

## ORIGINAL ARTICLE

# Ethno-Medicinal Treatment of Common Gastrointestinal Disorders by Indigenous People in Pakistan

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### ABSTRACT

Pakistan lies between 23° 45' to 36° 50' N and 60° 55' to 75° 30' E with a total area of 8, 03,943 sq. Km. Pakistan has a very rich and diverse flora. There are about 4940 native species of flowering plants (about 5738 species if cultivated or naturalized taxa are included) which are found in a variety of habitats from seashores (Arabian Sea) and deserts (Cholistan) to high mountainous areas to the north (Galliat, Gilgit-Baltistan). These include 372 species which are endemic, mostly found in the north and western mountainous regions of Pakistan. The people in Pakistan have a strong faith in the usage of the ethno-medicinal plants for the treatment of various ailments especially gastrointestinal disorders that are very common due to malnutrition or infected drinking water. The research work was conducted in different regions of the country including Northern parts of the country mainly represented by the mountainous areas Galliat and Ayubia region and Southern parts of the country including the plains and deserts representing by Cholistan desert. During the research more than 100 plants were recorded and out of these total 17 plant species belonging to 16 families were recorded that were used for the treatment of gastrointestinal problems through Ethnobotanical surveys. The most common gastrointestinal disorders mainly included Diarrhea, dysentery, stomachache, indigestion (dyspepsia), Gastritis, stomach and duodenal ulcers. The commonly used ethno-medicinal plants for the treatment of gastro intestinal disorders are *Plantago lanceolata*, *Althea rosea*, *Bergenia ciliata*, *Berberis lycium*, *Fragaria nubicola*, *Gentiana kurroo*, *Bistorta amplexicaulis*, *Valeriana jatamansii*, *Calatropis procera*, *Xanthium strumarium*, *Solanum surattense*, *Bryophyllum pinnatum*, and *Acacia nilotica*.

Keywords: Gastrointestinal Disorders, Medicinal Plants

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### INTRODUCTION

Pakistan lies between 23° 45' to 36° 50' N and 60° 55' to 75° 30' E with a total area of 8, 03,943 sq. Km. Pakistan has a very rich and diverse flora. There are about 4940 native species of flowering plants (about 5738 species if cultivated or naturalized taxa are included) which are found in a variety of habitats from seashores (Arabian Sea) and deserts (Cholistan) to high mountainous areas to the north (Galliat, Gilgit-Baltistan). These include 372 species which are endemic, mostly found in the north and western mountainous regions of Pakistan. [1]. In Pakistan Northern areas have some very high and extreme cold areas and many intermediate zones. [2]. Pakistan also has many climatic and vegetation zones or biomes. All these varied ecological zones have distinct ethno botanically important plants. These plants are not only important for the economy of a country, but they also act as useful tools in its defense. Mountains provide goods and services such as forests, water and agriculture products, biodiversity resources, and tourism recreational opportunities, not only to the mountain people but also to a large segment of the population living downstream in plain areas [3].

The Northern part of the country is also the main source of the medicinal plants and people in these areas are very much dependent on the plants. People living in these mountainous areas of the country mainly use the plants in many ways e.g. as medicines, food, timber wood, fodder, fuel wood and construction purposes. [4].

The Study area comprises of the areas of the country ranging from the northern mountainous ranges e.g. Galliat, Ayubia, Kashmir up to the southern plains and deserts e.g. Cholistan desert. There is a lot of vegetational diversity and people of these areas have a strong faith and belief in the use of the plants.

The main reason of choosing the Gastro intestinal (GIT) disorders and its treatment through ethno-medicinal plants was to cure GIT at the community level by involving them in this serious disorder / ailment and creating awareness about this disorder. In Pakistan GIT infections are mainly caused due to the use of unsafe and polluted water in the remote backward areas and malnutrition and use of low quality food. The other reason is the unaffordability for the purchase of expensive medicine due to less income for the treatment of different ailments or disorders. The main reason for this research is to provide the people a chance to develop a strong relationship with the medicinal plants and use them in a sustainable way for the cure of GIT or other disorders.

Ethnobotany is basically the study people about a particular culture and regions make the use of indigenous plants, while the ethno botanist mainly explores the knowledge about how these plants are used for medicine, food, shelter, fodder, clothing, fuel wood, hunting and other religious ceremonies. It is the science, which studies the relationship between a given society and its environment and in particular the plant world [5].

Previously different botanists have tried to work on ethnobotany and its impact on the lives of the local people but the main reason for doing this particular research was to find the detail and end-user approach in the field of ethnobotany as still there is a need of thorough and end-user approach in the research in the field of ethnobotany and ethnomedicine, so that the local people can get the maximum benefit out of this research in terms of their domestic use of plants and earning of their livelihood through these plants without disturbing the conservation status of the plant biodiversity and using them in a sustainable fashion.

Previous work done by the botanists included the work of different scientists e.g. Shinwari, 2000 described 50 species of herbs belonging to 27 families from Margala Hills National Park, Islamabad Pakistan, as used medicinally by the local inhabitants of the park, among which ten species are being sold in the local market. *Asparagus adscendens* Roxb, and *Viola canescens* Wall. ex Roxb. are found vulnerable to harvesting [6]. Bukhari, 1994 worked on ethnobotany and vegetation analysis of Machyara National Park Muzafarabad AJK, he reported 10 plant communities in different regions of the National Park; he discussed the status of the plant species in the park and also reported the detail of the medicinal plants in the park [7]. Qureshi [8], reported medicinally important plants are necessary for the production of the various drugs and curing diseases. The local people use 26 species of the vascular plants of the Mianwali district for medicine, furniture and agricultural implements and as the food. The local community is extremely knowledgeable about the local plants but unfortunately this knowledge is going to be lost as traditional culture is disappearing.

## METHODOLOGY

The research work was conducted with the help of questionnaire developed including the concerned information about the plants usage and also about the personal and educational background of the informants. The other important part was the recipe of the plants i.e. how they are used for the treatment of the Gastro intestinal (GIT) disorders, what part is used and in what amount.

The people from all the age groups were asked about the use of the plants ranging from younger to the elderly i.e. 20-65 years of age. The Plants were collected from the Northern and Southern parts of the country including Galliat, Ayubia, Kashmir, Bahawalpur and Cholistan (Desert) area used for the treatment of Gastro intestinal disorders.

The interviews of the people were mainly conducted in their local language. The main targets were the elderly people and women as these are mainly involved in the treatment of the GIT ailments through the medicinal plants.

The plants used for the stomach and gastro intestinal ailments (Table. 01) were collected from the field and pressed and mounted on the herbarium sheets. The plant samples were deposited in the Herbarium of Pakistan Museum of Natural History (PMNH) Islamabad.

## RESULTS AND DISCUSSION

Family: Apocynaceae.  
 Botanical name: ***Nerium oleander* L.**  
 Local name: Gandeer  
 Flowering period: March to October.  
 Part used: Leaves, flowers, latex and bark.  
 Voucher No: 10

### **Ethno-Medicinal use for Gastrointestinal (GIT) treatment**

The dried leaf powder is used for the treatment of stomach disorders. The Leaves extract is also used in the treatment of earache.

People responded. 20  
 Age of informant. 30-45 years

Family: Asclepiadaceae.  
 Botanical name: ***Calatropis procera* (Willd.) R. Br.**  
 Local name: Dasi ak.  
 Flowering period: June to October.  
 Part used: Stem, bark, leaves, seeds and root.  
 Voucher specimen No: 08

### **Ethno-Medicinal use for Gastrointestinal (GIT) treatment**

Bark is used for the cure of dysentery. The milky latex is used for diarrhea. It is also used for the cure of malaria and cough. It is used as toothaches.

People responded. 40  
 Age of informant. 25-60 years

Family: Asteraceae.  
 Botanical name: ***Parthenium hysterophorus* L.**  
 Local name: Thandi boti.  
 Part used: Leaves and flowers.  
 Flowering season: May to October.  
 Voucher No: 14

### **Ethno-Medicinal use for Gastrointestinal (GIT) treatment**

The dried leaves and flowers powder is used for the treatment of indigestion and also useful in the cure of diabetes. The leaf extract is used as carminative.

People responded. 15  
 Age of informant. 30-40 years

Family: Asteraceae.  
 Botanical name: ***Xanthium strumarium* L.**  
 Local name: Chota Dhatoora.  
 Flowering period: June to July.  
 Part used: Leaves and fruit.  
 Voucher No: 12

### **Ethno-Medicinal use for Gastrointestinal (GIT) treatment**

The fruit is used in the cure of dysentery and urinary diseases. It is also useful in toothaches, headaches, and leprosy.

People responded. 25  
 Age of informant. 30-65 years

Family: Berberidaceae  
 Botanical name: ***Berberis lycium* Royle**  
 Local name: Sumbli / Zarch.  
 Flowering period: April-June  
 Voucher specimen No: 03  
 Part used: Root & Leaves

### **Ethno-Medicinal use for Gastrointestinal (GIT) treatment**

Root is used in jaundice and diarrhea. The bark of the root is used in diabetes, also used as tonic.

People responded. 75  
Age of informant. 20-60 years

Family: Crassulaceae.  
Botanical name: ***Bryophyllum pinnatum* (Lam.) Oken**  
Local name: Pthar chat.  
Flowering period: November to December.  
Part used: Leaves.  
Voucher No: 16

**Ethno-Medicinal use for Gastrointestinal (GIT) treatment**

The leaves and whole plant is used in the treatment of all kinds of gastro-intestinal trouble e.g. indigestion, dysentery and diarrhea. This plant is also useful for the treatment of skin diseases.

People responded. 10  
Age of informant. 35-45 years

Family: Cucurbitaceae.  
Botanical name: ***Citrullus colocynthis* (L.) Schrad**  
Local name: Tumma.  
Flowering period: June to August.  
Part used: Seeds and fruits.  
Voucher No: 09

**Ethno-Medicinal use for Gastrointestinal (GIT) treatment**

The fruit and seeds are used for the cure of stomach and intestinal disorder and also cures constipation. It is useful for many stomach disorders, abdominal pain, jaundice and other liver disorders.

People responded. 15  
Age of informant. 40-50 years

Family: Euphorbiaceae.  
Botanical name: ***Euphorbia hirta* L.**  
Local name: Lmbi dhodhi.  
Flowering period: May to August.  
Part used: Leaves and milky latex.  
Voucher No: 15

**Ethno-Medicinal use for Gastrointestinal (GIT) treatment**

The Leaf extract is used for the treatment of dysentery and diarrhea. The plant is very useful for the healing of internal and external wounds. The white latex (Milk) is used as aphrodisiac.

People responded. 10  
Age of informant. 35-50 years

Family: Gentianaceae  
Botanical name: ***Gentianodes kurroo* (Royle) Omer, Ali & Qaiser**  
Local name: Nil-Kanth  
Flowering period: September-November  
Voucher specimen No: 05  
Part used: Roots

**Ethno-Medicinal use for Gastrointestinal (GIT) treatment**

The root is used in stomachache and is used in urinary infections.

People responded. 12  
Age of informant. 35-50 years

Family: Malvaceae  
Botanical name: ***Althea rosea* L.**  
Local name: Gule-Khaira  
Flowering period:  
Voucher specimen No: 01  
Part used: Roots

**Ethno-Medicinal use for Gastrointestinal (GIT) treatment**

The root of the plant is used in jaundice, stomach, urinary ulcers and in liver

disorders.

People responded. 15  
Age of informant. 25-50 years

Family: Mimosaceae.

Botanical name: ***Acacia nilotica* (L.) Delile**

Local name: Kiker.

Flowering period: February to March.

Part used: Leaves, Gum bark and flowers.

Voucher No: 17

**Ethno-Medicinal use for Gastrointestinal (GIT) treatment**

The fruit and bark (soup/extract) of this plant are used for the improvement in digestion and to treat dysentery. The stem exude (gum) is used for the treatment of backache.

People responded. 45  
Age of informant. 40-60 years

Family: Polygonaceae

Botanical name: ***Bistorta amplexicaulis* (D. Don) Green**

Local name: Masloon

Flowering period: June- September

Voucher specimen No: 06

Part used: Roots and Leaves

**Ethno-Medicinal use for Gastrointestinal (GIT) treatment**

Root is used in fever and diarrhea.

People responded. 29  
Age of informant. 25-40 years

Family: Rosaceae

Botanical name: ***Fragaria nubicola* Lindl.**

Local name: Budi-mewa/wild-strawberry

Flowering period: May-Aug

Voucher specimen No: 04

Part used: Fruit and Leaves

**Ethno-Medicinal use for Gastrointestinal (GIT) treatment**

The leaves and fruit are mixed with the leaves of *Berberis lycium* and used in cure of stomach ulcers, also used as antiseptic.

People responded. 30  
Age of informant. 25-40 years

Family: Saxifragaceae

Botanical name: ***Bergenia ciliata* (Haw.) Sternb.**

Local name: Zakhm-e-hayat / Bhat-pay.

Flowering period: March-May.

Voucher specimen No: 02

Part used: Rhizome and Leaves

**Ethno-Medicinal use for Gastrointestinal (GIT) treatment**

The rhizome is crushed and used in all kinds of ulcers mainly stomach and duodenal and also in internal infections. It is also anti-cancerous in action.

People responded. 20  
Age of informant. 20-50 years

Family: Solanaceae.

Botanical name: ***Solanum surattense* Burm. f.**

Local name: Mokri.

Flowering period: April to October.

Part used: Whole plant.

Voucher No: 13

**Ethno-Medicinal use for Gastrointestinal (GIT) treatment**

The plant extract is used for the cure of body pains and fever and chest congestions.  
 The seeds are boiled with milk and used for the treatment of stomachache and diarrhea.  
 People responded. 50  
 Age of informant. 25-60 years

Family: Tamaricaceae.  
 Botanical name: ***Tamarix dioica* Roxb. ex Roth**  
 Local name: Pilchi.  
 Flowering period: March.  
 Part used: Whole plant.  
 Voucher No: 11

**Ethno-Medicinal use for Gastrointestinal (GIT) treatment**

The bark is used for the treatment of diarrhea and dysentery. It is also useful for the cure of piles, ulcer, leucorrhoea. The extract of the bark and leaves is externally applied as ointment in the treatment of ulcers and piles.  
 People responded. 10  
 Age of informant. 35-50 years

Family: Valerianaceae  
 Botanical name: ***Valeriana jatamansii* Jones (*V. wallichii* DC.)**  
 Local name: Mukshbala  
 Flowering period: March-May  
 Voucher specimen No: 07  
 Part used: Roots & Leaves

**Ethno-Medicinal use for Gastrointestinal (GIT) treatment**

Root is carminative, stimulant and antispasmodic. It is also used as insecticide by placing the leaves in the clothes.  
 People responded. 15  
 Age of informant 30-40 years

**DISCUSSION**

Total 17 plants belonging to 16 families were reported out of total 100 plant (Table. 01), to be used for the treatment of the Gastro intestinal disorders in the local people from different areas of the country including the Northern part of the country e.g. Galliat, Ayubia & Kashmir area, and Southern part of the country e.g. Bahawalpur and Cholistan area.

The interviews of more than 200 local people were conducted ranging between the age groups of 20 to 65 years. The elderly people were the most informed about the treatment of Gastro intestinal disorders through the indigenous medicinal plants.

The people have a strong faith in the usage of these plants and they are frequently using the plants for the stomach disorders and other Gastro intestinal problems.

The main reason of the Gastro intestinal disorders is the use of unsafe and polluted water in the remote backward areas with less facility of food and drinking water. The other reason is the malnutrition due to less income and non availability of quality food. The other reason is the unaffordability for the purchase of expensive medicine due to less income for the treatment of different ailments or disorders and people are unable to buy the expensive medicines for their treatment and some times it is too late to survive due to non availability of medicine and causes death. The main reason for this research is to provide the people a chance to develop a strong relationship with the medicinal plants and use them in a sustainable way for the cure of GIT or other disorders.

The medicinal plants are used all over the world with great interests. these are also the active participants in the trade and economy of the country, e.g. in China more than 2394 traditional Tibetan medicines are commonly used mainly from plants (1106), animals (448) and natural minerals (840) [9].

The plants are used for the treatment of the different ailments of stomach because of non-availability of alopahthic medicine and low income or unaffordability of the expensive medicine.

The trend in the country of using the medicinal plants is becoming more popular and people have a strong faith in these plants. During this research the most responded plant was *Berberis lycium* as more than 75 people responded to this plant and the use of this plant was very common among the people for the treatment of jaundice and diarrhea. The other plants most commonly used were *Solanum surattense*, *Acacia nilotica*, *Calatropis procera*, *Bistorta amplexicaulis*, *Fragaria nubicola* and *Xanthium strumarium*.

These plants were mainly used for the treatment of diarrhea, dysentery, indigestion, stomach and intestinal ulcers.

The results obtained from the current research work can later be applied to biodiversity, conservation and community development [10].

The results obtained from the current research could be used to interact with the local people and to educate them with reference to the plants and their sustainable use for the treatment of Gastro intestinal ailments and other common diseases. This is the need of the hour to conserve these plants and not to over-exploit the plant diversity.

**Table. 01: List of the Plants Used in the Gastro Intestinal Disorders.**

S/No.	Plant Name	Family	Part used
1.	<i>Nerium oleander</i>	Apocynaceae.	Fl, Lx & Bk
2.	<i>Calatropis procera</i>	Asclepiadaceae.	St, Bk, L, S, & R
3.	<i>Parthenium hysterophorus</i>	Asteraceae.	L & Fl.
4.	<i>Xanthium strumarium</i>	Asteraceae.	L & F
5.	<i>Berberis lycium</i>	Berberidaceae	R & L
6.	<i>Bryophyllum pinnatum</i>	Crassulaceae.	L
7.	<i>Citrullus colocynthis</i>	Cucurbitaceae.	S & F
8.	<i>Euphorbia hirta</i>	Euphorbiaceae.	L & Lx
9.	<i>Gentianodes kurroo</i>	Gentianaceae	R
10.	<i>Althea rosea</i>	Malvaceae	R
11.	<i>Acacia nilotica</i>	Mimosaceae.	L, G & Fl.
12.	<i>Bistorta amplexicaulis</i>	Polygonaceae	R & L
13.	<i>Fragaria nubicola</i>	Rosaceae	F & L
14.	<i>Bergenia ciliata</i>	Saxifragaceae	Rh & L
15.	<i>Solanum surattense</i>	Solanaceae.	WP
16.	<i>Tamarix dioica</i>	Tamaricaceae	WP
17.	<i>Valeriana jatamansii</i>	Valerianaceae	R & L

Flower: FI, Latex: Lx, Bark: Bk, Stem: St, Leaves: L, Seeds: S, Root: R, Fruit: F, Gum: G, Rhizome: Rh, Whole Plant: WP.

**Fig. 01: Plants used for Gastro intestinal ailments treatment**



*Berberis lycium*

*Bistorta amplexicaulis*



*Bergenia ciliate*

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