

## Research Article

# Medicinal Plants Used to Cure Diarrhea and Dysentery by the Local Inhabitants of District Bannu, Khyber Pakhtoonkhwa, Pakistan

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### ABSTRACT

Information and description of the medicinal plants used to cure diarrhea and dysentery was collected from local inhabitants in district Bannu. Of these, plants belong to the following families, *Apiaceae*, *Myrtaceae*, *Mimosaceae*, *Alliaceae*, *Lamiaceae*, *Rutaceae*, *Plantaginaceae*, *Amaranthaceae* were with 2 species each. While *Euphorbiaceae*, *Moraceae*, *Rhamnaceae*, *Astraceae*, *Solonaceae*, *Cyperaceae*, *Meliaceae*, *Oxaladaceae*, *Punicaceae*, *Poaceae*, *Chenopodiaceae* and *Caesalpinaceae* were with single species each. Of these plants, 16 plants were used to cure dysentery & 8 plants were used to cure diarrhea & 4 plants were used for the treatment of both diarrhea and dysentery.

**Key Words:** medicinal plants; diarrhea; dysentery; Bannu district. Pakistan

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### INTRODUCTION

Diarrhea affects all types of people, including men, women and children. It also affects infants and old aged people. Approximately, 2-4 billion people become of diarrheic every year; however more frequent in infants (Farthing M. 2002). According to World Health Organization Diarrhea is the third leading cause of death in developing countries (Thapar and Sanderson 2004). More than 1.8 million people mostly children

under the age of 5 years) died annually because of diarrhea (Anon 2004). Among the infectious agents, diarrhea is caused by various bacterial species belonging to the, *Escherichia coli*, *Clostridium perfringens*, *C. botulinum*, *Salmonella*, *Shigella*, *Vibrio cholerae* etc. The viral species causing diarrhea are *Corona viruse*, *Cryptosporidium parvum*, *Blastocystis hominis* and *Microsporidie* etc.

Table 1: Plants used in the treatment of Diarrhea and Dysentery by inhabitants of Bannu.

Family and Scientific Names	Local Names	Habit	Flowering Period	Flower Colour	Part Used	Mode of Application Against Diarrhea and Dysentery
<b>Alliaceae</b> <i>Allium cepa</i> Linn.	Pyaz	Herb	May-June	White	Bulb	-Juice is made from the bulb which is used in the treatment of dysentery.
<i>Allium sativum</i> Linn	Weza	Herb	April-May	White	Bulb	-Bulb juice is used against dysentery.
<b>Amaranthaceae</b> <i>Achyranthes aspera</i> Linn.	Azgikai	Herb	Mar-April	Violent/pink	Roots and leaves	-Decoction of roots and leaves is used in the treatment of Dysentery
<i>Amaranthus viridis</i> L.	Ranzaka	Herb	Jul-August	Red and white	Whole plant	-Decoction of root, Stem, leaves and flowers is used in the curing of diarrhea
<b>Apiaceae</b> <i>Foeniculum vulgare</i> Miller.	Soop	Herb	March-April	Yellow	Seeds	-The seeds are used in green tea and are helpful against dysentery.
<i>Daucus carota</i> L.	Gajarah	Herb	Jan-Feb	Creamy, off white	Seeds	-The seeds are carminative and are very useful in windy colic and dysentery.
<b>Asteraceae</b> <i>Conyza canadensis</i> Conquist	Speliye	Herb	Aug-September	Gray	Leaves and stem	-Vegetative parts are used in the treatment of diarrhea and dysentery
<b>Caesalpinaceae</b> <i>Cassia fistula</i> Linn.	Gardanali	Tree	June-July	Bright yellow	Seeds	-Seeds are mixed with sarson (Brassica) oil which are helpful for curing dysentery.
<b>Chenopodiaceae</b> <i>Chenopodium ambrosioides</i> L.	Srmai	Herb	July-Aug	Yellow	Seeds	-Seeds are eaten as digestive remedy and are used to remove colic and dysentery problems.
<b>Cyperaceae</b>	Delai	Herb	June-July	Purple	Whole	-Plant extract is mixed with sugar

<i>Cyperus rotundus</i> L.					plant	solution and is used in dysentery
<b>Euphorbiaceae</b> <i>Euphorbia hirta</i> L.	Purparai	Herb	Feb–March	White	Root	–Extract from the root of Euphorbia if given to cure bloody diarrhea.
<b>Lamiaceae</b> <i>Mentha arvensis</i> Linn.	Potna	Herb	Feb–March	Pale–yellow	Leaves	Leaves are grinded into powder form and are used for curing Diarrhea
<i>Osimum basilicum</i> L.	Bobraii	Herb	Feb–March	Blue to purple	Leaves and roots	–Leaves and root extract is mixed with sugar solution to treat diarrhea
<b>Meliaceae</b> <i>Azadirachta indica</i> A. Juss.	Bakana	Tree	Sep–October	White to cream	Leaves	Juice of leaves is mixed with sugar and is used to cure dysentery.
<b>Mimosaceae</b> <i>Acacia nilotica</i> (L.) Delile	Kikar	Tree	May–June	Yellow	Gum	Gum is tonic and it is used for curing dysentery and diarrhea
<i>Acacia modesta</i> Wall.	Paloosa	Tree	May–June	White	Gum	Gum is tonic and it is used for curing dysentery
<b>Moraceae</b> <i>Ficus bengalensis</i> L.	Peepaal	Tree	Aug–Sep	Reddish to yellow	Latex	–Latex is used for the treatment of diarrhea and dysentery and the latex is mixed with sugar and ghee.
<b>Myrtaceae</b> <i>Syzygium cumini</i> (Linn.) Skeels.	Jaman	Tree	June–July	Purple	Bark	Bark is grounded into powder form and is taken thrice a day to cure diarrhea
<i>Psidium guajava</i> L.	Amrat	Tree	March–April	White	Bark	–Bark decoction is used to treat diarrhea.
<b>Oxalidaceae</b> <i>Oxalis corniculata</i> L.	Tarweka	Herb	June–July	Yellow	Whole plant	–The plant extract is mixed with wheat flour and used for diarrhea because it act as refrigerant i.e. cooling agent
<b>Plantaginaceae</b> <i>Plantago major</i> L.	Spegol	Herb	March–April	White	Seeds	–The seeds are mixed with sharbat (water + sugar) to treat diarrhea and dysentery.
<i>Plantago lanceolata</i> L.	Spegol	Herb	March–April	White	Seeds	–The seeds are mixed with curd or water + sugar to treat diarrhea and dysentery.
<b>Poaceae</b> <i>Cynodon dactylon</i> L.	Barawa	Herb	Mar–April	Bright	Root	–Root extract is mixed with goat and sheep milk to treat dysentery
<b>Punicaceae</b> <i>Punica granatum</i> Linn.	Anar	Tree	Feb–March	Deep red	Fruit	–The fruit juice is helpful in the treatment of dysentery
<b>Rhamnaceae</b> <i>Zizyphus jujuba</i> Mill.	Beera	Tree	Mar–April	Yellow	Bark	–Bark is mixed with honey to cure dysentery
<b>Rutaceae</b> <i>Citrus lemon</i> (Linn.) Burm.f.	Nimbu	Tree	Mar–April	White	Fruit	–Fruit juice is mixed with salt and is helpful to cure dysentery.
<i>Citrus aurantiifolia</i> Christm.	Malta	Tree	Mar–April	White	Fruit	Fruit juice is mixed with salt and is helpful to cure dysentery.
<b>Solonaceae</b> <i>Solonom nigrum</i> L.	Khunsabai	Herb	May–June	Whitish yellow	Fruit	Fruit decoction is orally used to treat dysentery.

Dysentery is an inflammation of the large intestine or colon that causes severe abdominal pain. It may be caused by certain protozoa like *Entamoeba histolytica* (cause amoebic dysentery or amoebiasis), *Bacillus subtilis* and *B. cereus* (Bacillary dysentery), other micro organisms which cause dysentery and diarrhea are *Escherichia coli*, *Shigella flexneri*, *S. dysenteriae* and *Campylobacter* sp, *Shigella sonnei*, *Shigella flexneri*, *Shigella boydii* and *Shigella dysenteriae*, the last one listed produces the most severe symptoms. It spreads mainly through contaminated water, food poisonings (Melookunnel, S. 2000, Kar and Borthakur 2008).

Wild plants are of great importance because they are used in curing various diseases (Shinwari 2010; Shinwari *et al.*, 2012). The active chemical which have a great biological importance are present in different plant parts proved to be helpful in curing the disease Mitscher *et al.*, 1980). Shah *et al.*, 2011 reported effect of plants on diarrhea and antispasmodic activity

#### MATERIALS AND METHODS

During the year 2013, a number of field trips were arranged to the study areas to bring together all those plant species which are mainly used for the treatment of diarrhea and dysentery by the local inhabitant. The information was collected using questionnaires, open interviews, and dialogue with inhabitants, such as hakims (n=50) and experienced villagers (n=150). The plant specimens were identified with the help of flora of Pakistan. Voucher specimens are deposited in the Department of Botany University of Science and Technology Bannu as per the nomenclature reported previously, Nasir and Ali, (2005); Rubina (1998); Ali and Fefevre, (1996), Khalid (1995); Wazir *et al.*, (2007).

Table 2: Species distribution among families

Family	Species
Alliaceae	2
Amaranthaceae	2
Apiaceae	2
Asteraceae	1
Caesalpiniaceae	1
Chenopodiaceae	1
Cyperaceae	1
Euphorbiaceae	1
Lamiaceae	2
Meliaceae	1
Mimosaceae	2
Moraceae	1
Myrtaceae	2
Oxalidaceae	1
Plantaginaceae	2
Poaceae	1
Punicaceae	1
Rhamnace	1
Rutaceae	2
Solonaceae	1

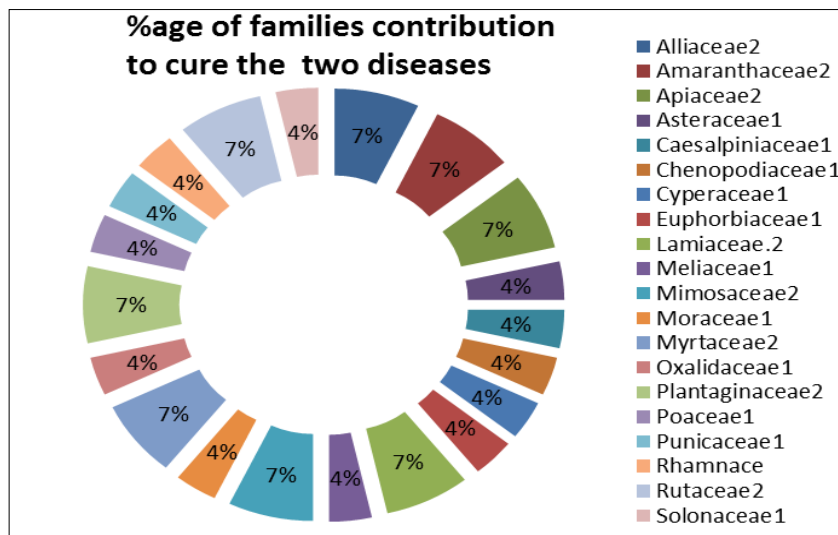


Figure 1: Percentage of families' contribution to cure diarrhea and dysentery

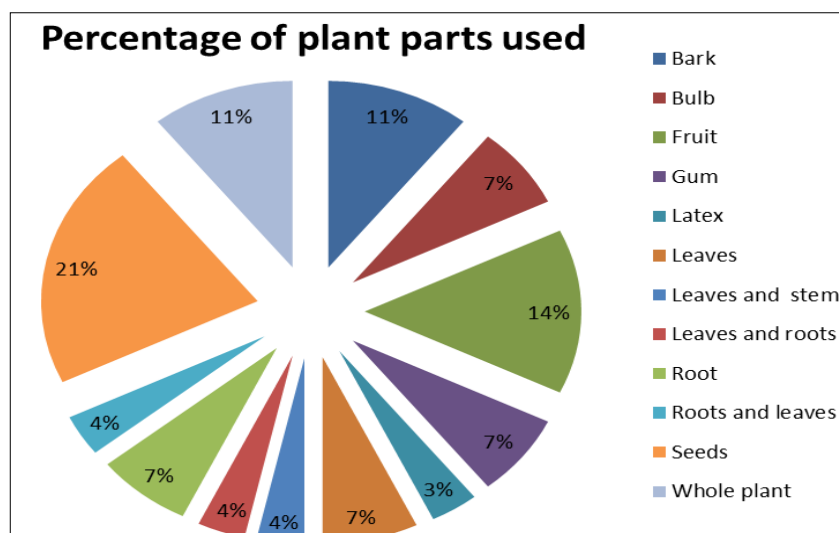


Figure 2: Percentage of plant parts used to cure diarrhea and dysentery

Table 3: Plant parts used to cure diarrhea and dysentery.

Part used	Plants
Bark	3
Bulb	2
Fruit	4
Gum	2
Latex	1
Leaves	2
Leaves and stem	1
Leaves and roots	1
Root	2
Roots and leaves	1
Seeds	6
Whole plant	3

### Results and Discussion

The study identified 28 medicinal plants belonging to 20 families in the frontier regions of Bannu. The plants were found both in their natural habitat types as well as cultivated. The plants examined included *Allium cepa* Linn, *Allium sativum* Linn, *Azadirachta indica* Juss, *Acacia nilotica* L, *Acacia modesta* wall, *Amaranthus viridis* L, *Conyza canadensis* Conquist, *Foeniculum vulgare* Miller, *Mentha arvensis* Linn, *Syzygium cumini* (Linn.) Skeels, *Psidium guajava* L, *Oxalis corniculata* L, *Plantago major* L, *Plantago lanceolata* L, *Cynodon dactylon* L, *Punica granatum* Linn, *Solanum nigrum* L, *Cassia fistula* Linn, *Chenopodium ambrosioides* L, *Achyrenthes aspera* Linn, *Citrus lemon* Linn, *Citrus aurantifolia* L, *Cyperus rotundus* L, *Ficus religiosa* Linn, *Ocimum basilicum* L, *Euphorbia hirta* L, *Daucus carota* L., and *Ziziphus jujuba* (L.) Mill. The gum of *Acacia nilotica* (Linn) Delite, is locally used in the treatment of diarrhea and

dysentery. *Allium cepa* Linn and *Allium sativum* Linn bulb juice is used to treat dysentery, *Achyrenthes aspera* Linn decoction of root is used to cure dysentery, *Cyperus rotundus* L., extract is mixed with sugar to treat dysentery, *Euphorbia hirta* L Extract from the root of Euphorbia is given to cure bloody diarrhea, *Mentha arvensis* Linn leaves are grinded into powder form and mix with curd and are used for curing diarrhea, *Syzygium cumini* (Linn.) Skeels bark is grounded into powder form and is taken thrice a day to cure diarrhea, Citrus lemon (Linn.) Burm.f fruit juice is mixed with salt and is helpful to cure dysentery etc.

It was concluded that percentage of the collected plant Parts used to cure diarrhea and dysentery were, Seeds (21%), Fruit(14), Bark (11%),Whole plant (11%), Bulb, Gum, Leaves and Root (7%) each, while leaves, roots and stem (4%) each and latex 3%.

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