

**ETHNOMEDICINAL USES OF SOME AQUATIC PLANTS IN BARGARH DISTRICT OF WESTERN ODISHA (INDIA)**S. K. Sen\*<sup>1</sup> and L. M. Behera<sup>2</sup><sup>1</sup>Department of Botany, Panchayat College Bargarh: 768028 (Odisha).<sup>2</sup>Ex-Reader in Botany, Modipara (Near Water Tank), Sambalpur: 768004 (Odisha).**\*Corresponding Author: S. K. Sen**

Department of Botany, Panchayat College Bargarh: 768028 (Odisha).

Article Received on 17/02/2018

Article Revised on 10/03/2018

Article Accepted on 31/03/2018

**ABSTRACT**

The study reveals the diversity of aquatic medicinal plants used by various tribes of Bargarh district. The potential of ethnomedicinal research and need for documentation of traditional knowledge pertaining to the utilization of medicinal plants for the greater benefit of mankind is carried out. The traditional healers, tribal priests (*Deheri, Deshari, Jhankar*), experienced men and women using common medicinal plants in their day-to-day life were contacted and interviewed to record their knowledge on ethnomedicine. Thirty-two plant species growing in different aquatic conditions were collected and identified with standard flora. A list of plant species along with their botanical names, family, local names, parts used and the mode of administration has been discussed. The plant specimens were deposited in the herbarium of Botany Department of Panchayat College, Bargarh.

**KEYWORDS:** Traditional use, Ethnomedicine, Aquatic plants, Tribals, Bargarh district.**INTRODUCTION**

Odisha is one of the eastern states, where a lot of tribes reside. It is a homeland of 62 tribes with a population of 9,590,756 (Census, 2011). A major part of the population of Odisha lives in the rural areas and a considerable proportion of them are tribals residing in the deep forests. A lot of ethnobotanical information remains unnoticed and undocumented due to lack of communication. The tribals and other rural people primarily depend upon agriculture. These tribes have rich knowledge about the indigenous practices on medicinal plants.

Out of 30 districts, Western part of Odisha consists of 10 districts (Bargarh, Bolangir, Baudh, Deogarh, Jharsuguda, Kalahandi, Nuapada, Sambalpur, Subarnapur, Sundargarh). Bargarh is one among them. It lies between longitude 82° 39' and 83° 58' East and between latitude 20° 43' and 21° 41' North extending over an area of 5837 sq Km. The area is sub-tropical, dry and hot in summer and dry and cold in winter.

Bargarh district having 391.40 sq. km of land areas are considered as the wetland (except the rivers and the irrigation canals) of which 241.84 sq. km area covered by the water bodies having less than 10 ha. extension and 63.46 sq. km area occupied by water bodies having more than 10 ha. extensions. Marshes and mudflats cover an area of 86.10 ha. and 260.47 ha. respectively (Sen, 2010). A plant that grows partly or wholly in water

whether rooted in the mud. It is very difficult to draw a line between the hydrophytic and terrestrial plant communities because aquatic habitat cannot be sharply distinguished from the terrestrial ones. These wetlands are rich in medicinal plants resources, which are used by the local inhabitants for their primary healthcare and the diseases that they suffer from. But due to industrialization, over-exploitation and due to removal of plants species for fishing most of the aquatic plants are vanishing rapidly from the water bodies. Although few attempts have been in the past to collect information on ethnomedicinal plants in the state (Panigrahi 1963, 1964, Brahman & Saxena 1990, Satpathy & Panda 1992, Mishra *et al.* 1994, Choudhury *et al.* 1975, Saxena & Dutta 1975, Paul & Mudgal 1985, Das & Misra 1987, Aminuddin & Girach 1991, Girach 1992); an attempt has been made to collect information on ethnomedicinal uses of aquatic plants available in Bargarh district.

**MATERIALS AND METHODS**

Survey was conducted in various river systems, reservoir, streams, ponds, ditches and crop fields. The present work includes survey and documentation of aquatic ethnomedicinal plants of Bargarh district. The methodology used for procuring information through interviews of forest dwellers with knowledge of plants for medicinal purposes. Questionnaire were prepared to interviewed people regarding the use of aquatic ethnomedicinal plants and the information collected was verified during different occasions with same informant

and in different localities with other informers on different occasions. Aquatic medicinal plants were collected, identified taxonomically with some standard flora like Haines (1921-25), Saxena and Brahmam (1994-96) and herbarium specimen were deposited in the herbarium of Botany department of Panchayat College, Bargarh.

### Enumeration

Plant species belonging to various families which are used in traditional medicine are enumerated with their botanical name and family in parenthesis, followed by local name in inverted comma, locality with voucher number and the mode of use and doses of different parts in various treatments is also mentioned.

1. *Aeschynomene indica* L. (Fabaceae) 'Sole', Ambabhona- 287

Equal amount of stem bark of the plant and root of *Andrographis paniculata* are crushed and the paste is taken with honey to cure dysurea.

2. *Alternanthera sessilis* (L.) R.Br. ex DC., (Amaranthaceae) 'Chantisag', Nrusinghnath- 424

Equal amount of root, stem and leaves are crushed and boiled together. The decoction (10ml) is taken twice daily to cure blood dysentery.

3. *Ammania baccifera* L. (Lythraceae) 'Dadmari, Samardhara- 205

Leaf paste/ whole plant paste is applied externally to cure ringworm.

4. *Bacopa monnieri* (L.) Penn. (Scrophulariaceae) 'Jal-brahmi', Ambabhona- 284

Leaf extract (3 teaspoon) with honey (2-3 teaspoon) is taken once daily for at least one month to cure hysteria.

5. *Centella asiatica* (L.) Urb. (Apiaceae) 'Thakudi', Barhaguda- 682

Leaf extract mixed with cow's milk and taken 2 times daily in empty stomach to cure, cough, bronchitis and asthma.

6. *Commenlina benghalensis* L. (Commelinaceae) 'Kenasag', Kharmunda - 156

Leaf paste is applied externally to cure wound, acne and pimples.

7. *Drosera burmannii* Vahl (Droseraceae) 'Kandri', Manbhang- 455

Whole plant extract (5ml) is taken with cow's urine 1-2 times daily to cure cough and asthma.

8. *Eclipta prostrata* (L.) L. (Asteraceae) 'Bhrungaraj', Samardhara- 639

Whole plant extract is dropped into the nostrils to get relief from cold and headache. Leaf extract (10-15 ml) with honey is taken 2-3 times daily to get relief from gastritis.

9. *Eichhornia crassipes* (Mart.) Solms (Pontederiaceae) 'Bilatidal', Ganjaguda- 303

Leaf decoction is taken 2 times daily to cure dysentery and diarrhoea.

10. *Enydra fluctuans* Lour. (Asteraceae) 'Hidmircha', Kamgaon- 208

Leaf extract with cow urine is given twice daily till its cures anaemia.

11. *Eriocaulon quinquangulare* L. (Eriocaulaceae), 'Phurki', Barhaguda- 270

Whole plant is crushed with cow's urine and the paste is taken 2 times daily to cure fever.

12. *Fimbristylis miliacea* (L.) Vahl. (Cyperaceae) 'Suanli', Ainlapali- 300

Leaf decoction is taken twice daily to cure fever.

13. *Hydrilla verticillata* (L.f.) Royle (Hydrocharitaceae) 'Jagal', Barhaguda- 683

Wound: Fresh whole plant paste is applied over wound.

14. *Hygrophila auriculata* (Schum.) Heine (Acanthaceae) 'Kuilekha', Ramkhol- 534

Leaves are crushed with cow urine and is taken with honey once daily for 15- 30 days to cure anaemia, jaundice and oedema.

15. *Ipomoea aquatica* L. (Convolvulaceae) 'Kalmo', Ramkhol- 251

It is used as vegetable and also useful in curing constipation. Leaf extract is useful in reducing fever. Leaves are crushed and taken once daily in empty stomach to lowering blood sugar level.

16. *Limnophila heterophylla* (Roxb.) Benth. (Scrophulariaceae) 'Ambakasia', Nrusinghnath- 344

Whole plant decoction (2 teaspoon) is taken 2 times daily to get relief from itching.

17. *Ludwigia octovalvis* (Jacq.) Ravea (Onagraceae) 'Payen-mircha', Ainlapali- 296

Whole plant paste is applied externally to cure cut wound.

18. *Ludwigia perennis* L. (Onagraceae) 'Jal-labang', Ainlapali- 298

Whole plant ash mixed with coconut is oil applied externally to cure eczema. Fresh or dry root and flower are crushed together applied to cure wound.

19. *Marselia quadrifolia* L. (Marsileaceae) 'Sunsunia', Ruhinia-104

Whole plant extract (10-15 ml) and cow ghee are mixed together and is taken once in empty stomach to enhance memory power. Leaves (10 g) are fried with cow ghee and taken once daily to get relief from indigestion. Leaf (15gm) and Potash (5gm) are boiled together in water

(500ml). After cooling the decoction (one cup) is taken twice daily to cure dysurea.

20. *Nelumbo nucifera* Gaertn. (Nymphaeaceae) 'Padam', Kharmuda-223

Stamens of the plant and root of *Vetiveria zizanoides* are crushed together in water and filtered. The filtrate (2-3 drops) is dropped into the eyes to cure conjunctivitis and watering from eyes. Crushed flowers are soaked in a glass of water for 2-3 days and filtered. The filtrate (10ml) is taken twice daily to cure vomiting. Tender leaves crushed with sugar / sugar candy and is taken twice daily to check bleeding piles.

21. *Nymphaea pubescens* Willd. (Nymphaeaceae) 'Lalkain', Ainlapali- 295

Root (10 g) of the plant and root of *Saraca asoca* (10 g) are crushed together and taken with milk twice daily to cure dysmenorrhoea. Root decoction (15 ml) is taken once daily for 15- 21 days to cure haemorrhage.

22. *Nymphoides indica* (L.) Kuntze (Menyanthaceae) 'Pani seuli', Kharmunda- 309

Leaf paste (10-15ml) with honey is taken twice daily to cure diabetes. Leaf paste with a pinch of salt is applied externally 2-3 times a day to cure ringworm.

23. *Paspalum scrobiculatum* L. (Poaceae) 'Kudo', Ramkhol-257

Stem extract is dropped into the eyes to cure inflammation of eyes.

24. *Phyla nodiflora* (L.) Greena (Verbenaceae) 'Ghesingi', Banjipali- 243

Leaf paste is applied over injured horns of animals.

25. *Pistia stratiotes* L. (Araceae) 'Burojhanji', Kharmunda- 218

Warm leaf extract (2-3 drops) is poured into the ear to cure earache.

26. *Polygonum glabrum* Willd. (Polygonaceae) 'Sauripata', Ainlapali- 294

Leaf paste is applied externally to cure wounds. Root paste is applied over the affected part and bandaged to cure bone fracture.

27. *Polygonum plebium* R. Br. (Polygonaceae) 'Muthisag', Kharmunda- 777

Whole plant is cooked and consumed to regulate bowel complaints.

28. *Saccharum spontaneum* L. (Poaceae) 'Kainsh', Barhaguda- 271

Flower decoction is taken 2 times daily to cure fever. Flower paste along with black pepper and honey is taken 2 times daily to cure haemorrhage.

29. *Sagittaria trifolia* L. (Alismataceae) 'Kukurjivi', Khandijharan-313

Leaves are crushed with camphor and applied over affected part to cure itching and scabies.

30. *Trapa natans* L. (Lythraceae) 'Pani-Singhada', Ambabhona-285

Warm fruit paste is applied over the affected part to cure sciatica and back pain.

31. *Typha elephantina* Roxb. (Typhaceae) 'Santara', Ambabhona-286

Root powder with coconut oil is applied externally over the affected part to cure itching and scabies.

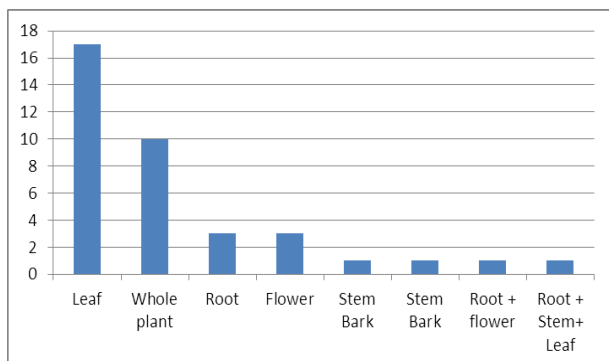
32. *Utricularia graminifolia* Vahl. (Lentibulariaceae) 'Bhaturia dala', Ramkhol- 525

Whole plant paste with a pinch of salt is applied externally to get relief from itching.

## RESULTS AND DISCUSSION

An attempt has been made in this paper to document the plant parts used along with the mode of administration for all species. It has been observed during the investigation that aquatic plants reported in this paper are mostly used by the tribals and other rural communities against some common diseases that people suffer from and not for such critical disease.

The present paper deals with 32 plant species belonging 25 families and 30 genera used by the tribals by of Bargarh district. The plant parts are used in the form of paste, decoction, extract and powder. Both internal and external applications are involved in the treatment process. There are 57 prescriptions have been administered from 32 plant species to cure 40 diseases and ailments. Out of 57 prescriptions, 32 prescriptions are used orally, 19 used externally and 6 are used internally. The plant parts used are root, stem, leaf, flower and whole plant for the purpose. The most frequently used plant parts in the preparation of herbal remedies were leaves (17), followed by whole plant (10), flower and root (3 each), stem and stem bark (1 each), mixture of root and flower and mixture of root, stem and leaf (1 each) have also been used. Leaves are used most of the cases to cure or control the disease. These data are also cross-checked with some scientific literatures (Kirtikar & Basu 1991, Jain 1991, Ambasta *et al.* 1992, Chopra *et al.* 1992, Warriar *et al.* 1997, Pal & Jain 1998, Paria 2005, Joshi 2006, Patil 2008, Panda & Mishra 2011 Mishra *et al.*, 2012 & Sahoo, 2014.



**Fig. List of plant parts used to cure various diseases.**

## CONCLUSION

Traditional and indigenous systems of medicine persist all over the world. The unique traditional system of healthcare that is passed down from generation to generation within a society is still the prevalent system found within the remote rural areas of the country. The aquatic plant species used as herbal remedies are effective against cold, cough, bronchitis, asthma, fever, constipation, indigestion, bowel complain, gastritis, dysentery, diarrhoea, blood dysentery, wound, back pain, sciatica, headache, earache, dysurea, anaemia, diabetes, bleeding, jaundice, oedema, vomiting, conjunctivitis, eye inflammation, watering from eyes, bleeding piles, bone fracture, haemorrhage, menorrhagia, dysmenorrhoea, hysteria, memory enhancement and skin diseases like acne, ringworm, scabies, pimples, itch and eczema and horn injury in animals.

The study offers a great deal of scope for ethnomedicinal study not only because of the richness of aquatic flora but also because of good population of tribals in the study area. The study represents a contribution to the existing knowledge of folk remedies that are in current practice for the treatment of some common diseases. This is hope that, this information will be a useful lead for further phytochemical and pharmacological study. Once the efficacy of the herbal medicine is established, the popularization of these remedies can be recommended in Indian healthcare system for safe use by the people.

## ACKNOWLEDGEMENTS

The authors are thankful to Prof. N. B. Pradhan, Retd. Reader in Botany and Mr. Pareswar Sahu for their sincere help during the survey, collection, identification of plant species and preparation of herbarium. The authors are also thankful to the informants who shared their valuable information.

## REFERENCES

1. Ambasta SP, Ram Chandran K, Kashyappa K, Chand R The Useful Plants of India. Publication and Information Directorate, CSIR, New Delhi, 1992.

2. Aminuddin, Girach RD. Ethnobotanical studies on Bondo tribes of District Koraput (Orissa), India. *Ethnobotany*, 1991; 3: 15-19.
3. Brahmam M, Saxena HO. Ethnobotany of Gandhamardan Hills – Some noteworthy folk-medicinal uses. *Ethnobotany*, 1990; 2: 71-79.
4. Chopra RN, Nayar SL, Chopra IR. *Glossary of Indian Medicinal Plant (Reprint edn.)*. National Institute of Science Communication, CSIR, New Delhi, 1992.
5. Choudhury HN Rai, Pal DC, Tarafdar CR. Less known uses of some plants from the tribal areas of Orissa. *Bulletin Botanical Survey of India*, 1975; 17: 132-136.
6. Das PK, Misra MK. Some medicinal plants used by the tribals of Deomali and adjacent areas of Koraput district. Orissa. *Indian Journal of Forestry*, 1987; 104: 301-303.
7. Girach R.D. Medicinal plants used by Kondh tribe of district Phulbani (Orissa) in eastern India. *Ethnobotany*, 1992; 4: 53-66.
8. Haines HH. *The Botany of Bihar and Orissa*. Arnold & Son & West Nirman Ltd., London, 1921-25.
9. Jain SK. *Dictionary of Indian Folk Medicine and Ethnobotany*. Deep publications, New Delhi, 1991.
10. Joshi SG. *Medicinal Plants*. Oxford and IBH Co. Pvt. Ltd., New Delhi, 2006.
11. Kirtikar KR, Basu BD. (1991) *Indian Medicinal Plants (Repn. Edition)*. Jayyed Press, Delhi-6, 1991.
12. Mishra Malaya K, Panda Anima, Sahu Deenabandhu. Survey of useful wetland plants of South Odisha, India. *Indian J of Traditional Knowledge*, 2012; 11(4): 658-666.
13. Mishra RC, Panda PC, Das P. Lesser known medicinal uses of plants among the tribals of Gandhamardan hill range, Orissa. *Higher plants of Indian subcontinent. Additional Series of Indian Journal of Forestry (No.VI)*, 1994; 3: 135-142.
14. Pal DC, Jain SK. *Tribal Medicine*. NayaProkash, Calcutta, 1998.
15. Panda Anima, Mishra Malaya K. Ethnomedicinal survey of some wetland plants of South Orissa and their conservation. *Indian J of Traditional Knowledge*, 2011; 10(2): 296-303.
16. Panigrahi, G. Gandhamardan Parbat, Orissa – A potential source of important indigenous drugs. *Bull. Reg. Res. Lab., Jammu*, 1963; 1: 111-116.
17. Panigrahi G, Choudhury S, Raju DCS, Deka GK. A contribution to the botany of Orissa. *Bulletin Botanical Survey of India*, 1964; 6: 237-266.
18. Paria ND. *Medicinal Plants Resources of South West Bengal*. Directorate of Forests, Government of West Bengal, Kolkata, 2005.
19. Patil DA. *Herbal Cures: Traditional Approach*. Aavishkar Publishers, Distributors, Jaipur, India, 2008.
20. Paul TK, Mudgal V. Unreported medicinal uses of some plants recorded from the tribals of Koraput (Orissa). *Bulletin Botanical Survey of India*, 1985; 26: 69-71.

21. Sahoo, AK. Glossary of useful plants of Odisha. Odisha; the Odisha State Bureau of Textbook Preparation and Production, Putak Bhavan, Bhubaneswar, 2014.
22. Satpathy KB, Panda PC. Medicinal uses of some plants among the tribals of Sundargarh District, Orissa. *Journal of Economic and Taxnomic Botany (Additional. Series)*, 1992; 10: 241-249.
23. Saxena HO, Brahmam M. *The Flora of Orissa*. Regional Research Laboratory, Orissa and Orissa Forest Development Corporation Ltd., Orissa, 1994-46.
24. Saxen HO, Dutta PK. Studies on the ethnobotany of Orissa. *Bull. Bot. Surv. India*, 1975; 17: 124-131.
25. Sen Sunil Kumar. Some common, ethnomedicinal plants of Bargarh district in Orissa. Ph. D Thesis. Sambalpur University. Sambalpur, Orissa, India, 2010.
26. Warriar PK, Nambiar VPK, Ramankutty C. *Indian Medicinal Plants*. Orient Longman Ltd., Chennai, 1997.