

**FORMULATION AND INVIVO INVESTIGATION OF POLYHERBAL ANTI-DIARRHOEAL SYRUP****N. Deepa*, R.Kaviselvan, E.Prithivirajan, S.Dhanapriya, S.Krishna, N.Ram Vignesh**Department of Pharmacy, Saveetha College of Pharmacy, Saveetha Nagar, Thandalam,
Chennai – 602105, Tamilnadu, India.**ABSTRACT**

Diarrhoea is the common disease mostly seen in developing countries. It is caused by contaminated food, variety of virus, and bacteria and parasitic organisms. 70% of acute diarrhoea is due to food borne disease. Chronic diarrhoea is caused by inflammatory bowel disease, microscopic colitis. The antibiotics and their resistance are used for the bacteria clostridium difficile which increases the diarrheal incidence. Herbal medicines are used mostly on india and plays important role in the world. Plants consist of astringent properties, anti-inflammatory properties, and also bulk forming agents are used for the treatment of diarrhea. The SYRUP showed marked reduction in the number of diarrhoea stools and the reduction in the weight and volume of the intestinal contents, as well as a modest reduction in intestinal transit. This study did not go further, to demonstration as to whether the extract altered the activity of Na/K ATPase or activation of chloride channels. .

Keywords: Anti-diarrhoeal, Syrup Formulation, Polyherbal, Castor Oil Induction.**INTRODUCTION**

Diarrhea in developed countries is the most prevalent bowel movement condition that originates from polluted food and water. Bacteria, bacterial infections and infectious worms are also caused by it. Because of foodborne illness, 70% of acute diarrhea happens while the condition lasts from one to two days. Chronic diarrhoea is caused by microscopic colitis and IBD. The antibiotic resistance used in clostridium difficile bacteria suggests a greater frequency of diarrhea. Plants used in diarrheal therapy are involved in astringent activity, non-inflammatory components and bulk shaping agents[1]. Owing to the side effects of chemotherapy treatment, the patient requires secondary palliative care. Plant medicines are well known for their non-toxic side effects, so the objective of the study is to develop a drug from medicinal plant against colon cancer with non-toxic side effects. It plays an important role in the discovery of lead compound for development of conventional drugs. About 60% of currently used anticancer agents are derived from natural source (i.e. plants). Phytochemically the plant has been investigated for cardenolides, alkaloids, triterpenes and

saponins and it is found to contain a variety of triterpenes and steroidal compounds and also to find out, a newer synthetic drug, for its anti-antidiarrhoeal potential and its toxic profile. In the current work, a syrup formulation with varying concentration of herbs in it and the same is tested for the anti-diarrhoeal activity [2].

Materials and Methods**Preparation of extracts**

Plant parts were obtained in the locality from the dealer shop and the plant parts were correctly authenticated. Parts were cleaned, powdered and moved through a 40-mesh sieve under controlled temperature. In the Soxhlet apparatus, 100g of powdered plant material was wrapped and refluxed with purified water before a transparent solution was obtained. The extracts were measured in accordance with the proportions prescribed in table 1. The proportions are combined into the basic solution of syrup[3]. In the syrup, the final concentration of the extracts would be 10% w/v.

Animals used

We obtained albino wistar rats (150-230g) of either sex. The animals were housed in polypropylene cages in a well-ventilated room with a light/dark period of 12:12 hours. Standard pellet feed (Hindustan Lever Limited., Bangalore) was fed to the animals, and water was given ad libitum. Ethical Commission consent has been received from the CPCSEA's IAEC (Institutional Animal Ethics Committee)[4,5].

Castor oil-induced diarrhoea

Diarrhea was caused by administering 1 ml of castor oil orally to rats. Rats were split into four classes of six animals each. Group I was treated as control (2 ml/kg, i.p. saline), Group II was treated with atropine (3 mg/kg, i.p.) as normal, and Group III and IV were treated with SYRUP (100 and 200 mg/kg, i.p.) 1 h prior to administration of castor oil[6,7]. The amount of wet and dry diarrheal droppings relative to the positive control group consisting of animals undergoing an intraperitoneal saline injection (2ml/kg, i.p)[8] is counted every hour with an average of 4 h of stools passing through the treated groups.

Statistical analysis

The data was expressed as mean \pm standard error mean (S.E.M). The magnitude of discrepancies between groups was analyzed using one-way and multiple-way

variance analysis (ANOVA). Significance was known to be the test preceded by Dunnet test P values below 0.05[8,9].

RESULTS

Castor oil-induced diarrhoea

A time period of 30 min after administration of castor oil the diarrhoea was clinically apparent in all the animals of control group, for the next 4 h. This was markedly reduced by the intraperitoneal injection of atropine, 3 mg/kg (70.92%). A similar marked reduction in the number of defecations over four hours was achieved SYRUP 200 and 400 significantly inhibited the defecation. SYRUP 200 and 400 mg/kg, i.p. delayed the onset of diarrhoea and only 30% of animals showed diarrhoea at first hour (P<0.001) (Table 1).

Chemical and reagents

The reference standard of Dabigatran mesylate was received as a gift sample from Madras pharma Limited, Chennai. HPLC grade Acetonitrile and Trimethylamine were purchased from Sigma Aldrich, India. O-phosphoric acid was purchased from Thermo Fischer pvt ltd. Ultra-pure water was obtained from Mille-Q water purification system from Millipore (Milford) USA.

Table 1: Formulation of the syrup using herbal extracts

Ingredient	Dose	
	Syrup 200	Syrup 400
Senna extract	100mg	100mg
Aloe vera gel	100mg	100mg
Curcuma longa extract	60mg	30mg
Oscimum sanctum dry powder	60mg	30mg
Mucuna Pruriens extract	30mg	30mg
NaCl	--	10mg
Methyl paraben	0.5mg	0.5mg
Dextrose Sugar	1g	1g
Distilled water	Qs to make 10ml	Qs to make 10ml

Table 2. Effect of SYRUP on castor oil-induced rats.

Group	Treatment	Mean Defecation in 4hr	% Inhibition of Defecation
I	Castor oil (1ml p.o) + saline (2ml/kg i.p)	27.53 \pm 4.67	---
II	Castor oil (1ml p.o) + atropine (3mg/kg i.p)	10.07 \pm 0.54**	71.06
III	Castor oil (1ml p.o) + SYRUP (200mg/kg i.p)	19.36 \pm 3.2*	45.73
IV	Castor oil (1ml p.o) + SYRUP (400mg/kg i.p)	12.69 \pm 2.08**	66.45

Effect of SYRUP on castor oil-induced diarrhoea in rats: SYRUP was administered i.p 1 h before castor oil administration. Values are expressed as mean \pm SEM from the experiments. *P<0.01, **P<0.001 when compared with *Castor oil* + saline-treated group.

CONCLUSION

In conclusion, SYRUP showed a marked decline in the amount of diarrhoea stools and a decrease in intestinal weight and length, as well as a small decrease in intestinal transit. This research did not go on to show whether the extract altered Na/K ATPase behavior or chloride channel activation. Whatever the mechanism of action may be, the Syrup may be effective in a wide variety of diarrhoeal states, due to all transit diseases such as functional diarrhoea, radiation diarrhoea, or due to

irregular secretory processes such as diarrhoea caused by cholera or E.coli enterotoxin.

CONFLICT OF INTEREST

Authors declare no conflict of interest

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