



E-ISSN: 2278-4136

P-ISSN: 2349-8234

JPP 2019; 8(6): 2181-2184

Received: 19-09-2019

Accepted: 21-10-2019

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Ethno-medicinal utilization of *Bergenia ciliata* L. in Kashmir, Himalaya, India

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Abstract

The present study reports the ethno-medicinal uses of *Bergenia ciliata* L., from two districts (Srinagar and Ganderbal) of Kashmir valley. The study was conducted using questionnaire apart from having discussions with various herbal healers locally known as *hakeems* and *bhoris*. A total of 104 ailments were found to be treated by *Bergenia ciliata*. The main ailment treated include gastrointestinal, skin diseases, Renal/urinary disorders, muscular/skeletal disorders, respiratory diseases, eye diseases, oral infections, worm infections, and gynecological disorders. Whole plant was utilized as ingredient for ethno-medicine. However rhizome was most frequently used part utilized by dependent users followed by roots and leaves. The utilization of the plant parts were taken in the form of decoction, juice, paste, powder, tea and extract. Most commonly used preparation were powder followed by decoction, juice, paste, tea and extract.

Keywords: Traditional knowledge, therapeutic uses, disorder, ailment, juice, extract

Introduction

Bergenia ciliata, locally known as *Pather phand*, *Zakhm-e-hayat*, *Pahand*, *Pashanbhed* etc. belonging to Family Saxifragaceae is endemic to Northern and Eastern temperate Himalayan region. Seeds are greyish in colour, minute and numerous in one capsule and rhizome comes out from the crevices of rocks and hangs in the air in sloppy areas. Health care in ancient times included the use of leaves, flowers, stems, berries and roots of herbs for their therapeutic or medicinal value. These medicines initially took the form of crude drugs such as tinctures, teas, poultices, powders, and other herbal formulations (Balick and Cox, 1996; Samuelsson, 2004) [3, 15]. Knowledge of the specific plants to be used and the methods of application for particular ailments were passed down through oral history and information regarding medicinal plants was eventually recorded in herbals (Balunasa and Kinghorn, 2005) [4]. According to World Health Organization (2002) [20], nearly 70 per cent population of the world depends on traditional healthcare System for curing various diseases. In the Asia-Pacific region, 14 countries namely Bangladesh, India, Nepal and Sri Lanka in South Asia; Indonesia, Malaysia, the Philippines, Thailand and Vietnam in Southeast Asia; China, Mongolia and South Korea in East Asia; and Fiji and Papua New Guinea in the South Pacific are actively involved in research and development of medicinal plants (Batugal *et al.*, 2004) [5]. India is amongst the most important medicinal plant collection centers as it has about 27% of the total known medicinal plant species of the world (Kumar and Katakam, 2002) [9].

Traditional medical system is a prehistoric system of medicine recognized throughout the world as trustworthy healthcare resource. It has been practiced since chronological times and draws its roots to ancient civilization. Nowadays, folk medicine is recognized throughout the world as a credible healthcare resource and about 80 per cent of the world's population depends on traditional medicine for treatment of different ailments (Shinwari and Qaisar, 2011) [16]. The World Health Organization reveal the current estimative suggests, that many developed countries have a great proportion of the population making use of traditional practice of health, especially the use of medicinal plants (WHO, 1999) [19]. Although the access to the modern medicine is available in these countries, the use of medicinal herbs has kept popularity for historical and cultural reasons. In the developing countries, 65-80 per cent of the population depends exclusively on the medicinal plants for basic cares of health (Maria de Fatima *et al.*, 2008) [11]. Officially recognized that, the 2500 plant species have medicinal value while over 6000 plants are estimated to be explored in traditional, folk and herbal medicine (Huxley, 1984) [8].

Medicinal plants are the mainstay of indigenous system of medicine in Sri Lanka including Siddha, Ayurveda, Unani, Homeopathy and traditional medicine.

This herbal system of medicine thrives on naturally occurring floral diversity. Medicinal plants are involved with multi sectional systems including pharmaceutical, cosmetic, agriculture and food industry nowadays (Siva and Sujatha, 2012). The Jammu and Kashmir, a mountainous zone in the north-west Himalaya with most complex and diverse physico-geographically is bestowed with rich floral diversity. The diversity in its climate and altitude has resulted in an ideal environment for the development of rich variety of forests. Forests being the planet's most important terrestrial ecosystem, are linked with economic and physical welfare of mankind. Interestingly, the Kashmir Himalaya alone contributes nearly 2,000 (20%) of the plant species within just 2.15 per cent (15,948 km²) of the total land area (Dar *et al.*, 2002). Most of these plants have been used as food source but some are still under-utilized and their knowledge is confined to only tribal and ethnic communities living in close conformity to the nature (Akbar *et al.*, 2011)^[1]. The present study was therefore conducted with the purpose to know the traditional utilization of *Bergenia Ciliata* among inhabitants of Srinagar and Ganderbal districts.

Materials and Methods

The present study was carried out in the two central districts of Kashmir valley *viz.*, Srinagar and Ganderbal. Ethno-medicinal data was collected during the year 2017-2018 using purposive sampling to reach target population. The information was collected using a well-developed questionnaire and covered the information appropriate methodology was used to obtain the information about the parts used, formulation method, disease treated, treatment procedure for various diseases from *Bergenia ciliata*. The information was collected from the local herbal healers called "Hakeems and Bohris" by using interview schedule. The interviews were held in local dialect. Both male and females were involved in the discussions and elderly population was most preferred.

Results and Discussion

Diseases treated: A total of 104 ailments were found to be treated by *Bergenia ciliata*. The main ailment categories that are treated include gastrointestinal, skin diseases, Renal/urinary disorders, muscular/skeletal disorders, respiratory diseases, eye diseases, oral infections, worm infections, and gynecological disorders, ENT, fever, cancer and others. Among these categories gastrointestinal accounted

maximum percentage (23%), skin diseases (17%), urinary/renal (14%), muscular/skeletal (10%), respiratory diseases (8%), fever (7%), eye diseases, oral infections, worm infections, gynecological (3%), ENT and cancer (1%). High value of medicinal properties of *Bergenia ciliata* rhizome is evident from highest percentage of gastrointestinal disorders (Table 1).

Plant parts used: The traditional *Hakims* and *Bohris* utilize different parts of plant as a remedy for different ailments. Each and every part of *Bergenia ciliata* was used for treatment of different diseases *viz.*; rhizome, roots, stem, leaves, latex, flower and as whole plant. However rhizome was most frequently used part (43%) followed by roots (27%), leaves (19%), whole plant (5%), stem, latex and flower (2%). Modes of utilization or preparations were decoction, juice, paste, powder, tea and extract. Most commonly used preparation were powder followed by decoction, juice, paste, tea and extract. Powder was found to be most common mode of utilization; this is due to the hard nature of rhizome and roots.

Plant and plant products are used among different parts of north-east region and their livelihood is traditionally dependent on these resources and are used to treat various diseases Kutum *et al.* (2011; Baba *et al.* 2012)^[10, 2]. Bhat *et al.* (2012)^[6] reported that 32 species belonging to 31 genera and 23 families were recorded as being used by local inhabitants for curing various ailments of Shopian district. Mir *et al.* (2014)^[12, 13] reported that 30 plant species belonging to 25 different families have been recorded for treatment of different diseases in Pulwama district. Rajoriya *et al.* (2016)^[14] reported that a total of 30 plant species belonging to 19 different families were used traditionally by inhabitants of district Bandipora. Mir (2014)^[12, 13] reported that 36 plant species belonging to 25 families are used to cure various skin diseases like cuts, wounds, boils, blisters, itching, leucoderma, swelling, scabies, rashes, inflammation etc. Different parts of plants such as leaf, fruit and roots are taken different forms in district Kupwara. Rhizome is used orally, simply chewed if fresh, for curing diarrhea and during vomiting (Sinha *et al.*, 2001)^[17]. In addition they have been applied externally for healing wounds, eye-sores and boils. These plants are in demand in market for commercial purpose. Plants collected from wild and sold to the middlemen or contractors in terms of weight and not in terms of numbers.

Table 1: Ethno-medicinal utilization of *Bergenia ciliata*, parts used, diseases treated and treatment procedures

| Parts used | Formulation method | Disease treated | Treatment procedure |
|------------|--------------------|---|---|
| Rhizome | Powder/paste | Kidney stones, urinary disorders | ▪ Rhizome is dried and crushed into powder and tea is made and taken orally twice a day for 2 weeks to dissolve kidney stones and for treatment of urinary disorders. |
| | | Muscular diseases | ▪ Rhizome powder is mixed with edible oil to form paste which is used for massage to regain muscular strength. |
| | | Gastrointestinal diseases | ▪ The crushed rhizome powder is given with kneaded flour for general gastric complaints. |
| | | Ulcers | ▪ Powdered rhizome is used for cleaning teeth and is sprinkled over ulcers for quick healing. |
| | | Fractures | ▪ The rhizome powder is mixed with oil is rubbed on skin to heal fractures. |
| | | Intestinal, Gynecological, Respiratory diseases | ▪ Various ayurvedic classical drugs such as <i>Pashanbeda kwath</i> , <i>P. ghrit</i> , <i>P. churan</i> are prepared from powdered rhizome for treatment of intestinal, gynecological, respiratory diseases. |
| | | Wounds | ▪ Powdered rhizome is applied to wounds for rapid healing. |
| | | Round worms | ▪ Rhizome paste or juice orally taken by adults with molasses twice a day for 3-4 days for expulsion of round worms. |

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| | | Rheumatism | ▪ Rhizome is dried and cut into pieces and used to make tea. One cup tea is taken in morning for few weeks to cure rheumatism. |
| | | Stiff joints | ▪ Rhizome powder is useful to treat stiff joints. |
| | | Skin diseases | ▪ Rhizome powder is mixed with oil to form paste which is used to treat skin problems such as blisters and pimples. |
| | | Constipation | ▪ The rhizome powder is mixed in 1 glass of water and taken 2 times for 15-25 days. |
| | | Dislocated joints | ▪ The rhizome powder is mixed with groundnut oil and paste is prepared which is applied on dislocated joints at bed time for 5-8 days. |
| | | Arthritis | ▪ The rhizome extract is mixed with mustard oil and paste is applied for a month daily. |
| Root | Powder/decoction | Rheumatism | ▪ A decoction of roots is taken twice a day for a week for treatment of rheumatism |
| | | Gout | ▪ Root powder mixed with water with a pinch of salt taken orally early in the morning for 7-10 days for treatment of gout. |
| | | Arthritis | ▪ The roots are powdered mixed with mustard oil to make paste. Paste is applied on affected portion externally for 10 days for treatment of arthritis. |
| | | Spleen enlargement | ▪ Powdered roots in small doses is taken for treatment of spleen enlargement |
| | | Stomach ache, internal injury | ▪ For stomach ache and internal injury, powder of dried roots is taken with milk or water. |
| | | Teething | ▪ The root is rubbed down and given with honey to children when teething. |
| | | Diuretic | ▪ The root powder is considered mild diuretic, but in higher doses, it exhibits anti-diuretic action. |
| | | Cuts, boils, burns, wounds | ▪ Dried roots have been used externally for cuts, boils, wounds, burns. |
| | | Ophthalmia | ▪ Hot water extract of roots is used for treatment of ophthalmia |
| | | Skin diseases | ▪ The roots are dried and crushed and powder is mixed with mustard oil to make paste which is applied on affected portion for treatment of skin sores. |
| Leaves | Paste/juice/decoction | ENT | ▪ The leaves are ground in mortar and the juice is used for ear aches. |
| | | Rheumatin | ▪ The leaves are dried, crushed into powder and mixed with ghee to make paste which is applied on affected portion externally for treatment of rheumatin. |
| | | Pain | ▪ The leaves are boiled in water and resulting extract is used by ladies for taking bath after delivery. |
| | | Cough | ▪ The leaf extract is mixed with sugar is taken twice a day for 5-10 days for treatment of cough. |
| | | Sore throat | ▪ The extract of leaves is taken twice a day for 5-8 days for treatment of sore throat. |
| | | Diarrhea | ▪ The dried leaves are crushed and taken with milk/water for twice a day for 2-5 days for treatment of diarrhea |
| | | Indigestion | ▪ The leaves are made into fine powder and decoction prepared, decoction of one cup is taken thrice a day for 2-5 days for treatment of indigestion |
| | | Boils and burns | ▪ Poultice of leaves is applied on boils to help ripen and burst them |
| Whole plant | Paste/juice/decoction | Joint pains | ▪ Paste of roots and leaves boiled in mustard oil to treat cysts of feet and hands, also rubbed against joint pains |
| | | Fractures | ▪ Paste of the aeral parts and powdered rhizomes mixed together and is applied on fractured bones and tied with woolen cloth for whole night for 5-10 days. |
| | | Skin sores | ▪ The whole plant is dried and crushed and powder is mixed with mustard oil to make paste which is applied on affected portion externally for treatment of skin sores |
| Flowers | Powder/paste | Skin inflammation | ▪ Flowers after drying made into powder, mixed with mustard oil and applied on skin daily |
| | | Headache | ▪ The flowers are made into fine powder, about 3-4 g of this powder is mixed with mustard oil and applied on head 3-4 times a day. |
| Latex | Paste | Warts | ▪ Latex of the plant is rubbed on warts for a week daily at bed time |
| Stem | Paste | Joint pain | ▪ For joint pain fresh stem is grinded and is applied on the joints |

Conclusion

The present study reveals that whole plant of *Bergenia ciliata* has medicinal values and is used for treatment of different diseases under traditional and ayurvedic system. The study led to conclude that the high cost and side effects of allopathic medicine, the use of *Bergenia ciliata* against different ailments plays a significant role in meeting the primary health care needs of the rural as well as urban communities in the study area.

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