

## Folk Medicinal Plants for Treatment of Gastrointestinal Tract Disorders in Two Villages of Bangladesh

Samiun Alam Patwary<sup>1</sup>, Tania Khatun<sup>1</sup>, Nupur Mondol<sup>1</sup>, Meem Mustarin Shondhi<sup>1</sup>, Khoshnur Jannat<sup>2</sup>, Mohammed Rahmatullah<sup>2\*</sup>

<sup>1</sup>Department of Pharmacy, University of Development Alternative, Bangladesh

<sup>2</sup>Department of Biotechnology and Genetic Engineering, University of Development Alternative, Bangladesh

**\*Corresponding Author:** Mohammed Rahmatullah, Professor and Dean, Faculty of Life Sciences, Department of Biotechnology and Genetic Engineering, University of Development Alternative, Dhaka, Bangladesh.

**Received:** November 13, 2019; **Published:** November 22, 2019

### Abstract

The rural inhabitants of the roughly 86,000 villages of Bangladesh along with the people of the urban slums lack proper sanitation facilities and access to safe drinking water systems. Various gastrointestinal disorders ranging from helminth infestations to diarrhea and dysentery are common among this majority segment of the total population of more than 150 million in the country. Since access to allopathic doctors and modern diagnostic centers and hospitals is not possible for the rural and remote area population, they mostly rely on folk medicinal practitioners (FMPs) for treatment. FMPs, in turn, are mostly dependent on phytotherapy because plants are readily available and affordable. In two villages of Gopalganj district, Bangladesh, a random survey documented the use by two FMPs of three plants for treatment of various gastrointestinal tract (GI) disorders like acidity, dysentery and stomach pain (due to bloating or acidity). The plants used for treatment of the three GI-tract disorders were, respectively, *Mikania scandens*, *Heliotropium indicum* and *Smilax zeylanica*. The appropriateness of the selection of plants is discussed on the basis of available scientific evidence.

**Keywords:** GI-tract Disorders; Phytotherapy; *Mikania scandens*; *Heliotropium indicum*; *Smilax zeylanica*; Bangladesh

### Abbreviations

FMP: Folk Medicinal Practitioner; FM: Folk Medicine; GI-tract: Gastrointestinal Tract; TMP: Tribal Medicinal Practitioner; TM: Tribal Medicine

### Introduction

Bangladesh is a developing nation with one of the highest population densities in the world. It has been said that “the dense population, poverty, unsatisfactory sanitary and hygienic conditions, illiteracy promote wide circulation in Bangladesh of acute intestinal infections” [1]. Various gastrointestinal disorders are common; in a study conducted in Ghior Union of Manikganj district, Bangladesh, it was observed that 61.9% of the population suffers from dyspepsia [2]. Despite Government interventions and drug administration programs, helminth infections still persist in the country [3]. Among slum dwelling children in Bangladesh below 2 years of age, Giardiasis, ascariasis and trichuriasis were the most frequent parasitic infections; *Campylobacter* spp., Enteroaggregative *Escherichia coli* (EAEC) and Enterotoxigenic *Escherichia coli* (ETEC) were the common bacterial pathogens as observed in stool samples. Notably, these pathogens can cause intestinal inflammation and increased intestinal permeability [4]. Diarrhea arising from various pathogenic infections in Bangladesh children under 5 years of age has been associated with growth faltering [5].

Because of non-availability, non-affordability and other factors, most patients with GI-tract disorders (diarrhea and dysentery being the most common), visit folk medicinal practitioners (FMPs) or tribal medicinal practitioners (TMPs). FMPs practice among the mainstream Bengali-speaking population, while TMPs practice among their respective tribal people. However, the mainstay of both folk medicine (FM) and tribal medicine (TM) treatment is phytotherapy [6-10]. Surveys of ethnic or traditional medicinal practitioners have always been seen as an approach to discovery of new drugs. In addition, documentation of such phytotherapeutic practices can lead to greater awareness for conservation of medicinal plants and more so, the endangered species of plants.

### Objective of the Study

The objective of the present study was to document the phytotherapeutic practices of two FMPs in two villages of Gopalganj district, Bangladesh to treat gastrointestinal disorders.

### Methods

The present survey was carried out in Debashur and Konapara villages of Gopalganj district, Bangladesh the district being located in between 22°50' and 23°01' north latitudes and in between 89°40' and 90°02' east. To get acquainted with the local people and the FMPs, several trips were made to the two villages between June 2018 and April 2019. The reason for choosing this district was that one of the authors hailed from this district. The two FMPs were Shusheel Kumar Mondol, Debashur village, Gopalganj district, male, age 68 years and Rabindranath Das, Konapara village, Gopalganj district, male, age 63 years. The FMPs were told of the reasons for requesting the phytotherapeutic information and prior informed consent obtained from both FMPs to disseminate any provided information both nationally and internationally. Permission was also obtained from the village elders for such permission is a social necessity to work in a village. The FMPs between themselves mentioned and showed the authors three plants, which they used for treatment of various GI-tract disorders. The plants were photographed and specimens collected and dried for later identification by a competent botanist at the University of Development Alternative. Plant specimens were deposited with the Medicinal Plant Collection Wing of the University of Development Alternative.

### Results

The two FMPs mentioned three plants, which they used for treatment of three types of gastrointestinal disorders. *Mikania scandens* was used to treat acidity, *Heliotropium indicum* to treat dysentery and *Smilax zeylanica* to treat stomach pain (due to bloating or acidity). The results are shown in table 1. The FMPs did not use any polyherbal formulations; a single plant part was used in all three disorders treated. According to the FMPs, acidity reflects a sour taste in the mouth with heartburn felt in the chest area and occasional difficulties in breathing with regurgitation of food or sour liquid. Dysentery was defined by the FMPs as diarrhea with mucus or blood. However, according to the FMPs, if other suitable plants were not available, *Heliotropium indicum* can be used for treatment of diarrhea also. Stomach pain according to the FMPs was upper abdominal pain and caused due to indigestion and so indicated dyspepsia.

Serial Number	Scientific Name	Family Name	Local Name	Parts used	Ailments treated
1	<i>Mikania scandens</i> (L.) Wild	Asteraceae	Jarmany/ Bitechara gach	Leaf	Acidity. In the morning, 500g of juice from macerated leaves is taken on an empty stomach.
2	<i>Heliotropium indicum</i> L.	Boraginaceae	Hatishur	Leaf	Dysentery. Leaves are crushed for collecting juice; juice is then taken for three consecutive days in the morning on an empty stomach.
3	<i>Smilax zeylanica</i> L.	Smilacaceae	Kumari gach	Young stem	Stomach pain (due to indigestion). Top of one young stem is taken every day in the morning on an empty stomach for three consecutive days.

**Table 1:** Medicinal plants used in folk medicine against gastrointestinal disorders in Gopalganj district.

### Discussion

*Mikania scandens* aerial parts reportedly have antinociceptive and sedative properties. In India, the plant is used for treating stomach ulcers in folk medicine and further thought to be efficacious in treating gastric problems [11]. Common symptoms of acidity are heart-burn (burning pain in stomach or chest); the antinociceptive effects of the plant may be helpful in relieving the pain. Diterpenes present in *Mikania* genus can account for the anti-inflammatory and antinociceptive activity of the plant [12]. In Pakistan, roots of *Heliotropium indicum* are used to treat dysentery in children [13]. Leaf extract is known to have anti-ulcer and gastroprotective properties, which has been reviewed; in Kancheepuram district of Tamil Nadu, India tribals use the plant to heal stomach problems [14]. Thus both ethnic uses in India and pharmacological property studies of the plant indicate that it might prove useful in treating dysentery. In Patuakhali district of Bangladesh, dried stems of *Smilax zeylanica* are taken orally to treat nausea, abdominal pain, and acidic taste in mouth [15]. The plant also has analgesic properties [16].

### Conclusion

It appears from ethnic reports and scientific studies that the plants used by the FMPs in two villages of Gopalganj district, Bangladesh merit potential for further studies towards discovery of drugs, which are effective against gastrointestinal tract disorders.

### Conflicts of Interest

The authors declare that they have no conflicts of interest.

### Bibliography

1. Rodionova OM., *et al.* "The Role of Ecological Factors in Acute Enteric Infection Morbidity of Population of the People's Republic of Bangladesh". *Probl Sotsialnoi Gig Zdravookhranennii Istor Med Journal* 27.1 (2019) 68-72.
2. Chowdhury J., *et al.* "Study of the Prevalence of Dyspepsia in the Adult Population in a Rural Community of Bangladesh". *Mymensingh Medical Journal* 28.1 (2019) 163-174.
3. Nath TC., *et al.* "Barriers and gaps in utilization and coverage of mass drug administration program against soil-transmitted helminth infection in Bangladesh: An implementation research". *Journal of Infection and Public Health* 12.2 (2019) 205-212.
4. Fahim SM., *et al.* "Association of intestinal pathogens with faecal markers of environmental enteric dysfunction among slum-dwelling children in the first 2 years of life in Bangladesh". *Tropical Medicine and International Health* 23.11 (2018) 1242-1250.
5. Schnee AE., *et al.* "Identification of Etiology-Specific Diarrhea Associated with Linear Growth Faltering in Bangladeshi Infants". *American Journal of Epidemiology* 187.10 (2018) 2210-2218.
6. Rahmatullah M., *et al.* "A survey of medicinal plants used by folk medicinal practitioners for treatment of gastrointestinal disorders in randomly selected areas of four districts of Bangladesh". *Advances in Natural and Applied Sciences* 4.2 (2010) 139-147.
7. Das PR., *et al.* "A selection of medicinal plants used for treatment of diarrhea by folk medicinal practitioners of Bangladesh". *American-Eurasian Journal of Sustainable Agriculture* 6.3 (2012) 153-161.
8. Shakera J., *et al.* "Folk medicine in Bangladesh: Healing with plants by a practitioner in Kushtia district". *Archives of Pharmacy and Pharmacology Research* 1.5 (2019) APPR.MS.ID.000525.
9. Malek I., *et al.* "Medicinal plants used by the Mandais – a little known tribe of Bangladesh". *African Journal of Traditional, Complementary and Alternative Medicines* 9.4 (2012) 536-541.

10. Islam B., *et al.* "Holqarrhena antidysenterica (Linn.) Wall. (Apocynaceae) – A plant for gastrointestinal disorders". *EC Gastroenterology and Digestive System* 5.6 (2018) 437-443.
11. Dey P., *et al.* "Neuropharmacological properties of Mikania scandens: (L.) Willd. (Asteraceae)". *Journal of Advanced Pharmaceutical Technology and Research* 2.4 (2011) 255-259.
12. Rufatto LC., *et al.* "Genus Mikania: chemical composition and phytotherapeutical activity". *Revista Brasileira de Farmacognosia* 22.6 (2012) 1384-1403.
13. Shinwari MI and Khan MA. "Folk use of medicinal herbs of Margalla hills national park, Islamabad". *Journal of Ethnopharmacology* 69.1 (2000) 45-56.
14. Ghosh P., *et al.* "Morphological characteristics and Phyto-pharmacological detailing of Hatishur (*Heliotropium indicum* Linn.): A concise review". *Journal of Pharmacognosy and Phytochemistry* 7.5 (2018) 1900-1907.
15. Pervez MN., *et al.* "A randomized survey of ethnomedicinal plants used in Patuakhali district, Bangladesh". *Journal of Chemical and Pharmaceutical Research* 6.12 (2014) 118-122.
16. Jena PK., *et al.* "Investigation on phytochemicals, anthelmintic and analgesic activities of *Smilax zeylanica* Linn. leafy extracts". *Asian Journal of Chemistry* 23.10 (2011) 4307-4310.

**Volume 6 Issue 12 December 2019**

**©All rights reserved by Mohammed Rahmatullah., *et al.***