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MEDICINAL PLANTS PROFILE AND SOME SCREENING METHOD USED IN THE TREATMENT OF DIARRHEA: A REVIEW

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ABSTRACT

There are two system of healthcare in developing world, one being traditional and other is western in derivation as we know diarrhea is leading cause of child and adult mortality in India. This paper deals with medicinal plant reported for significant anti-diarrheal activity. In past years' herbal medicine has gained an exponential growth in the field of medicine in all over world. In comparison to other countries India is the largest producer of medicines. The current review focuses on herbal preparation and plants recently evaluated in the treatment of diarrhea disease in the world. This paper will focus on different beneficial aspects of herbal medicine as anti- diarrheal.

KEYWORD: Anti-diarrheal, Herbal medicine.

INTRODUCTION

Diarrhea is commonly defined by medicinal practitioners as having more than three watery or loose bowel movements per day. The disease can arise from multiple causes including bacterial, viral or parasitic infections as well as simple causes like indigestion arising from over eating. Children under the age group of five are most vulnerable and accounted for 1.5 million deaths in 2009. Dairrhea is most commonly due to viral gastroenteritis with rotavirus, which accounts for 40% of cases in children under five. However, the disease can also affect children above five years of age and adults, who accounted for another 1.1 million deaths in the same year. Norovirus is the most common cause of diarrhea in adults. Adenovirus and astroviruses have also been implicated in diarrhea. Various bacterial species, which have been found to cause diarrhea are species belonging to the Aeromonas, Cryptosporidium, Campylobacter, Salmonella, and Shigella, genus as well as Escherichia coli. Parasites like

Giardia can also cause diarrhea. Chronic diarrhea can be due to a number of chronic medical conditions affecting the intestine. Common cause includes ulcerative colitis, Crohn's disease, microscopic colitis, celiac disease, irritable bowel syndrome and bile acid malabsorption. Diarrhea can also be a symptom of another disease like cholera, caused by Vibrio species. Excessive passing out of water during diarrhea can cause severe dehydration and electrolyte imbalance leading to fatality.

Diarrhea is generally classified under five categories. Secretory diarrhea occurs when the gut is excreting more fluids then normal or is unable to absorb fluids. Motility-related diarrhea occurs when food moves too quickly through the intestines without having adequate time for proper absorption. Inflammatory diarrhea happens when the gut lining becomes inflamed. Osmotic diarrhea is when too much water is drawn into the bowels. Finally, dysentery is defined as diarrhea when blood passes out with stool and is caused by a release of excess water caused by an antidiuretic hormone from the posterior pituitary gland.

The majority of diarrheal cases occur in the poorer segments of the population in poor or developing countries. Non-maintenance of proper hygiene (like washing of hands following defection) or drinking of contaminated water (particularly water with fecal contamination) can cause diarrhea through presence of diarrhea- causing bacteria, parasites or viruses in the water.

In a study conducted between 2005 and 2008 among diarrheal patients, it was observed that vibrio species were the most predominant followed by Shigella species, aeromonas species, and Salmonella species.[1] Hand washing before preparing food has been shown to reduce incidences of diarrheal in children highlighting the importance of proper hygiene even if the hand were washed with water only.[2] Families using water from deep tube wells had less incidences of childhood diarrhea as opposed to families using water from surface areas in rural villages.[3] On the other hand, at least for the Dhaka city area, factors associated with high temperature, low humidity and high river-level has been found to increase the incidence of rotovirus diarrhea.[4]

HERBAL PLANTS USED AS AN ANTIDIARRHEAL[5-30]

Table 1.

S.No	Name of drugs	Common name	Family	Parts used	Uses
1	Aegle Marmelos	bael	rutaceae	root	Anti-diarrheal
2	Aerva lanata	Kapuri jadi	amaranthaceae	Whole plant	Anti-diarrheal
3	Aframomum Melegueta	Melegueta pepper	Zingiberaceae	seed	Anti-diarreheal
4	Ageratum Conyzoides	Jangli pudina	Asteraceae	Leaves	Anti-diarrheal
5	Alchornea cordifolia	English Christmas bush	Euphorbiaceae	Leaves	Anti-diarrheal
6	Achyranthes aspera L. (Herb)	Latzeera	Amaranthaceae	Root	Anti-diarrheal
7	Acacia Arabica L. (Tree)	Babul	Leguminosae	Leaf,bean	Anti-diarrheal
8	Acalypha hispida	Kuppi	Euphorbriaceae	Flower	Anti-diarrheal
9	Blighia sapida	Ackee	Sapiandaceae	Stem bark	Anti-diarrheal
10	Butea monosperma lam.(Tree)	Palas	Leguminosae	Gun	Anti-diarrheal
11	Byrsocarpus Coccineus	Ghana Adangme	Connaraceae	Leaves	Anti-diarrheal
12	Calotropis procera	Apple of sodom	Apocynaceae	Leaves	Anti-diarrheal
13	Calotropis Gigantean	Jilledu	Apocynaceae	Arieal parts	Anti-diarrheal
14	Camellia sinensis	chai	Theaceae	Leaves and the Buds	Anti-diarrheal
15	Cissampelos Pateira Linn	Abuta	Menispermaceae	Root	Anti-diarrheal
16	Curcuma amada roxb. (Herb)	Amahaldi	Zingiberaceae	Rhizome	Anti –diarrheal
17	Cyperus Rotundus	Motha	Cyperaceae	Rhizome	Anti- diarrheal
18	Dalbergia Lanceolaria	Himalaya raintree	Fabaceae	Bark	Anti- diarrheal
19	Elephantopuus Scaber	Elephant Root	Asteraceae	Leaves	Anti-diarrheal
20	Emblica Officinalis	Amla	Euphorbiaceae	Fruit	Anti-diarrheal
21	Emilia Coccinea	Tassel	Asteraceae	Leaves	Anti-diarrheal
22	Enhydra fluctuans	Helencha	Asteraceae	Rhizomes	Anti-diarrheal
23	Eracleum Nepalense	Nepal Hogweed	Umbelliferae	Root	Anti-diarrheal
24	Euphorbia hirta	Bara Dudhi	Euphorbiaceae	Whole root	Anti-diarrheal
25	Ficus species	Ficus tree	Moraceae	Bark,leaves	Anti-diarrheal
26	Ficus glomerta Roxb (Tree)	Gular	Moraceae	Bark	Anti-diarrheal
27	Hedychium Spicatum	Kapur kachari	Zingiberaceae	Rhizome	Anti-diarrheal
28	Holorrhena antidysenterica Raxb. (Tree)	Dudhi	Apocyanaceae	Bark	Anti-diarrheal
29	Indigofera Pulchara	Iporuru	Papilionaceae	Areial part	Anti-diarrheal
30	Ixora Coccinea	Rang an	Rubiaceae	Flowers	Anti-diarrheal`
31	Jatropha Curcus	Physic nut	Euphorbiaceae	Root	Anti-diarrheal
32	Limonia Acidissima	Wood apple	Rutaceae	Bark	A nti-diarrheal
33	Litsea Glutinosa	Chandna	Lauraceae	Leaves	Anti-diarrheal
34	Litsea Polyantha	Meda	Lauraceae	Bark	Anti-diarrheal
35	Mangifera Indica	Mango	Anacardiaceae	Seeds	Anti-diarrheal
36	Marsilea Quadrifolia	Water Shamrock	Marsileaceae	Whole plant	Anti-diarrheal

37	Mimosa Pudica Linn	Chuimui	Fabaceae	Leaves	Anti-diarrheal
38	Moringa Oleifera	Drumsticj tree	Moringaceae	Root	Anti-diarrheal
39	Mucuma pruriens L.	kewanch	Fabaceae	Root	Anti-diarrheal
40	Paederia Foetida	Gandha prasirini	Rubaiceae	Whole plant	Anti-diarrheal
41	Phyllodium polchellum	Jatsalpan	Fabaceae	Bark	Anti-diarrheal
42	Picralima nitida	Akuamma	Apocynaceae	Whole plant	Anti-diarrheal
43	Pongamia glabra	Karanja	Fabaceae	Leaves	Anti-diarrheal
44	Punica granatum	Pomegranate	Punicaceae	Flowers	Anti-diarrheal
45	Psidium guajava L.(shrub/smalltree)	Amrood	Myrtaceae	Leaves	Anti-diarrheal
46	Rhizophora mucronata	Red Mangrove	Rhizophoraceae	Bark	Anti-diarrheal
47	Rhus semialata	Nutgall tree	Anarcardiaceae	Fruit	Anti-diarrheal
48	Rumex martium	Golden dock	Polygonaceae	Root	Anti-diarrheal
49	Stachytarpheta jamaicensis	porterweed	Verbenaceae	Leaves	Anti-diarrheal
50	Strychnous nux-vomica	Poison Nu	Loganiaceae	Root,bark	Anti-diarrheal
51	Tephrosia Purpurea	Sarphonk	Fabaceae	Whole plant	Anti-diarreheal
52	Termination Catappa	Sea Almond tree	Combretacae	Leaf	Anti-diarrheal
53	Thevetia peruviana	Yellow oleander	Apocynaceae	Leaves	Anti-diarrheal
54	Thunbergia Fragrans	Chimine	Acanthaceae	Leaves	Anti-diarrheal
55	Trilepisium madagascarience	Urnfig	Moraceae	Stem bark	Anti-diarrheal
56	Xanthium indicum	cocklebur	Asteraceae	Leaves	Anti-diarrheal
57	Zingiber offiicinaie	Ginger	Zingiberaceae	Rhizomes	Anti-diarrheal
58	Zizyphus vulguris (shrub/small tree)	Ber	Rhamnaceae	Root,bark	Anti-diarrheal

Screening Methods

1. Castor oil – include diarrhea in rats

The method followed that of Awouters (1978) with modifications. In this study rats of either sex (180-200 g) were fasted for 18 h. The animals were housed in six steel cages containing ten in each. None of the aninmals died even at a dose of 3 g/kg of each extract. The doses for the different extracts used were selected on a trial basis and were administered orally at a dose of 400 mg/kg. The fifth group received diphenxylate (5 mg/kg) orally in the form of a suspension as the standard drug for comparison. The sixth group which served as control received 1 ml of castor oil orally and was then observed for defecation. Up to 4 h after the castor oil challenge the presence of characteristic diarrhoeal droppings were noted in the transparent plastic dishes placed beneath the individual rat cages.[18]

2. Gastrointestinal motility tests

Rats were fasted for 18 h and placed in six cages containing ten in each. Each animal was administered orally with 1 ml of charcoal meal (3% deactivated charcoal in 10% aqueous tragacanth). Immediately after that, the first four groups of animals were administered orally with different individual extract suspension (400 mg/kg). The fifth group received atropine (0.1 mg/kg, i.p.), the standard drug for comparison. The sixth group was treated with aqueous tragacanth suspension as control. 30 min later each animal was killed and the intestinal distance moved by the charcoal meal from the pylorus to the caecum for each of animal.[18]

3. PGE2- Induced enteropooling

In this method rats were deprived of food and water for 18 h and were placed in six cages with ten animals per cage. The first groups of rats were treated with different extrcts at a dose of 400 mg kg `1 (p.o.). the fifth group was treated with 1 ml of 5% v/v ethanol in normal saline (i.p.) and then it was treated with aqueous tragacanth suspension as mentioned earlier, which served as vehicle control. Immediately after the extract administration PGE2 (Astra-IDL, India) was administered orally to each rat (100 mg/kg) in the first four groups, in 5% v/v ethanol in normal saline. The sixth group was treated with PGE2 as well as tragacanth suspension and served as PGE2 control group. After 30 min following administration each rat was killed and the whole length of the intestine from the pylorus to caecum dissected out and its contents were collected in a test tube and the volume was measured.[31]

CONCLUSION

The present review discusses the medicinal plant which plays important role against diarrhea diseses the different medicinal plants and their extract have significant anti diarrheal activity. our current review result shows that the above mentioned herbal plant can be used to treat diarrhea disease. The variety of medicinal plant have been reported to possess that activity. Hence, the review study is concluded that herbal drug possesses anti-diarrheal activity which has been proved by different animal study which may leads to do feature research.

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