



ISSN: 2455-0485

A study on the use of medicinal plants for the treatment of diarrhoea and dysentery in Khag tehsil of Budgam District of Jammu and Kashmir, India

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Received: January 10, 2020
Revised: February 18, 2021
Accepted: February 23, 2021
Published: February 27, 2021

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ABSTRACT

People are using medicinal plants to alleviate diseases since the time immemorial. The present paper enumerates a total of 25 medicinal plants belonging to 19 families used for the treatment of diarrhoea and dysentery diseases in Khag tehsil of district Budgam, Jammu and Kashmir. Asteraceae was the dominant family. Leaves were found to be the dominant plant used for the preparation of herbal remedies. It was found that in this era of modern medicine, people are still relied on traditional medicine to get their primary health care. It was also revealed medicinal plants are under serious threat and needs to be conserved as so as to enjoy this legacy in the future too.

KEYWORDS: Medicinal plants, Diarrhoea, Dysentery, Khag, Budgam, Jammu and Kashmir

INTRODUCTION

Diarrhoea and dysentery have long been known as an important health problems in all age groups and are a major cause of sickness and death in rural communities of socio-economically backward and developing, third-world countries. It may be infectious or non-infectious (de Hostos *et al.*, 2011) with increase in frequency of passage of liquid faeces and alteration in stool character (amount and consistency). Infectious causative organism (virus, parasite or bacterium) spreads through contaminated food or drinking-water or from person to person as a result of poor hygiene (WHO, 2010) while different toxins, chronic diseases or antibiotics are contributed in non-infectious diarrhoea (NHDHHS, 2009). Clinically it involves both an increase in the motility of the gastrointestinal tract, along with increased secretion and reduced absorption of fluid and loss of electrolytes (particularly sodium) and water in the small and/or large intestine resulting in profuse watery stool output (Rang *et al.*, 2003; Baldi *et al.*, 2009). Globally, diarrhoea accounts for more than 5-8 million deaths annually, majority of whom are infants and children below 5 years old especially in developing countries (Gutierrez *et al.*, 2008; Saralaya *et al.*, 2010). 88% of diarrhoea related deaths are caused by inadequate sanitation along with poor hygiene and clinically due to dehydration, which results from

the loss of electrolytes in diarrhoeal stools (De Wet *et al.*, 2010). Economically, diarrhoea is one of the major health challenges to humans as it causes loss of productive life due to premature mortality, disability and increased health-care costs (Guerrant *et al.*, 2005). Usually, the treatment approach towards diarrhoea is non-specific, with the goal of reducing the distress and trouble of recurrent bowel movements (Suleiman *et al.*, 2008). Oral rehydration therapy (ORT) is first line of treatment, when acute diarrhoea not control with ORT intravenous maintenance of fluid and electrolyte balance, antisecretory agents (bismuth compounds and octreotide); probiotics; anti-infectives (ciprofloxacin or levofloxacin) spasmolytic (loperamide, atropine, hyoscine) or other antidiarrhoeal agents (α 2-adrenergic receptor antagonists e.g. clonidine; calmodulin inhibitors e.g. zaldaride maleate) are used (Mims & Curry, 2008). A global diarrhoeal disease control programme was constituted by the WHO (WHO, 1987). Along with modern drugs, the programme includes treatment based on indigenous practices as well as the evaluation of health education and prevention approaches. Keeping in view these conditions, present study was carried out in some tribal villages of Khag tehsil of district Budgam of Jammu and Kashmir to document the medicinal plants used for the treatment of diarrhoea and dysentery disorders.

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MATERIAL AND METHODS

Study Area

Khag area of district Budgam of Jammu and Kashmir, is located some 55 kms from district headquarters between 34°42' to 34°50' N latitude and 74°24' to 74°54' E longitude, at an altitude of 3000-5000 m above sea level (Figure 1). This area is located away from district headquarters in the lap of Himalayas. The temperature of the area ranges from -7° C minimum in winters as it receives a good snowfall which goes to a maximum of 27° C in summers. The area is inhabited by people mostly of tribal communities such as Gujjar and Bakerwal. Being a border area and located at high altitude people are mostly dependent on indigenous medicine for their primary health care system. The traditional attire of the people of this area, with complex designs and embroidery reflects the rich culture and climate of the area.

Ethnomedicinal data Collection and Identification

The present study deals with the collection of the medicinal plants for the treatment of diarrhoea and dysentery among the local communities of Khag tehsil in district Budgam of Jammu and Kashmir. For the collection of medicinal plants from the study area, field surveys were performed between April to October 2020. Data was collected by using semi structured interviews and group discussions. Besides local tribal communities of Gujjar and Bakerwal, herbal healers and local knowledgeable persons were consulted during the course of study. Data collected was recorded in field notebook. Information regarding the use of medicinal plants by local people for the treatment diarrhoea and dysentery was collected in local language so as to get appropriate

and reliable information. Collected plant species were dried, pressed and mounted on herbarium sheets of standard size following standard herbarium techniques (Miller & Nyberg, 1995). Identification of the plants was conducted by Flora of Kashmir (Singh *et al.*, 2002), Flora of British India (Hooker, 1879) and other concerned literature from Kashmir Himalaya (Singh & Kachroo, 1994; Navchoo & Kachroo, 1995). All the plants were given a specific collection number according to their collection from the field. Data obtained from the field is elaborated in the results section of this paper.

RESULTS AND DISCUSSION

The indigenous knowledge of plants used for the diarrhoea and dysentery collected from study area includes 25 medicinal plants belonging to 19 families (Table 1). Asteraceae was found to be the dominant family being used by the local people with a species contribution of 3, followed Lamiaceae, Amaranthaceae, Plantaginaceae and Polygonaceae (2-species each), Mimosaceae, Acoraceae, Berberidaceae, Poaceae, Cyperaceae, Umbelliferae, Oxalidaceae, Plantanaceae, Punicaceae, Valerianaceae, Scrophulariaceae, Rhamnaceae, Brassicaceae and Moraceae (1-species each) (Table 2). Leaves were the dominant plant part used for the preparation of medicinal remedies with a species contribution of 8, followed by Whole plant (6-species), Roots and Rhizome (3-species each), Fruits and Bark (2-species each) and Seeds (1-species) (Figure 2). All the plants with their botanical name, local name, family, part used, Habit, mode of application and collection number is described here under.

The use of plants for the existence of human being is as old practice as the human race itself. However, the accumulation of

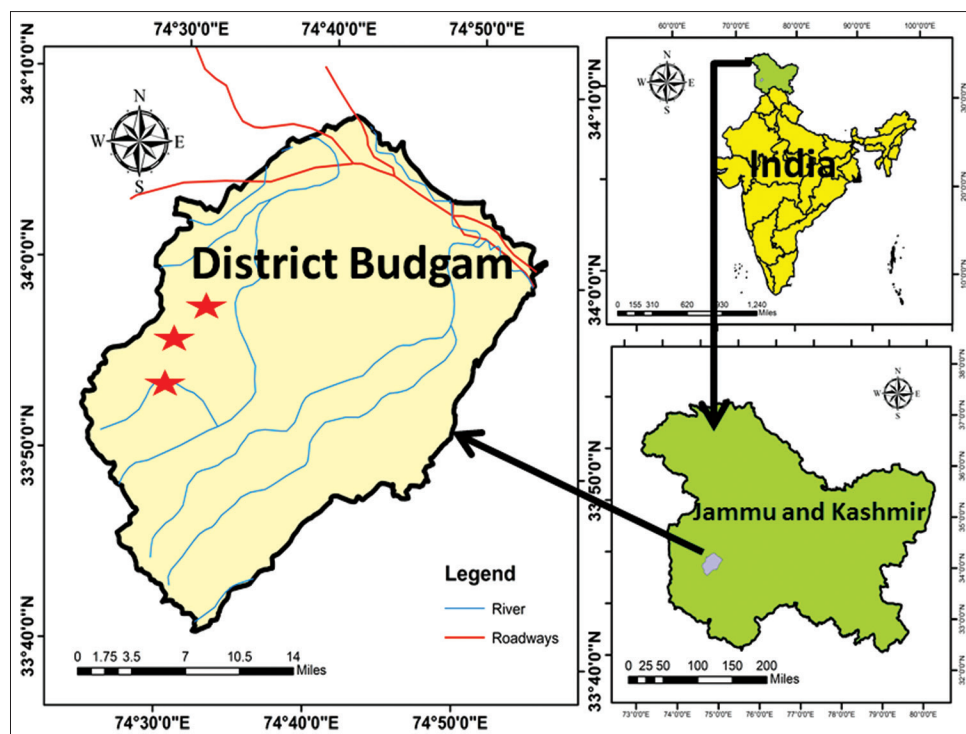


Figure 1: Map of the study area

Table 1: Enumeration of plants used for the treatment of diarrhoea and dysentery in Khag area of Budgam, Jammu and Kashmir

Sr.	Botanical Name/Collection number	Local Name	Family	Habit	Remedy	Part used	Mode of administration	Source
1	<i>Achillea millefolium</i> L. TM-003	Pahal gashh	Asteraceae	Herb	Decoction	Whole plant	Whole plant is boiled in water and the decoction is used for dysentery.	Wild
2	<i>Robinia pseudoacacia</i> L. TM-007	Kikar	Mimosaceae	Tree	Decoction	Leaves	Decoction of leaves is used for the treatment of diarrhoea and also for the treatment of dysentery by the local people.	Wild
3	<i>Acorus calamus</i> L. TM-002	Vaigander	Acoraceae	Herb		Rhizome	The dried rhizome is crushed to powder and is taken orally for the treatment of dysentery and chronic diarrhoea.	Wild
4	<i>Achyranthes aspera</i> L. TM-009	Lainda	Amaranthaceae	Herb	Decoction	Whole plant	Decoction of the whole plant is taken orally for the treatment of dysentery.	Wild
5	<i>Amaranthus viridis</i> L. TM-001	Liss	Amaranthaceae	Herb	Decoction	Leaves	Leaves are crushed, then boiled and decoction is taken orally for diarrhoea.	Wild
6	<i>Berberis lycium</i> Royle. TM-011	Kawdach	Berberidaceae	Shrub	Decoction	Leaves	Dried leaves are crushed, mixed with water and then filtered through a cloth. The extract obtained is used to cure diarrhoea. Decoction of leaves is also taken for the treatment of dysentery.	Wild
7	<i>Capsella bursa-pastoris</i> (L.) Medik TM-028	Kralmond	Brassicaceae	Herb	Vegetable	Whole plant	Whole plant is cooked as vegetable and used for the treatment of diarrhoea and dysentery.	Wild
8	<i>Cichorium intybus</i> L. TM-014	Handh	Asteraceae	Herb	Vegetable	Whole plant	Whole plant cooked as vegetable is taken against diarrhoea.	Wild
9	<i>Conyza canadensis</i> Conquist. TM-010	Shal lutt	Asteraceae	Herb	Juice	Fruits	Ripened fruits of the plant are taken to make juice of it and then used orally to cure dysentery and diarrhoea by the local people.	Wild
10	<i>Cynodon dactylon</i> L. TM-021	Dramun	Poaceae	Herb	Powder	Whole plant	Whole plant crushed into powder is taken with water for the treatment of chronic dysentery and diarrhoea.	Wild
11	<i>Cyperus rotundus</i> L. TM-004	Gashh	Cyperaceae	Herb	Paste	Rhizome	The rhizomes are scraped and pounded with green ginger and mixed with honey is given in dysentery.	Wild
12	<i>Daucus carota</i> L. TM-006	Gajar	Umbelliferae	Herb	Juice	Roots	Juice obtained from the plant roots is taken twice a day for about three days to cure dysentery and weakness occurred by dysentery.	Cultivated
13	<i>Ficus carica</i> L. TM-032	Anjeer	Moraceae	Tree	Decoction	Fruits	Decoction or juice of fruit is used for diarrhoea.	Cultivated
14	<i>Mentha arvensis</i> L. TM-024	Pudni	Lamiaceae	Herb	Powder	Whole plant	Whole plant is crushed, made into powder and taken with curd for the treatment of prolonged dysentery and diarrhoea.	Cultivated
15	<i>Mentha longifolia</i> L. TM-026	Jangli pudni	Lamiaceae	Herb	Powder	Leaves	The dried leaves are powdered and used in diarrhoea and dysentery.	Wild
16	<i>Oxalis corniculata</i> L. TM-019	Chuk chen	Oxalidaceae	Herb	Powder	Leaves	Plant leaves are crushed, made into powder and taken with water for the treatment of dysentery.	Wild

(Contd...)

Table 1: (Continued)

Sr.	Botanical Name/Collection number	Local Name	Family	Habit	Remedy	Part used	Mode of administration	Source
17	<i>Plantago major</i> L. TM-020	Bodd gull	Plantaginaceae	Herb	Powder	Seeds	Seeds are crushed and taken with milk for the treatment of dysentery.	Wild
18	<i>Plantago lanceolata</i> L. TM-025	Gull	Plantaginaceae	Herb	Decoction	Leaves	Extract is obtained from leaves and is taken for the treatment of diarrhoea by rural people.	Wild
19	<i>Platanus orientalis</i> L. TM-018	Boen	Plantanaceae	Tree	Decoction	Bark	Bark decoction is obtained and taken for diarrhoea and dysentery disorders.	Wild
20	<i>Polygonum bistorta</i> L. TM-029	-	Polygonaceae	Herb	Decoction	Roots	Root decoction is taken in case of diarrhoea and dysentery.	Wild
21	<i>Persicaria hydropiper</i> L. TM-033	-	Polygonaceae	Herb	Juice	Roots	The juice obtained from the roots is used for diarrhea and dysentery	Wild
22	<i>Punica granatum</i> L. TM-037	Anar	Punicaceae	Herb	Juice	Leaves	The juice of fruits is used against dysentery.	Cultivated
23	<i>Valeriana jatamansi</i> Jones TM-035	Mushkbala	Valerianaceae	Herb	Decoction	Rhizome	Decoction of rhizome is used against dysentery and diarrhoea.	Wild
24	<i>Verbascum thapus</i> L. TM-044	Wantamook	Scrophulariaceae	Herb	Decoction	Leaves	Extract obtained from leaves of is taken against dysentery and diarrhoea.	Wild
25	<i>Zizyphus jujuba</i> Mill. TM-049	Ber	Rhamnaceae	Tree	Paste	Bark	The macerated bark is mixed with milk and honey, and is taken for the treatment of diarrhea and dysentery.	Wild

Table 2: Species contribution of reported families from Budgam, Jammu and Kashmir

Family	Plant species	Number of species	Percentage
Asteraceae	<i>Achillea millefolium</i> , <i>Cichorium intybus</i> , <i>Conyza canadensis</i>	3	12
Lamiaceae	<i>Mentha arvensis</i> , <i>Mentha longifolia</i>	2	8
Amaranthaceae	<i>Amaranthus viridis</i> , <i>Achyranthes aspera</i>	2	8
Plantaginaceae	<i>Plantago major</i> , <i>Plantago lanceolata</i>	2	8
Polygonaceae	<i>Polygonum bistorta</i> , <i>Persicaria hydropiper</i>	2	8
Mimosaceae	<i>Robinia pseudoacacia</i>	1	4
Acoraceae	<i>Acorus calamus</i>	1	4
Berberidaceae	<i>Berberis lycium</i>	1	4
Poaceae	<i>Cynodon dactylon</i>	1	4
Cyperaceae	<i>Cyperus rotundus</i>	1	4
Umbelliferae	<i>Daucus carota</i>	1	4
Oxalidaceae	<i>Oxalis corniculata</i>	1	4
Plantanaceae	<i>Platanus orientalis</i>	1	4
Punicaceae	<i>Punica granatum</i>	1	4
Valerianaceae	<i>Valeriana jatamansi</i>	1	4
Scrophulariaceae	<i>Verbascum thapus</i>	1	4
Rhamnaceae	<i>Zizyphus jujuba</i>	1	4
Brassicaceae	<i>Capsella bursa pastoris</i>	1	4
Moraceae	<i>Ficus carica</i>	1	4

knowledge of plant use evolved with human civilization through the experimental use of plants, generation after generation.

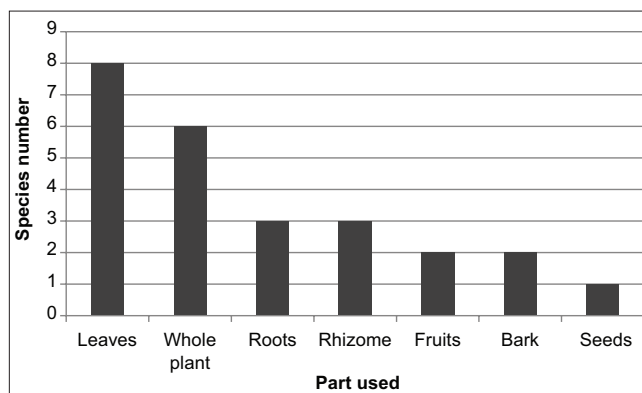


Figure 2: Species contribution for part used

People would have remained exposed to epidemic, endemic and chronic diseases, besides acute ailments (Hamayun, 2003). It has been estimated that 80% of the world's population is dependent on traditional medicine for their primary health care needs (Rai *et al.*, 2000; Anzar *et al.*, 2007; Jan *et al.*, 2020). Herbal medicines are being used because people are not able to get allopathic medicines. In Khag area of Budgam district of Jammu and Kashmir local people have remarkable detailed knowledge of species identity and medicinal usage. However, the anthropogenic unsustainable activities such as deforestation, habitat destruction, urbanization etc. may pose a serious threat to the important medicinal species. Hence, priority should be given to initiation of conservation action works with appropriate measures involving local participation, implementation of awareness activities with integrated approach for sustainable use of medicinal plants.

CONCLUSION

Herbal medicines are the backbone of traditional health care system as it is the primary health care facility being used by most of the people around the world. Medicinal plants are not only used in developing countries but they are making their popularity in industrialized countries as well because of their negligible side effects and cost effective condition. But due to urbanization and modernization this asset is on the verge of extinction. So there is dire need to conserve it before it will get vanished. Therefore documentation of the plants provides a way towards the conservation of this valuable resource. In addition, it is needed to check the phytochemical and pharmacological properties of medicinally important plants.

ACKNOWLEDGMENTS

Authors are thankful to Government Model Science College, Jiwaji University, Gwalior, for providing us the necessary facilities for our work. Authors are also thankful to local population of the study area for sharing their knowledge.

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