

## **Aquatic Angiospermic Plants of Purba Medinipur District, West Bengal with Reference to Their Sustainable Uses**

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### **Abstract**

The paper describes medicinal aquatic angiosperms of Purba Medinipur district, West Bengal. The study was carried out in this area to investigate the medicinal importance of the plants. It gives 37 species under 26 families with their botanical names, local names, flowering and fruiting period and medicinal uses.

**Key words :** Aquatic angiosperm, Medicinal plants, Sustainable uses.

While collecting plants growing in the aquatic or wetland conditions of Purba Medinipur, we observed a good number plants in the aquatic habitat possessing medicinal importance. The information on use of these plants was collected from local people. The information was compared with the available literature and experienced authorities. About 47 species collected so far were not so important medicinally; 37 species have been studied in this paper having medicinal importance from Ayurvedic, Unani, Homeopathic, Allopathic, or Ethnic point of view. More information like local names, scientific names, flowering and fruiting period have also been added to give a clear idea of the plants.

(Authors are grateful to the local people of the different areas for sparing their valuable time over interview and helps in exploration).

### **Study Area**

Purba Medinipur a district of West Bengal lies in between 87°30' E to 88°15' E longitude and 21°45' N to 22°30' N latitude. It has an area of 4,295 sq km. The average annual rainfall is 1,800 mm and maximum temperatures during winter and summer are 9 to 35 C, respectively. In the present study, the taxonomic status of plants seen on the fringe of the water spread area and on the margins of the canals, ponds and

rivers of the wetland was studied.

### **Methods**

A preliminary survey conducted in the aquatic and wetland areas revealed that the fringes of the water spread area and the margins of the water bodies that run through the middle of the wetland harbor good number of diverse plant species.

Major part of the district has been explored for a period of two years since March 2006 to February 2008. Collections were made in different seasons of the year. During collection, at least 3 samples for each species were taken and they were marked with numbered tags. For herbs and shrubs, twigs of suitable size with leaves, flowers and fruits were collection. After collected, the specimens were dried, preserved and mounted on herbarium sheets following the standard herbarium techniques (1). Plants were identified following different literature, monographs and herbarium sheets available at the Central National Herbarium.

Till now, the authors have collected 47 medicinally important plants under 33 families, of which 37 plants belonging to 26 families have been considered in this paper. The plants have been preserved in the Herbarium of Department of Botany and Forestry, Vidyasagar University, Midnapore.

Plant samples collected were brought to the labo-

ratory for taxonomic identification and preservation on the herbarium sheets.

Medicinal importance and vernacular names were collected from the local people and literature available.

### Results and Discussion

The medicinal importance of the plants were screened in consultation with local tribal people, ojhas, gunin (2—11). Some of the uses are enumerated by interviewing the local people and senior citizens of the villages adjacent to the water bodies. However, the authors have not verified such therapeutic uses (Table 1).

#### Enumeration of Medicinal Plants with Medicinal Uses

1. *Alternanthera sessilis* (L.) R. Br. ex DC.  
Foliage is used to treat night blindness and snakebites; for de-worming and proper digestion, to improve lactation to treat eye diseases and malnutrition.
2. *Ammannia baccifera* L.  
Herb is reported to possess anti-typhoid and anti-tubercular properties. Leaves acrid, rubifacient, used in fever, pains rheumatism and skin diseases.
3. *Bacopa monnieri* (L.) Wettst.  
Whole plant is used in neuralgia, inflammation, epilepsy, tumors, ulcer, leprosy, leucoderma, aphomia, strangury, spermatorrhoea; and as laxative, intellect promoting, carminative, emmenagogue and bronchodilator; leaves increase memory when consumed with rice and ghee, cures cold and cough when taken with boiled ghee. Plant is used as potent, diuretic, cardiac tonic and nerve tonic, useful in insanity reported to cure epilepsy.
4. *Centella asiatica* (L.) Urban.  
Leaves are used in dysentery, jaundice, ulcer, fatigue, weakness, anaemia, excessive sweating, indigestion and loss of memory, irregular menstruation, cold and cough. Leaves are useful in tuberculosis and as brain tonic. Plant decoction is given in leprosy, helping to restore the normal body function; used as tonic, in skin diseases, nervousness and blood diseases, also used in syphilitic skin diseases both internally and externally.
5. *Centaurim centaurioides* (Roxb.) Rao & Kamathy.  
Plants are used in stomach troubles; skin and blood infection.
6. *Commelina benghalensis* L.  
Herbs are considered demulcent, emollient, laxative and refrigerant, used in leprosy, insect poison and even snakebite.
7. *Corchorus capsularis* L.  
Leaves are used fresh and dry in blood dysentery, fever and acidity.
8. *Cyperus rotandus* L.  
The rootstock is used in difficult urination perspiration, colic pain, fever, indigestion, worm infection, insect stinging, flatulence, root is considered useful in diarrhoea, leprosy, thirst, blood diseases, pain, vomiting, disorder of stomach, as anthelmintic in expelling worms and as diuretic.
9. *Cyperus iria* L.  
Root paste is applied on joints to cure rheumatism.
10. *Dentella repens* (L.) J. & G. Forester  
Used for poulticing the sores.
11. *Echinochloa colona* (L.) P. Beauv  
Grains are used in cough, difficult urination, acidity, gonorrhoea, indigestion, ill health.
12. *Eclipta prostrata* (L.) L.  
Whole plant is used in elephantiasis, skin disease, bronchitis, asthma, scorpion stinging, fever, eye trouble, spleen enlargement and emetic etc. Leaves are used in jaundice, cough and ill growth of hair. Plant juice is used in diseases of liver. Roots used in scalding of urine.
13. *Enhydra fluctuans* Lour.  
The leaves are used as laxative; in skin infection, blood infection and have some other medicinal values.
14. *Grangea moderaspatana* (L.) Poir.  
Leaves are used as stomachic, antispasmodic, deobstruent, in hysteria, earache.
15. *Heliotropium indicum* L.  
Leaves are used in swelling of armpit with lime, insect stinging, swelling over joints, wounds, cold and cough, fever, typhoid, with country liquor causes abortion up to 3 months of pregnancy. Roots are used in snakebite, paste with lime in ringworm, decoction with honey given to mothers during pregnancy. Plants bitter, astringent, emollient, diuretic, applied on ul-

**Table 1.** List of medicinal plants collected from Purba Medinipur district West Bengal with scientific name, family, local name and flowering and fruiting time.

Plants names	Family	Local name	Fl/Fr Time
1. <i>Alternanthera sessilis</i> (L.) R. Br. ex DC.	Amaranthaceae	Shalincha	Most part of the year
2. <i>Ammannia baccifera</i> L.	Lythraceae	Dadmari	Aug—Jan
3. <i>Bacopa monnieri</i> (L.) Wettst.	Scrophulariaceae	Chhotobrahmi	Jul—Dec
4. <i>Centella asiatica</i> (L.) Urban	Umbelliferae (Apiaceae)	Thankuni	Nov—Mar
5. <i>Centaurim centaurioides</i> (Roxb.) Rao & Kamathy.	Menyanthaceae	Gima	Jan—Mar
6. <i>Commelina benghalensis</i> L.	Commelinaceae	Kanshira, Kanchata	Jun—Nov
7. <i>Corchorus capsularis</i> L.	Tiliaceae	Jut, tita pat	Aug—Oct
8. <i>Cyperus rotandus</i> L.	Cyperaceae	Golmutha	Jun—Oct
9. <i>Cyperus iria</i> L.	Cyperaceae	Mutha ghash	Aug—Oct
10. <i>Dentella repens</i> (L.) J. & G. Forester	Rubiaceae	Bhumipat	Throughout the year
11. <i>Echinochloa colona</i> (L.) P. Beauv	Poaceae	—	Jun—Nov
12. <i>Eclipta prostrata</i> (L.) L.	Asteraceae	Keshut, Bangraiya	Almost throughout the Year
13. <i>Enhydra fluctuans</i> Lour.	Asteraceae	Hingcha	Jan—Apr
14. <i>Grangea moderaspata</i> (L.) Poir.	Asteraceae	Mustaru	Major part of the Year
15. <i>Heliotropium indicum</i> L.	Boraginaceae	Hatishur, Bhurundi	Oct—Apr
16. <i>Hygrophila schulli</i> (Buch.-Ham) M. R. & S. M. Almeida.	Acanthaceae	Kulekhanra	Oct—Jan
17. <i>Ipomoea aquatica</i> Forsk.	Convolvulaceae	Kalmishak, nari	Sep—Feb
18. <i>Lemna purpusilla</i> Torrey.	Lemnaceae	Khundi pana	May—Dec
19. <i>Limnophila heterophylla</i> (Roxb.) Benth.	Scrophulariaceae	—	Oct—Jan
20. <i>Ludwigia adscendens</i> (L.) Hara.	Onagraceae	Keshardam	Sep—Dec
21. <i>Melochia corchorifolia</i> L.	Sterculiaceae	Bilpat	Sep—Dec
22. <i>Monochoria hastate</i> (L.) Solms.	Pontederiaceae	Neelopalam	Feb—Oct
23. <i>Nelumbo nucifera</i> Gaertn.	Nelumbonaceae	Kamal, padma	Jun—Oct
24. <i>Nymphaea nouchali</i> Burm. F.	Nymphaeaceae	Shaluk, Indian water lily	Mainly rainy season
25. <i>Nymphaea stellata</i> Willd.	Nymphaeaceae	Nil padma, sapla	Apr—Nov
26. <i>Nymphoides indicum</i> (L.) Kuntze.	Menyanthaceae	Bara pan chuli	Apr—Oct
27. <i>Oenanthe javanica</i> (Blume) DC.	Apiaceae,	Panturasi, Panjowan	Jan—Mar
28. <i>Oldenlandia paniculata</i> L.	Rubiaceae	Khetpapa	Major part of the year
29. <i>Polygonum barbatum</i> (L.) Hara.	Polygonaceae	Bekh-unjubas, panimirsch	Aug—Mar
30. <i>Phragmites karka</i> (Retz) Trin. ex. steud.	Poaceae	Nal, dharma	Dec—Feb
31. <i>Pistia stratiotes</i> L.	Araceae	Tokapana	May—Oct
32. <i>Ranunculus sceleratus</i> L.	Ranunculaceae	Polica	Dec—Feb
33. <i>Trapa natans</i> L. var. <i>Bispinosa</i> (Roxb.) Makino.	Trapaceae	Paniphall, singhara phal	Sep—Dec
34. <i>Typha elephantine</i> Roxb.	Typhaceae	Pati hogla	Jan—May
35. <i>Typha domingensis</i> Roxb.	Typhaceae	Hogla	Mar—May
36. <i>Vallisneria spiralis</i> L. var. <i>denseserrulata</i> Mikino	Hydrocharitaceae	Pata shyaoala	Oct—Mar
37. <i>Vetiveria zizanioides</i> (L.) Nash.	Poaceae	Kshir, paenamul	Jul—Nov

cers, sores, useful in skin infection.

16. *Hygrophila schulli* (Buch.-Ham) M. R. & S. M. Almeida.

Green foliage is used in swelling, anaemia, sleeplessness, kidney stone, bleeding and impotency, dropsy. Stem decoction with black pepper in

constitutional disorder. Seeds are used in gonorrhoea, spermatorrhoea, tubercular fistula with honey, jaundice, rheumatism.

17. *Ipomoea aquatica* Forsk.

Whole plant is used in ringworm, leucoderma, jaundice, leprosy, fever, bronchitis, liver disorder,

weakness after delivery, hepatic wounds, flower juice in eye disease. Plant juice emetic, purgative; given in piles, nervous disorder, general debility.

18. *Lemna purpusilla* Torrey.

Fronds reported to possess cooling, astringent and diuretic properties; useful in skin diseases and as ophthalmic wash.

19. *Limnophila heterophylla* (Roxb.) Benth.

Essential oil is used as antiseptic. Leaf infusion in stomach disorder.

20. *Ludwigia adscendens* (L.) Hara.

Roots are used in fever, leaves in colic pain and dyspepsia, pinworm infection, difficulty in urination. Herbs are used as paste in poultice for ulcers and other skin diseases.

21. *Melochia corchorifolia* L.

Decoction is used in dysentery. Root bark used to treat sore of lips.

22. *Monochoria hastate* (L.) Solms.

Plants tonic and cooling. Leaves juice is applied to boils and roots in tooth-ache.

23. *Nelumbo nucifera* Gaertn.

Rhizome is used in menstrual disorder, white var, in white discharge, red var, in blood dysentery, with black pepper in piles, abnormal bile secretion, Leaves in bone fracture. Flower buds are used in diarrhoea. Roots used in piles, dysentery, dyspepsia, ringworm and cutaneous affection.

24. *Nymphaea nouchali* Burm. F.

Rhizome is used as cooling agent, tonic and demulcent; in diarrhoea, dyspepsia, dysopia, and general debility, dysentery, piles, scanty menstruation, goiter, burning. Leaves and flowers are used as astringent, cardio tonic and in scabies. Root juice is taken with sugar and milk to increase semen, decoction with ghee and sugar given to increase flow of breast milk. Seeds are used in cutaneous diseases.

25. *Nymphaea stellata* Willd.

Root stocks are powdered and given in dyspepsia, diarrhoea and piles. Flowers are useful in palpitation of heart. An infusion of the roots and stems are considered emollient and diuretic; used for urinary tract diseases.

26. *Nymphoides indicum* (L.) Kuntze.

Plants are used in antiscorbutic and febrifugal. Plant is used as a substitute for chireta in fever and jaundice.

27. *Oenanthe javanica* (Blume) DC.

Seeds are used in dyspepsia, tapeworm infection and also in pinworm attack.

28. *Oldenlandia paniculata* L.

Whole plant is used in fever, jaundice, liver disorder, and worm infection, biliary fever and also in vomiting.

29. *Polygonum barbatum* (L.) Hara.

Plants are used as stimulant, diuretic, styptic, emenagogue; Leaves cause dermatitis, leaf paste in water as poultice; plant extract taken as oral contraceptive; herb infusion hemostatic, in uterine disorders, as sedative; root used as an astringent, carminative, anthelmintic, and as a colling agent. Leaf juice as wash for ulcers and skin diseases; leaves chewed in toothache. The seeds used to relieve gripping pains of colic.

30. *Phragmites karka* (Retz) Trin. ex. steud.

Roots and rhizomes are eaten and also used as diuretic, antiemetic, diaphoretic and in diabetes. Seeds used for preparation of alcohol. Root is used in bone fractures, weak urination, excessive heat, ill perspiration.

31. *Pistia stratiotes* L.

Leaf-juice is useful in skin diseases. Leaves are used in piles, asthma, infection of small and large worms, ulcer, dysentery, cold and cough. It possesses adequate antiseptic, antitubercular and insecticidal properties.

32. *Ranunculus sceleratus* L.

Juice is used in sciatica, rheumatism, dysuria, asthma, pneumonia, and its homeopathic use for skin diseases. Seed powder used as tonic, in ulcer and for kidney troubles.

33. *Trapa natans* L. var *Bispinosa* (Roxb.) Makino.

Fruits are used in bile troubles, dyspepsia, in insect stinging. It is nutritive cooling and stomachic.

34. *Typha elephantine* Roxb.

Root-stock is astringent, diuretic and sedative, used in measles, dysentery and gonorrhoea. Shoot decoction is applied in leprosy and enlarged spleen.

35. *Typha domingensis* Roxb.

Root-stock is used as astringent and for diuretic purposes.

36. *Vallisneria spiralis* L. var *denseserrulata* Mikino

Plants are used as stomachic, refrigerant and demulcent; used in leucorrhoea, hemotherima, giddi-

ness, morbid thrust and rheumatism.

37. *Vetiveria zizanioides* (L.) Nash.

Roots are used in difficult and less urination, fever, gout, cough and cold, influenza, paucity of menstruation, trembling of leg.

The plants collected and studied seem to be important from medicinal point of view. These plants should be preserved *in situ* by the local people. But the people in general are not so expert to preserve the plants. They should be informed of the importance of the plants by holding awareness programs.

Present study revealed the occurrence of 37 species (Table 1) belonging to 34 genera under 26 families. Three genera (*Cyperus*, *Nymphaea* and *Typha*) are represented by two species. Rest of the genera are represented each by one species only.

Altogether 37 species are in common ethno-medicinal use in different parts of the district. Medicinal uses of some of these plants have also been published earlier (12—16).

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