Aquatic Plants of Rajasthan, India with Medicinal Value

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Article history:
Received: 01 April, 2013
Accepted: 16 April, 2013
Available online: 01 June, 2013

Keywords:
Aquatic angiosperms, Biodiversity, Medicinal value and Wetlands of India

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Abstract
Although considerable work has been reported on the land plants but wetlands provide a unique habitat for several medicinal plants. The present review aims at compilation of data on aquatic plants of medicinal importance. A 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.

Citation:

1. Introduction

1.1 It has been realized that all systems of traditional Indian Medicine had their roots in one way or another in folk remedies and household remedies. Useful compilations of medicinal plants of India were published by Kumar (2000). Kumar and Sopory, 2008 reviewed the studies on traditional Indian Ayurvedic Medicines and some potential plants for bioenergy, medicine from India. Sharma, Agrawal and Kumar (2003) characterized medicinal plants for skin and hair care. Besides this plant based veterinary medicine from traditional knowledge of India has been recorded in Bulletin of Botanical Survey of India (Sharma, Dadhich and Kumar, 2005). Ethnobotanical survey of medicinal plants from Baran District (Meena and Kumar, 2012).

1.2 Traditional Medicinal plants of Rajasthan
Quite a number of workers have published their work on the ethnomedicine of the tribals of Rajasthan. Sharma and Kumar, (2005, 2006, 2007) studied traditional medicinal practices of Rajasthan. The published work can be classified under the following categories:

1.1.1 Ethnomedicine specific to ethnic groups: Bhils (Sharma and Kumar, 2011; Sharma and Kumar, 2012).

1.1.2 Ethnomedicine specific to ailments
Depression and other nervous disorders (Verma, Kumar and Tewari 2003a); anti-diarrhoea and dysentery agents (Chaudhary and Kumar 2002); anti-cardiac disease agents (Sharma and Kumar, 2002), various types of cancer from (Sharma and Kumar 2002a): cosmetics (Sharma and Kumar 2002b).

1.3 Ethnomedicine specific to different plants. Trigonella foenum-graceum Linn. (Gupta and Kumar 2002): Palas (Verma et al., 2003b). Chitrak (Sharma and Kumar, 2003).

(e) Ethnomedicine specific to regions: The entire tribal region (Sharma and Kumar 2011); Churu District in the Thar Desert (Parveen, et al., 2007); Baran District of...
Although Rajasthan is considered desert state but it has rich aquatic flora and biodiversity. Out of an estimated 1500 species of plants in the state nearly one fifth are aquatics (Pareek, 1996, Razvy, 2011). Reports published exclusively on the aquatic plants of the State are not many (Pareek and Sharma, 1988). Some of the reports include Ajit Sagarbandh (Nair and Kanodia, 1959); Bharatpur (Sarup, 1961), Ghana Bird Sanctuary (Saxena, 1975); Alwar (Vyas 1962); Kota (Gupta, 1966); Bundi district (Maheshwari and Singh, 1974) and Jaipur district (Sharma and Kumar, 2011, 2012). Pareek (1994a, 1994b) carried out detailed investigations on several aquatic species from Rajasthan and also studied their medicinal properties. Shreevastava and Kumar (2007) characterized wetlands of Rajasthan as potential source for cultivation of medicinal plants. Though the aquatic situations of India are rich repositories of various plant species, not much work has been undertaken to enumerate the medicinal uses of them. Present investigations were undertaken to characterize ethnomedicinal plants of Rajasthan with special reference to aquatic plants. The objective of the present investigation was to review the work done on aquatic plants.

2. Materials and Methods

2.1 A review of the work done is presented here.

The samples of selected plants were collected from different parts of Rajasthan from water bodies and marshy areas. 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 were collected, photographed and identified. Their nature of growth, habit, habitat and medicinal property were noted from local rural and tribal people of different area. To acquire detailed 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 Herbarium, University of Rajasthan, Jaipur, India.

3. Results

Some of the important plants of Rajasthan having medicinal value are listed below.

3.1 Nelumbo nucifera Gaertner (Nelumbonaceae)

Lotus is widely distributed in India; cultivated as a crop, found growing in ponds, and tanks. The fruiting tori is sold for the edible carpelsembbedded on it and is considered superior to cereals in nutritive value. A handsome aquatic herb with stout, creeping rhizome, leaves peltate, glaucous, petioles long, smooth or with small prickles, petals large, white or rosy. 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. 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. Flower petal decoction is given against diarrhea. Paste of young leaf, along with fruits of Emblica myrobalan is applied on forehead to get relief from headache.

Young seed paste is used externally as a cooling medicine for skin diseases. Powdered root is taken for expelling ring worms. 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. 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.

3.1.1 Nymphaea nouchali N.L. Burman (Nymphaeaceae)

Indian Water lily is 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. Seeds are used as a cooling medicine in cutaneous diseases (Wealth of India, Vol. VII). 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 cardiotonic. 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.

### 3.1.2 *Trapa natans* Linn. (Trapaceae)

It is known as Singhara in India (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 and elsewhere where it is a staple food.

### 3.1.3 *Rumex crispus* L., - curly dock

This is adventive perennial plant is 1-3' tall and little branched, except where the flowers occur. The seeds are nutlets dark brown and 3-angled, tapering at their tips. The seeds can persist in the ground for several decades (at least 50 years) and remain viable. The root structure is a large, yellow, forking taproot. Plants can contain quite high levels of oxalic acid, and leaves in many members of this genus have an acid-lemon flavour. All parts of the plant can be used, though the root is most active medicinally. The root is alterative, antiscorbutic, astringent, cholagogue, depurative, laxative and mildly tonic. Leaves are eaten raw or cooked. The leaves can be added to salads, cooked as a potherb or added to soups. However, when eaten in large amounts oxalic acid can lock-up other nutrients in the food, especially calcium, thus causing mineral deficiencies. The oxalic acid content is reduced if the plant is cooked. People with a tendency to rheumatism, arthritis, gout, kidney stones or hyperacidity should take especial caution if including this plant in their diet since it can aggravate their condition. The roasted seed has been used as a coffee substitute.

### 4. Discussion

Although several studies have been conducted on medicinal plants of Rajasthan but studies on aquatic medicinal plants are lacking (Pareek, 1989). Aquatic ecosystems are important one which provides livelihoods for the millions of people who live around them. Aquatic species are not so widely spread as the terrestrial species and work on aquatic medicinal plants is lacking. Often the information on the composition of a specific medicinal 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 diseases. 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.

Men depends ponds for most of their 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. Besides these water bodies provide medicinal plants of immense value.

### 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, India. Present study reveals that the plants in ponds which are 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.

References


Kumar A., 2000. Traditional Indian Ayurvedic Medicines: Some potential plants for bioenergy, medicine from India. Institute of Natural Medicine, Toyama Medical and Pharmaceutical University, Japan. 27, 3-15.


