Sarovar Bird Sanctuaries are surveyed with a number of minor streams, which are swollen to considerable dimension during rains and later subside into narrow streams with a very small discharge.

Several floristic work has been carried out and a number of research papers have appeared in different journals on medicinal and ethno botanical property of plants by Fassett (1940), Muenscher (1944), Chopra *et al* (1956), Jain (1965, 1975, 1994, 1995, 2000), Chopra *et al* (1968), Lambert & Vietmeyer (1975), Kapoor & Mitra (1979), Maheshwari & Singh (1979), Kirtikar & Basu (1980), Oliver-Bever (1983), Maheshwari *et al* (1981,86), Ahuja (1986), Asolkar (1992), Kareiva (1994), Cook (1996), Satyavathi *et al* (1996), Lambert (1997), Chamberlian (1998), Majid (1998), Varier (1998), Quattrochi (1999), Freed (2001), Kumar & Jain (2002), Maliya & Singh (2003) and Maliya (2004) but whole account of medicinal property of this major wetland of north central India of Indo-Nepalese border has been neglected. Therefore, the attempt has been made to document some of the little known medicinal

properties of wetland and aquatic plants used by the local community.

## MATERIAL AND METHOD

For the study of medicinal property of wetland plants frequent trips were made in wetland area, Bird sanctuary, lakes, ponds, puddles, ditches, canal, swamps etc. During the survey, Plants occurring in different water saturated areas are collected, photographed and identified. Besides these, nature of growth, habit, habitat and medicinal property were noted from local rural and tribal people of different area. To acquire detail knowledge on the utilization of plant resources, old and experienced persons, village heads, and farmers were also contacted, besides making personal observation on spot; the species are identified with the help of relevant literatures and deposited in Duthie Herbarium, Allahabad University, Allahabad. The plants are listed with latest botanical name in family according to the Bentham & Hooker system of classification and their medicinal value, part used, flowering & fruiting are also mentioned in table(1).

**Table 1**  
*Classification and their medicinal value*

S. No.	Name of Plant	Family	Phenology	Part used	Medicinal used
1.	<i>Ranunculus sceleratus</i> L.	Ranunculaceae	Jan.- April	Leaves, seeds	Contain Protanemonin which may poisonous livestock
2.	<i>Eurale ferox</i> Salisb.	Nymphaeaceae	May - Dec.	Leaves Flowers, Seeds,	Leaves in rheumatism, Flowers in tonic, aphrodisiac, restrain seminal glects.



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					Seeds are astringent, cooling, in dysmenorrheal.
3.	<i>Nymphaea nouchali</i> Burm. f.,	Nymphaeaceae	Aug.- Nov.	Rhizome	Powered rhizome used in disease of urinary tract, dyspepsia, diarrhea and piles.
4.	<i>N. pubescens</i> Willd.	Nymphaeaceae	Aug.- Nov.	Rhizome, Flowers	Rhizome for piles, dysentery and diarrhea, flowers astringent and cardio-tonic.
5.	<i>Nelumbo nucifera</i> Gaertner	Nelumbonaceae	Aug.- Oct.	Seeds, Rhizome	Seeds for skin disease, diarrhea and rhizomes for piles, ringworm.
6.	<i>Rorippa islandica</i> (Qeder) Bor.	Brassicaceae	Sept.- Nov.	Roots	Diuretic in measles.
7.	<i>Pentapetes phoenicea</i> L.	Sterculiaceae	Aug.-Dec.	Capsule	Diseases of bowels, an emollient.
8.	<i>Melochia corchorifolia</i> L.	Sterculiaceae	Aug.- Dec.	Leaves	Decoction used in dysentery.
9.	<i>Bergia ammannioides</i> Roxb. ex Roth.	Elatinaceae	Sept.- Nov.	Whole plant	In skin disease.
10.	<i>Corchorus aestuens</i> L.	Tiliaceae	Sept.- Jan.	Leaves, Roots	Fever, Stomach ache.
11.	<i>C. capsularis</i> L.	Tiliaceae	Sept.- Nov.	Leaves	As a tonic.
12.	<i>Oxalis corniculata</i> L.	Oxalidaceae	Jan.- Dec.	Leaves	Infants in case of rickets.
13.	<i>O. corymbosa</i> DC.	Oxalidaceae	April - June	Whole Plant	Fresh juice of plants used in dyspepsia, piles, anemia and tymponites.
14.	<i>Aeschynomene aspera</i> L.	Fabaceae	Oct.- Nov.	Seeds	Fatty oil.
15.	<i>A. indica</i> L.	Fabaceae	Oct.- Nov.	Seeds	Fatty oil, toxic to horse.
16.	<i>Sesbania procumbens</i> Wright et Arnott.	Fabaceae	Feb.- April	Leaves, seeds	Ulcers, pleurisy colic.
17.	<i>Neptunia oleracea</i>	Mimosaceae	Nov.- Feb.	Leaves,	To cure earache and



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Lour.			Flowers	syphilis.	
18.	<i>Potentiella supina</i> L.	Rosaceae	Jan.- April	Roots	In tonic, febrifuge, astringent.
19.	<i>Ammannia auriculata</i> Willd.	Lythraceae	Nov.- Feb.	Leaves, Seeds	As a counter irritant for rheumatic pains.
20.	<i>A. baccifera</i> L.	Lythraceae	Nov. - April	Leaves, Seeds	Poisonous,, reduce the sexual libido of animals.
21.	<i>A. multiflora</i> Roxb.	Lythraceae	Nov.- Feb.	Leaves	For subsiding fever.
22.	<i>Rotala indica</i> (Willd.) Koehne.	Lythraceae	Jul. - Nov.	Leaves, Flowers	For respiratory disease, bitter herb, for stomach disorder.
23.	<i>Ludwigia adscendens</i> (L.) Hara	Onagraceae	Jan.- June	Leaves	Used in poultice for ulcers and other skin disease.
24.	<i>L. octovalvis</i> (Jacq.) Raven	Onagraceae	Nov.- Jan.	Whole Plant	Given in fever, toxemia, boiled plant is applied on body in fever to reduce body ache.
25.	<i>Trapa natans</i> L. var. <i>bispinosa</i> (Roxb.) Makino	Trapaceae	Sept.- Oct.	Seeds	In cooling and stomachic.
26.	<i>Centella asiatica</i> (L.)	Apiaceae	Nov.- Jan.	Whole plant	As brain tonic, in leprosy, tuberculosis, sedative, spasmolytic and amoebic properties.
27.	<i>Dentella repens</i> (L.) J. & G. Forster	Rubiaceae	Throughout year	Leaves	For poulticing sores.
28.	<i>Centipeda minima</i> (L.) A. Braun	Asteraceae	Sept. - May	Leaves, Flowers	Promote sneezing, nasal congestion, to treat swelling and inflammation.
29.	<i>Eclipta prostrata</i> (L.) L.	Asteraceae	March - April	Buds, Roots	Antidote to snake bite, asthma.
30.	<i>Enhydra fluctuans</i> Lour.	Astraceae	Sept. - May	Aerial part	Anasaraca, snake bite.
31.	<i>Gnaphalium indicum</i> L.	Asteraceae	March -	Leaves, bud	Gastric complaints.



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April					
32.	<i>Sphaeranthus indicus</i> L.	Asteraceae	Dec. - April	Buds, Roots	Anthelmintic tonic, aphrodisiac, cure for toothache, diuretic, laxative and fish poison.
33.	<i>Spilanthes paniculata</i> Wall. ex DC.	Asteraceae	March - April	Buds, Roots	For toothache and sore throats.
34.	<i>Sphenoclea zeylanica</i> Gaertner	Sphenocleaceae	Aug.- Nov.	Leaves, Flower	Abortive.
35.	<i>Anagalis arvensis</i> L.	Primulaceae	Dec.- March	Whole Plants	Hydrophobia, Leprosy.
36.	<i>Nymphoides hydrophylla</i> (Lour.) O. Kuntze	Menyanthaceae	Aug.- Oct.	Leaves	Skin disease.
37.	<i>N. indica</i> (L.) Kuntze	Menyanthaceae	Aug.- Oct.	Flowers, Tubers	Plant is ant scorbutic and febrifuge.
38.	<i>Hydrolea zeylanica</i> (L.) Vahl	Hydrophyllaceae	Aug.- Oct.	Whole plant	Antiseptic properties.
39.	<i>Heliotropium supinum</i> L.	Boraginaceae	Aug.- March	Whole plant	On skin disease.
40.	<i>Ipomoea aquatica</i> Forssk	Convolvulaceae	Sept.- Feb.	Leaves , bud	Emetic, purgative, given in piles, nervous disorder.
41.	<i>I. carnea</i> Jacq.	Convolvulaceae	Aug.- April	Flower, leaves	Toxic and purgative.
42.	<i>Bacopa monnieri</i> (L.) Wettst.	Scrophulariaceae	July - Dec.	Leaves, stem	Plant contain alkaloids used in cardiac and nerve tonic.
43.	<i>Centranthera indica</i> (L.)Gamble	Scrophulariaceae	Oct.- June	Root	Root parasite on grasses.
44.	<i>Limnophila indica</i> (L.) Druce	Scrophulariaceae	Aug.- March	Leaves	Antiseptic, to cure for dysentery.
45.	<i>Lindernia ciliata</i> (Colms.) Pennel	Scrophulariaceae	Aug.- March	Leaves	Used as a remedy for gonorrhoea.
46.	<i>L. procumbens</i> (Krock) Borbos	Scrophulariaceae	Oct.- June	Leaves	Dysentery, against ringworm.
47.	<i>Veronica anagallis-</i>	Scrophulariaceae	Jan.- April	Leaves,	Ant scorbutic, roots



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	<i>aquatica</i> L.			Roots	used in preparation of gargles.
48.	<i>Hygrophila auriculata</i> (Schum.) Heine	Acanthaceae	Oct.- Jan.	Seeds	Given in calculi, strangely rheumatism
49.	<i>H. polysperma</i> (Roxb.) T. Anderson	Acanthaceae	Oct.- April	Leaves	Cooling medicine.
50.	<i>Justicia quinqueangularis</i> Koenig ex Roxb.	Acanthaceae	Aug.- April	Flower, roots	Antiseptic.
51.	<i>Orthosiphon pallidus</i> Royle ex Benth.	Lamiaceae	June - March	Leaves, flower	In fever, urine complaints.
52.	<i>Phyla nodiflora</i> (L.) E. Greene	Verbenaceae	Throughout year	Whole plants	In skin disease.
53.	<i>Amaranthus virides</i> L.	Amaranthaceae	March - June	Leaves, roots	Centipedes bite.
54.	<i>Alternanthera paronychioides</i> St.	Amaranthaceae	March - Oct.	Leaves, stem	Urine complaints.
55.	<i>A. philoxeroides</i> (Mart.) Griseb.	Amaranthaceae	April-Nov.	Whole plant	Allelopathic.
56.	<i>A. pungens</i> Kuntz.	Amaranthaceae	Aug.- May	Leaves	Diuretic, decoction in gonorrhoea.
57.	<i>A. sessilis</i> (L.) R. Br. ex DC.	Amaranthaceae	Aug.- May	Leaves	Used in soap.
58.	<i>Centrostachys aquatica</i> (R. Br.) Wallich ex Moquin- Tondon	Amaranthaceae	Sep.- Nov	Leaves	Hydrophobia, insect bite.
59.	<i>Polygonum barbatum</i> L.	Polygonaceae	Aug.- April	Leaves, Seeds	Seed used in relieving colic, dispelling fever.
60.	<i>P. glabrum</i> Willd.	Polygonaceae	Aug.- April	Leaves, stem	Unlock bone, jaundice.
61.	<i>P. lanigerum</i> R. Br.	Polygonaceae	Aug.- April	Leaves, stem	Gastric complaints.
62.	<i>P. hydropiper</i> L.	Polygonaceae	Aug.- April	Leaves, stem	Skin disease, fish poison.
63.	<i>P. plebeium</i> R. Br.	Polygonaceae	Oct.- April	Leaves	For pneumonia, bowl complaints.
64.	<i>Rumex dentatus</i> L.	Polygonaceae	Jan.- June	Roots	Antiseptic, astringent.
65.	<i>Ceratophyllum</i>	Ceratophyllaceae	Oct.- Feb.	Whole	Plants are cooling



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	<i>demersum</i> L.			Plants	laxative & antipyretic, useful in biliousness and ulcers.
66.	<i>Hydrilla verticillata</i> (L. f.) Royle	Hydrocharitaceae	Sept.- Dec.	Whole plants	Applied on skin disease.
67.	<i>Vallisneria spiralis</i> . L.	Hydrocharitaceae	Dec.- April	Leaves	Stomachic, refrigerant and demulcent.
68.	<i>Eichhornia crassipes</i> (Mart.) Solms	Pontederiaceae	July - Nov.	Flowers	Skin disease in horses.
69.	<i>Monochoria vaginalis</i> (Burm. f.) ex Kunth	Pontederiaceae	July - Nov.	Leaves	Plants for tonic and leaves juice for boil.
70.	<i>Commelina benghalensis</i> L.	Commelinaceae	July - Nov.	Leaves	Demulcent, emollient, laxative and refrigerant.
71.	<i>C. erecta</i> L.	Commelinaceae	July - Nov.	Leaves	As a refrigerant for skin inflammation, leprosy, constipation.
72.	<i>C. longifolia</i> Lam.	Commelinaceae	Aug.- Nov.	Leaves	Against burns, itches and boils.
73.	<i>Cynotis axillaries</i> (L.) Sweet.	Commelinaceae	July - Nov.	Leaves	For tympanites, ascites and abortion.
74.	<i>Typha angustifolia</i> L.	Typhaceae	Oct.- April	Rhizome	As a astringent and diuretic.
75.	<i>Acorus calamus</i> L.	Araceae	July - Nov.	Tuber	Snake bite, for eye treatments.
76.	<i>Colocasia esculenta</i> (L.)	Araceae	July - Nov.	Tuber	Decoction of tuber in heart weakness.
77.	<i>Pistia stratiotes</i> L.	Araceae	Jan.- May	Whole Plant	Antiseptic, anti dysenteric, insecticide, for asthma.
78.	<i>Sagittaria guayanensis</i> Humb.	Alismataceae	April - Oct.	Leaves, Tubers	Leaves used in sore throats and inflammation of breast, tubers in cetaceous trouble.
79.	<i>S. trifolia</i> L.	Alismataceae	Dec.- May	Bulb	For normal health.
80.	<i>Butomopsis latifolia</i> (D. Don) Kunth.	Butomaceae	Aug.- Dec.	Leaves, Roots	Leaves for relieving throat ache. Roots





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					intestinal order.
81.	<i>Najas graminea</i> Delile	Najadaceae	Aug.- Oct.	Leaf	Paste applied on goiter and on boils.
82.	<i>Bulbostylis densa</i> (Wall.) Hand.	Cyperaceae	Jul.- Dec.	Tuber	For dysentery.
83.	<i>Cyperus difformis</i> L.	Cyperaceae	July - April	Leaves, Tubers	In diarrhea.
84.	<i>C. esculentus</i> L.	Cyperaceae	Jul.- April	Tubers	In abdominal disorder.
85.	<i>C. iria</i> L.	Cyperaceae	Aug.- Feb.	Tubers	Aromatic, as a medicine.
86.	<i>C. rotundus</i> L. ssp. <i>rotundus</i> L.	Cyperaceae	Jul.- April	Tubers	In scorpion sting, febrile & dyspeptic.
87.	<i>C. triceps</i> Endl.	Cyperaceae	Aug.- Dec.	Tubers	Liver complaints.
88.	<i>Fimbristylis bisumbellata</i> (Forssk.) Bub.	Cyperaceae	Aug.- May	Under ground parts	As cooling medicine.
89.	<i>F. dicotoma</i> (L.) Vahl.	Cyperaceae	July.- Nov.	Whole plants	For fever and bowel complaints.
90.	<i>F. ovata</i> (Burm. f.) Kern.	Cyperaceae	Aug.- May	Tubers	Syphilis, Stomach aches.
91.	<i>Kyllinga brevifolia</i> Rottb.	Cyperaceae	June - Oct.	Roots, Rhizome, leaves	Roots, rhizome used as poultice on sores, in diarrhea.
92.	<i>Scirpus articulatus</i> L.	Cyperaceae	Oct.- Dec	Tubers	Medicine in purgative.
93.	<i>Arundo donax</i> L.	Poaceae	Sep.- Feb.	Rhizome	Diuretic, emollient and stimulate menstrual discharge, raises blood pressure.
94.	<i>Coix lachrymal-jobi</i> L.	Poaceae	Sept.- Feb.	Roots	For menstrual disorder and small pox.
95.	<i>Cymbopogon citratus</i> Stapf.	Poaceae	Sept.- Feb.	Roots, seeds	Fever, Headache.
96.	<i>Cynodon dactylon</i> (L.) Pers.	Poaceae	July – Nov.	Tubers	Piles, Snake bite, antiviral.
97.	<i>Dactyloctenium aegyptium</i> (L.) Beauv.	Poaceae	Sept.- Feb.	Roots, seeds	Stomachache.
98.	<i>Eleusine indica</i> (L.) Gaertn.	Poaceae	Dec.- Feb.	Rhizome, roots	Medicine in fever.



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99.	<i>Hygroryza aristata</i> (Retz.) Nees ex Wight & Arnott.	Poaceae	Oct.- Dec.	Roots, seeds	For cooling, diuretic and tonic, used in biliousness.
100.	<i>Paspalum</i> <i>scrobiculatum</i> L.	Poaceae	Aug.- Sep.	Seeds	Used in diabetes substitute for rice.
101.	<i>Phragmites karka</i> (Retz.) Steud.	Poaceae	Dec.- Feb.	Rhizome , roots	As diuretic, animistic, diaphoretic and in diabetes.
102.	<i>Vetiveria zizanioides</i> (L.) Nash.	Poaceae	July - Nov.	Under ground parts	Diaphoretic, refrigerant, febrifuge.

**RESULT**

During the present study altogether 102 species and 75 angiosperm genus 40 family are collected in which 47 species belong to dicotyledons and 28 species to monocotyledons are recorded which possess some medicinal potential. *Potentiella supina*, *Ludwigia adscendens*, *Centella asiatica*, *Eclipta prostrate*, *Amaranthes virides*, *Polygonum barbatum*, *Rumex dentatum* and *Acorus calamus* are popular and common medicinal plants used everywhere by all community.

Seeds and tuber of *Nymphaea nauchali*, *Nelumbo nucifera*, seeds and fruits of *Lathyrus sativus*, *Vicia hirsuta*, *Trapa natans* and *Coix lacryma-jobi* are used as a food material by local people. *Hydrilla verticillata*, *Vallisneria spiralis*, *Polygonum crispus* and *Naja graminea* are also used as aquabarium. In present analysis of wetland plants maximum number of medicinal plants is of Cyperaceae family over the Poaceae and Scrophulariaceae.

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### Photographs: Aquatic Medicinal Plants

*Lugwigia octovalvis* (Jacq.) Raven



*Alternanthera philexoroides* (Mart.) Griseb



*Sphenoclea zeylanica* Gaertn



*Polygonum lapathifolium* var. *lanatum* (Roxb.)  
Steward



*Heliotropium supinum* L



*Monochoria vaginalis* (Burm.f.) ex Kunth





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### DISCUSSION

Wetlands also provide an excellent habitat for several species of plants; local people use a wide variety of wetland and associated plants as ingredients of traditional herbal medicine. Often the information on the composition of a specific medical preparation or the knowledge on the use and medical value of a particular plant is restricted to a few members of a community or even to one or two individuals of a household since most of this vial system of knowledge is transmitted orally, the local extinction of plant results in the gradual loss of knowledge related with a medicinal value of such species.

The knowledge of medicinal property of plants has been accumulated in the course of many centuries. The local inhabitants have inherited rich traditional knowledge on the use of many plants or plant parts for treatment of common disease. Medicinal plant provides accessible and culturally relevant sources of primary health care, the remedies based on these plants often have minimal side effect. The medicinal values of a particular species of plant differ 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. It is well known that global wetlands are shrinking rapidly and hence their resources both plant and animal are depleting in the same place. The survival of aquatic species is threatened and hence the study on the aquatic resources especially those having medicinal value are important. Wetlands not only provide useful resources but are also important in terms of ecology and maintaining the climate of the region. Therefore, Conservation of wetlands will be addressed urgently.

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