IOSR Journal Of Pharmacy And Biological Sciences (IOSR-JPBS)
e-ISSN:2278-3008, p-ISSN:2319-7676. Volume 19, Issue 1 Ser. 1 (Jan. – Feb. 2024), PP 01-07
www.Iosrjournals.Org

Ethno-Medicinal Plants Used For Treatment Of Gastrointestinal Diseases In The Rural Regions Of Wardha District, Maharashtra State, India.

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Abstract:
The present study is based on the field investigation of various plants used by tribal of Wardha district to cure gastrointestinal diseases and related problems. 60 plant species are documented in which common plant species are Achyranthes aspera, Abutilon indicum,Acacia nilotica, Oxalis corniculata, Psidium guajava, Cassia fistula, Allium sativum, Aegle marmelos.Use of the plants to the humankinds is known since time immemorial. The use of plants in gastrointestinal diseases is well known. The present paper deals with study regarding the plants and their parts used against gastrointestinal diseases in Wardha district of Maharashtra state, 60 plant species belonging to 54 genera and 39 families were recorded during the present study. Almost all the plant species used in gastrointestinal diseases are used in traditional medicine by tribal and rural people. Conservation of some of the plant species by commercial cultivation and traditional methods is necessary.

Keywords: *Ethono-botany, Gastrointestinal, Family, Genera, Wardha.*

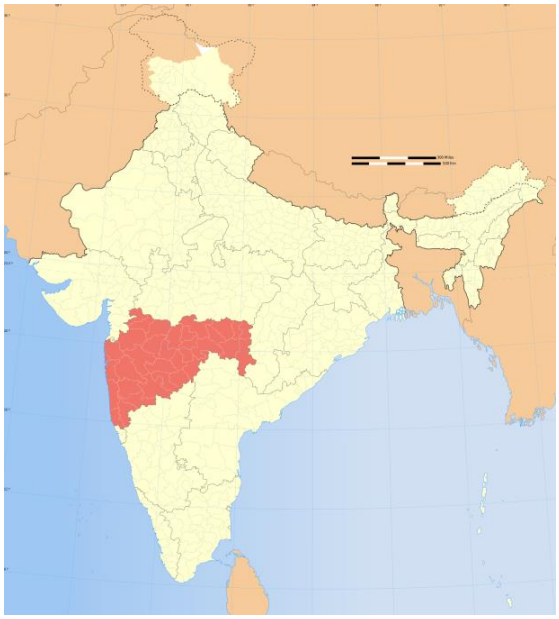
Date of Submission: 01-01-2024 Date of Acceptance: 11-01-2024

I. Introduction:

The term "Ethnobotany" was coined by Harshberger, an eminent American economic botanist in 1896. "Ethnobotany is the study of the relationship which exists between people of primitive societies and theirplant environment." Ethnobotany has emerged as an important branch of study which focuses on the utility of different plant species and their properties as food, medicine and for other uses (Allen *et al*., 1990, Cotton, 1997).In India the rural population is dependent on nature for meeting their health care needs. India has a rich knowledge of medicinal plant and the art of herbal treatment has very deep roots in Indian culture. Even today in most of the rural areas people are depending on herbal drug system for primary health care. Use of medicinal plants is found in almost in all the villages in Wardha district. The survey was conducted during the month October 2015 to September 2016. Plants are the great source of medicine especially in traditional medicine, which are useful in the treatment of various diseases (Bako *et al.*, 2005). The use of plant species of the Himalaya, as medicine has been known for long time and about 1748 medicinal plants are reported from Indian Himalaya, (Samant *et al*., 1998).The tribals and rural people depend on the traditional medicine for the remedy and cure of gastrointestinal diseases. They use different parts of the plants during different occasion like birth of child, marriages, worship of gods, worships of spirits, gastrointestinal disorder and different types of diseases. Gastrointestinal disorders are common in rural areas of Wardha district because of lack of hygienic condition and malnutrition as well as having insufficient availability of pure water. The present study deals with the study of the plants used to cure gastrointestinal diseases in Wardha district.

Study area: The present ethno-medicinal study has been carried out in Wardha district of Maharashtra Wardha district has a dry tropical weather climate with1100mm. Rainfall in the highest range of temperature the maximum temperature is 47.9^0C and Minimum temperature is 30^0C and in the range of lowest temperature the maximum temperature is 23^0C.and minimum temperature is 10.2^0C. Present study site is at an elevation of 234meter (767feet) at the latitude of 78.61^0East and longitude of 20.71^0North. The land scape of the district has a typical seasonal monsoon, where people are engaged in agriculture.

Wardha district occupy about 6310Km^2 of the total geographical area in which forest occupy 576.63Km^2. there are eight talukas, 1376 villages and 13 towns. As per the census of India 2011.Wardha district has population of 1,300,774 of which 668385 are male and 632389 are female of the total population 40%of population lives in urban areas and 60% population lives in rural area. The present investigation therefore attempts to study medicinal plants used by tribals and rural people for gastrointestinal diseases and related problems.



Map.1. India showing Maharashtra state.

Map.2. Wardha District showing tehsils.

II. Methodology:

The information of plants used on gastrointestinal diseases was collected by interviewing the elder person, local informers, as well as traditional healers. The information regarding the plants and their parts used at the time of gastrointestinal problem,constipation, stomach ache, and diarrhoea. Its importance, beliefs and benefits was collected and noted. The information about the medicinal use and importance of the plants used during the gastrointestinal problems was collected by interviewing the traditional healers. The plants were collected and identified with the help of available floras. Hooker,(1872-1897), 'Flora of British India' Vol. I-VII. Crooke, (1901-1908), 'Floras of presidency of Bombay' Acharya, (1985) 'Floras of Wardha District.'Ugemuge,(1986), 'Floras of Nagpur district' herbarium specimen were deposited in the Department of Botany, R. S. Bidkar College, Hinganghat, district Wardha (Maharashtra State). The habit of the plants was categorized into 3 classes herb, shrubs and trees. Plant parts us was categorized into leaves, roots, stem, whole plant, seed, fruit and flower. The information about the plants i.e. the Botanical name, Family, Local name, Plant parts used and its ethno-medicinal used was noted.

III. Observation and Result:

Sr. No.	Botanical name	Family	Local name	Plant parts used	Ethnomedicinal used
1	*Abutilon indicum* (L.) Sweet.	Malvaceae	Atibala	Whole plant	Decoction or powdered is used against constipation one teaspoon after lunch and dinner
2	*Acacia modesta* Wall.	Mimosaceae	Babul	Bark	Decoction is made by boiling bark or powder of bark is made by grinding the bark treatment of gas trouble and abdominal diseases two-teaspoon after 10 hrs. for a day
3	*Acacia nilotica* (L.) Willd. Ex Delile.	Mimosaceae	Babhul	Bark and pods	Decoction of bark used in diarrhoea and pods are grinded to make powder mixed with jagary to treat dysentery. 500 mg peels given to twice a day.
4	*Achyranthes aspera* L.	Amaranthaceae	Aghada	Whole plant	Its decoction is used in stomach disorder. The juice of the plant is used in abdominal pain , dysentery and in bowel complaints

5	*Aegle marmelos* (L.) Corr. Serr.	Rutaceae	Bel	Root	Root juice for curing dysentery, Fruit promote digestion and relief from dysentery.
6	*Ageratum conyzoides* L.	Asteraceae	Ganera	Leaf	Warm leaf infusion is given for three days as anti-dysenteric and anti-diarrhoeic.
7	*Albizia lebbeck* (L.) Benth.	Miomosaceae	Shiris	Bark	Decoction of bark is used to treat diarrhoea 1-2 teaspoon after 6hrs for a day.
8	*Allium cepa* L.	Liliaceae	Kanda	Bud	Equal amount of extract of onion bulb and mint are mixed and given for cholera.
9	*Allium sativum* L.	Liliaceae	Lasoon	Seed	Seed infusion of *Zanthoxylum armatum* mixed with the *Allium sativum* bulb and little salt is taken twice a day in stomach bloating.
10	*Andrographis paniculata* (Burm.f.) Wall.ex. Nees.	Acanthaceae	Kalmegh	Shoots	Infusion of dry shoots soaked in water is given to infant once in a day to control irregular stool and also used as anthelmintic.
11	*Aristolochia bracteolata* Lam.	Aristolochiaceae	(Sapan)	Root	Root is warmed on fire and pounded, decoction prepared from powdered root in water is given three times a day as anti-dysenteric and antidiarrheal.
12	*Artemisia absinthium* L.	Asteraceae	Davana	Leaf	Leaves are boiled to expel intestinal worms, indigestion, diarrhoea and vomiting.
13	*Asparagus racemosus* Willd.	Asparagaceae	Shatavari	Root	Ground root is effective for carminative
14	*Azadirachta indica* A. Juss.	Meliaceae	Neem	Leaf	Leaves decoction of leaves is taken for digestive and gastric problems. Two teaspoon for Three days.
15	*Boerhaavia diffusa* L.	Nyctaginaceae	Punrnava	Root	Gas troubles
16	*Bryophyllum calycinum* Salish.	Crassulaceae	Panfuti	Leaf	Hot infusion of leaves is taken twice a day as antidysenteric.
17	*Carica papaya* L.	Caricaceae	Papai	Root	Root decoction is given in malarial attacks, dysentery and dog bites.
18	Cassia fistula L.	Caesalpiniaceae	Amaltas	Fruit	A piece of fruit containing 10-12 seed are ground and boiled in ½ litter of water and strained for dysentery 3-4 teaspoon 2-3times daily.
19	*Centella asiatica* L.	Apiaceae	Mandukparni	Whole plant	Fresh whole plant extract is taken twice-to thrice a day as stomachic.
20	*Chenopodium album* L.	Chenopodiaceae		Leaf	Leaves are boiled and the extract is drunk as laxative.
21	*Citrullus colocyanthis* (L.) Schrad.	Cucurbitaceae	Indrayan	Fruit	Fruit is cut boiled in water and sugar added to make murabba used for constipation and abdominal diseases.

22	*Coriandrum sativum* L.	Apiaceae	Sambhar	Fruit	Fruit is crushed and mixed with salts as carminative indigestion.
23	*Crotolaria burhia* Benth.	Papilionaceae	Ghagri	Whole plant	Dried plant is ground mixed with water and strained and is given locally for diarrhoea and other abdominal pain.
24	*Curcuma longa* L.	Zingiberaceae	Halad	Rhizome	Rhizome is effective in treatment of stomach, and stomach bleeding.
25	*Cyperus rotundus* L.	Cyaperaceae	Nagarmotha	Rhizome	Rhizome is effective in treatment of dyspepsia, diarrhoea and vomiting.
26	*Datura stramonium* L.	Solanaceae	Dhotra	Whole plant	Seed are used in intestinal worms.
27	*Equisetum arvense* L.	Equisetaceae	Horse tail	Whole plant	Plant used in diarrhoea.
28	*Eugenia jambolana* Lam.	Myrtaceae	Jambhul	Stem	For stomach problems grinds the seeds and make powder 1-2 teaspoon daily for three days.
29	*Euphorbia hirta* L.	Euphorbiaceae	Dudhi	Whole plant	Plant used in stomach pain.
30	*Ficus palmata* Forssk.	Moraceae	Umbar	Fruit	Fresh fruit are eaten raw to cure diarrhoea and constipation.
31	*Ficus religiosa* L.	Moraceae	Pimpal	Bark	Burn the bark and make powder from it take 5 gm. of it orally with water to diarrhoea.
32	*Foenicum vulgare* Mill.	Apiaceae	Sounf	Flower	Equal quantity of fennel fruit, coriander fruit, *Anethum sowa* and sugar are mixed and ground together to make powder for dyspepsia and abdominal pain. Twice a day after meal.
33	*Fumaria indica* (Hausskn.)Pugstey.	Fumariaceae	Pitpapra	Whole plant	It is used in aches and pain, diarrhoea and vomiting.
34	*Malva parviflora* L.	Malvaceae	Narr	Leaf	Decoction of leaves is used for stomach problem. It is also used as laxative.
35	*Melastoma malabathricum*L.	Melastomaceae	Rindha	Leaf	Fresh leaf extract is used as anti-dysenteric. Shoot juice are used as mouth wash to relieve a toothache.
36	*Melia azadirachta* L.	Meliaceae	Bakneem	Leaf and fruit.	Leaves and fruit decoction is used to remove intestinal worms. Two teaspoon for 10 hrs. per day.
37	*Mentha longifolia* (L.) Huds.	Lamiaceae	Mint	Whole plant	Fresh leaves are boiled in water with green tea mixed some sugar to cure diarrhoea 2-3 teaspoon after 5 hrs. for a day.
38	*Mentha piperita* L.	Lamiaceae	Padina	Leaf	Tea made from the leaf is used as digestive.
39	*Moringa oleifera* Lam.	Moringaceae	Shewaga	Stem	10 ml of stem bark extract from *Moringa oleifera* with 100ml curd once a day for 10days.
40	*Morus nigra* L.	Moraceae	Tuti	Fruit	Fruit are boiled and the extract is drunk to cure diarrhoea.

41	*Musa paradisiaca* L.	Musaceae	Keli	Fruit	Boiled fruit is given once or twice daily to stop loose motion.
42	*Myrtus communis* L.	Myrtaceae	Malati	Leaf and fruit	Leaf and fruit are boiled and the extract is drunk to cure diarrhoea.
43	*Nasturtium officinale* R. Br.	Brassicaceae	Aliv	Whole plant	Leaves are taken orally for constipation.
44	*Opuntia dillenii* (Ker Gawl.) Haw.	Cactaceae	Nivdung	Leaf, Fruit	Ripened fruit is boiled in water and some sugar and take orally for constipation.
45	*Oxalis corniculata* L.	Oxalidaceae	Amboti	Leaf	Leaves extract juice from fresh leaves use against stomach troubles. One teaspoon twice a day.
46	*Phyllanthus emblica* L.	Phyllanthaceae	Awala	Fruit	Fruit effective in diarrhoea, dysentery and digestive.
47	*Physalis minima*L.	Solanaceae	Ranpopti	Fruit	Fruit extract is administered for gastric problem.
48	*Portulaca oleraceae* L.	Portulacaceae	Gholbhaji	Stem and leaf	Stem and leaves are taken as vegetable with boiled rice as stomachic.
49	*Psidium guajava* L.	Myrtaceae	Peru/ jamb	Leaf Fruit	Decoction of fresh tender leaf is taken for treating dysentery and diarrhoea. Tea made from the leaf is used as digestive. Fruit is digestive.
50	*Punica granatum* L.	Punicaceae	Anar	Fruit	Outer covering of fruit is dried and crushed and powder is taken with water for diarrhoea one table spoon daily for 3-4days.
51	*Rosa indica* L.	Rosaceae	Gulab	Flower	Flower are mixed with sugar put in sun place take orally with water funnel for vomiting.2gm twice a day.
52	*Saccharum officinarum* L.	Poaceae	Uoos	Stem	Stem extract useful in indigestion twice a day.
53	*Solanum spirale* Roxb.	Solanaceae	Marang	Fruit	Warm decoction of fruit is used in stomach-ache and also taken as vegetable.
54	*Sonchus arvensis* L.	Asteraceae	Mhatara	Leaf	Boiled leaves are taken for curing flatulence and body pain.
55	*Tagetus minuta* L.	Asteraceae	Chota Zendu	Leaf and Flower	Leaves and flower are boiled to prepare infusion which is helpful in curing stomach ache, gas and diarrhoea
56	*Trichosanthes cordata* Roxb.	Cucurbitaceae	Kadu padval	Root	Root decoction is used for dysentery and diarrhoea.
57	*Withania coagulans* (Stocks) Dunal.	Solanaceae	Paneer ful	Flower and leaf	Flower leaf and fruit are mixed with salt and take orally with water for gastric and abdominal pain. Extract of leaves is used twice a day for 3-4days.
58	*Woodfordia fructicosa*(L.) Kurz.	Lytharaceae	Dhayati	Flower	Flower is used in diarrhoea, dysentery and ulcers.

59	*Zingiber officinale* Roscoe	Zingiberaceae	Adrak	Stem	It is used for many gastrointestinal complaints including digestion. Tea made from the bark is used as digestive.
60	*Ziziphus jujuba* Mill.	Rhamnaceae	Bor	Fruit and root	Roast the fruit and eat for the treatment of stomach problem. Take 5gm of root powder and seven pieces of black pepper grind and mix used to cure diarrhoea and abdominal pain. Small amount twice a day.
61	Ziziphus nummularia (Burm. f.)Wight.and Arn.	Rhamnaceae	Bor	Leaf and bark	Decoction of leaf and bark is used in dysentery take orally thrice a day for 2-3days.

IV. Discussion and Conclusion:

Plants parts used in gastrointestinal diseases are Leaf (17), Fruit (15), Whole plant (10), Root (6), Stem (5), Flower (5), Bark (5), Rhizome (2), Seed (2), and Bud and Shoot each with (1).In the present study, 60 medicinal plants used by the villagers of the Wardha district. All these species belong to Dicotyledons, Monocotyledons and one Pteridophytes of these families included in the study family Solanaceae is a dominant family with four species followed by family Asteraceae, Apiaceae, Fabaceae Moraceae and Myrtaceae each with three species. Family Amaranthaceae, Cucurbitaceae, Liliaceae, Malvaceae, Meliaceae, Lamiaceae, Rhamnaceae, Zingiberaceae represented by two species. Family Asparagaceae, Aristolochiaceae, Brssicaceae, Cactaceae, Cyperaceae, Caesalpiniaceae, Crassulaceae, Caricaceae, Euphorbiaceae, Equisetaceae, Melastomaceae, Moringaceae, Musaceae, Rosaceae, Nyctaginaceae, Oxiladaceae, Portulacaceae, Poaceae, Punicaceae, Phyllanthaceae, Papilionaceae, Rosaceae and Rutaceae each represented by one species. These observations were coinciding with enumeration of earlier ethno-Botanists. Sumeet Gairola *et al*., (2013) reported 50 plant species used for the treatment of dysentery and diarrhoea, by the Bhoxa community of the district Dehradun, Uttarakhand, India. The present study was also noted the tribal people using plants for treatment of Stomach-ache and gastrointestinal disorder.These observations were coinciding with the enumeration of the earlier ethnobotanist viz, Kamble *et al*., (2008) and Biswakarma These observation are well supported by the previous studies of Tangjitman *et al*., (2015) reported 36 plant species used for the treatment of digestive system disorders by the people of Karen of northern, Thailand. Yunus Dogan &Ilker Ugula. (2013) documented 33 plant species used for the treatment of gastrointestinal disorder in some Districtof Izmir Province, Turkey. Prasad *et al*., (2013) documented 32 plant species used by the tribes for the treatment of digestive system disorder in Wayanad district, Kerala. Wali *et al*.,(2022) reported 61 plant species for the treatment of gastrointestinal diseases by tribal communities living in Diamir district, Western Himalayas, Pakistan. Chandra Prakash Kale, (2016) documented 90 plant species in the treatment of 10 types of gastrointestinal diseases including dysentery, diarrhoea, ulcer, gastric troubles, flatulence, piles, indigestion and cholera from Garwal region of Uttarakhand state in India. M. B. Rokaya *et al*., (2014) documented 947 species used to treat gastrointestinal disorders in Nepal. Thakur et al.,(2020)reported 40 plant species used to treat various gastrointestinal ailments by the inhabitants of Kishtwar Plateau in Jammu and Kshmir, Northwestern Himalaya, India. Lawaly Maman Marzo, (2017) 140 plant species recorded as being used to treat gastrointestinal disorders from Niger population, Western Africa. Sandrasari, *et al*., (2021) reported 51 plant species used by the Indonesian indigenous plants as a source of antioxidant to treat gastrointestinal disorders. Noor, *et al*., (2023) reported 126 leafy vegetables plant species used against gastrointestinal disorders in the Balasore district of Odisha, India. Kamble *et al*., (2008). 33 plant species used by the tribal people for the treatment of gastrointestinal disorder from the North Western region of Maharashtra. Patekar *et al*., (2019) 26 plants were reported to be used in the treatment of gastrointestinal diseases in the Amboli region of Maharashtra. Akash Tariq *et al*., (2015) enumerated 52 plant species were to be used against gastrointestinal complaints in five selected remote region of Pakistan. Kala (2016) were documented 90 plant species used for the treatment of gastrointestinal diseases from Garhwal region of Uttarakhand state in India. Kale and Arekar (2017) reported 15 plant species used for the treatment of gastrointestinal and urinary tract infections from Bordi

region of Dahanu taluka of District Thane. Kagyung *et al*.,(2010) reported 44 plant species used for the treatment of various gastrointestinal diseases from by Adi tribes of Dehang-Debang Biosphere reserve in Arunachal Pradesh.

Acknowledgements:

Author are very much thankful to all the informants, medicine men and housewives who have willingly shared their knowledge about festival and ethnomedicine significance with me, who encouraged me to take up this survey. We are grateful to Dr. S. N. Malode Head, Department of Botany, Government Vidarbha Institute of Science & Humanities, Amaravati, for the encouragement and possible help. Author is also thankful to Dr. L. P Dalal, Dr. B.M.Rajurkar, Prof. K.B.Bhute and Dr. M.N.Mhaiskar for critically editing the manuscript.

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