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Antidiarrhoeal Activity of Aqueous Leaf Extract of *Momordica Charantia* Linn. (Cucurbitaceae)

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Abstract – The antidiarrhoeal activity of aqueous leaf extract of Momordica charantia was evaluated on castor oil induced diarrhea, gastrointestinal transit, intestinal fluid accumulation and gastric emptying in mice. An inhibitory function against beaver oil has been seen in the aqueous extract from its leaves. The gastrointestinal community and fluid release by the extract mean that an anti-diarrhoeal mechanical operation is undertaken by the current extract.

Key Words: Momordica Charantia, Anti-Diarrhoeal Activity, Castor Oil, Gastrointestinal Transit.

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INTRODUCTION

Momordica charantia Linn. (CUCURBITACEAE) is an extensive climber, with tap-root stock (Oliver, 1986) and varied therapeutic values. The decoction of its leaves is used to cure diabetes, expel intestinal gas, promote menstruation and hepatic problems (Sofowora, 2006; Taylor, 2005). The paste of entire plants is applied externally to cure psoriasis, scabies and other diseases (Burkil, 1985).

Diarrhoea is one of the prime causes of high mortality rate in developing countries where infants under the age of five die annually from this disease (WHO, 1996). It leads greatly to malnutrition and also induces swift dehydration in babies and the old, which can kill if care is not provided (Yadzi and Chang, 1993; Gore et al., 1992; Bhan et al., 1992; Mahalanabis, 1998). The hypoglycaemic properties of Momordica Charantia are well-documented with little scientific data regarding their antidiarrhoeal capacity. Previous studies have shown that it contains large quantities of nutrients and its alleged medicinal activities may result from the plant phytochemicals (Bakare et al, 2010). Another research reinforces absorbing functions for hydrolytic enzymes in diarrhoeagenic patients' small intestines with the aqueous extract from their leaves (Bakare et al. 2010).

MATERIALS AND METHOD

Materials:

- Leaves of *Momordica charantia*
- Air oven
- Distilled water
- Whattman filter paper - No. 1
- Funnel
- Glasswool
- Lyophilizer
- Castor oil
- Methyl cellulose
- Morphine
- Albino mice

Methods: The leaves of *Momordica charantia* were collected and dried in a hot air oven. Later on, dried leaf samples were extracted in 5500 ml boiling distilled water for 30 minutes and filtered in Whattman filter paper followed by a funnel plunged with glass wool. The resultant filterates were pooled together and concentrated in a lyophilizer. The dry powder was put in a safe and locked jar and kept at room temperature before further usage. In adults (Akueshi et al., 2002; Oben et al., 2006), (R). A stock solution of the powder was supplemented with purified water with an 800 mg/ml concentration. The stock solution developed and orally delivered to the mice on trials at various doses of 100, 200, and 400 mg/kg.

Oral toxicity test:

The mices were randomly divided into nine groups, each containing 5 mices. The mice were fed on pellets and water. The mices were starved for 12 hours prior to test. Eight doses of the extract were administered by oral intubation. The 0.2 ml of water

was distilled to the mouse in the test group. As animals have 24 hours been seen. General toxicity and mortality signs have been reported (Amida et al.; 2007 Lorke, 1983).

Tests for anti-diarrhoeal activity (= Castor oil induced diarrhoea) : Mices of either sex fasted for 18 hours were randomly allocated to five group of 6 mices each as such –

- Group -I : 10 mg/kg distilled water.
- Group II, III, IV: oral extract 100, 200 and 400 mg/kg body weight.
- Group V: subcutaneous body weight of 10 g/kg.

The administration of 1 ml of beaver oil orally to each mouse caused diarrhoea after 1 hour, which was followed for around 4 hours. The signature droppings were contained in the absorbing paper under the perforated cages of each mice (Izzo et al. 1992; Mukherjee et al., 1995).

RESULTS AND DISCUSSIONS

Acute toxicity studies: Oral administration of the aqueous leaf extract of *Momordica charantia* produced no visible signs of toxicity except for an initial hudding observed at the highest dose of 20 g/kg body weight. No mortalities were recorded in all the doses.

Castor oil induced diarrhoea: The aqueous leaf extract of *Momordica charantia* at different doses significantly inhibit the frequency of defaecation when compared to the untreated (= control) mice (Table: 1). Normal gastrointestinal transit when treated with aqueous leaf extract of *M. chanantia*:

As shown in table-2, the extract decreases intestinal propulsion of the charcoal meal when compared with the control group. In control a mice, the charcoal meal travelled 61.33 ± 7.55 of the total length of the small intestine. The aqueous leaf extract (200 - 400 mg / kg) produce significant reduction in normal intestinal transit. This was less than the influence of morphine 16.48 ± 184 (73 13 percent inhibition).

Castor oil induced transit:

In contrast to natural intestinal movement in the beaver oil, the charcoal meal went further in the beaver oil - the mediated bowel travel, normal antidiarrhoeal morphine decreased intestinal mortality. The antimortality effect of the extract at the dose of 200 mg/kg was significantly higher than the other concentrations. This effect was significantly lower than that produced by morphine (Table-3).

Table 1 : Effects of leaf extract of *M. charantia* on castor oil induced diarrhea.

Group	Treatment	Doses	Mean weight of faeces after 4 hours	% Inhibition of defaecation
I	Control	-	2.28 ± 0.09	-
II	L. Extract	100	1.17 ± 0.11	48.69
III	L. Extract	200	0.66 ± 0.19	71.05
IV	L. Extract	400	0.47 ± 0.06	79.39
V	Morphine	10	0.25 ± 0.11	89.04

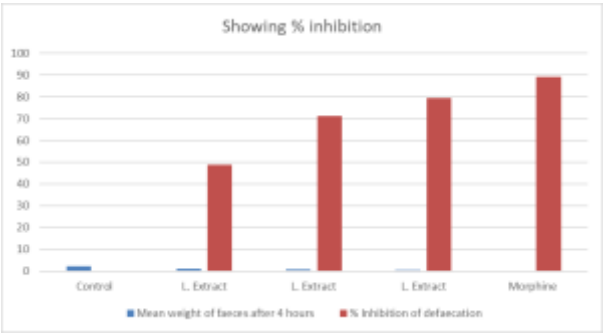


Table – 2 : Normal gastrointestinal transit when treated with aqueous leaf extract of *Momordica charantia.*

Group	Treatment	Body weight	Peristaltic Index	Inhibition %
I	Control	-	61.33 ± 7.55	-
II	L. Extract	100	54.89 ± 3.56	10.50
III	L. Extract	200	47.50 ± 4.17	22.55
IV	Leaf Extract	400	49.28 ± 6.06	19.65
V	Morphine	10	16.48 ± 1.84	73.13

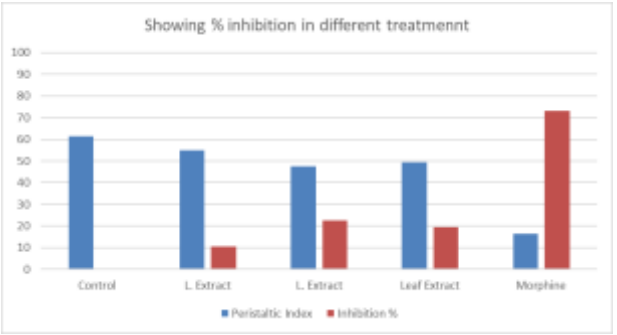
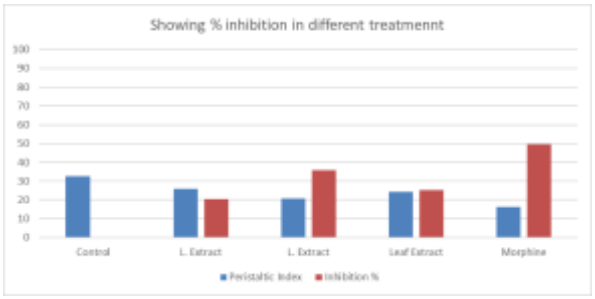


Table – 3: Castor oil-induced gastrointestinal transit.

Group	Treatment	Body weight	Peristaltic Index	Inhibition %
I	Control	-	32.55 ± 2.22	-
II	L. Extract	100	25.85 ± 2.00	20.58
III	L. Extract	200	20.89 ± 0.81	35.82
IV	Leaf Extract	400	24.36 ± 1.42	25.16
V	Morphine	10	16.36 ± 1.51	49.74



When offered orally, no sign of acute toxicity, such as restlessness or seizures were found during the observational time. The extract was well tolerated.

Diarrhea was caused by castor oil. Castor oil has been well-documented to induce diarrhoea because of its most active metabolite, hypersecretory ricinoleic acid that activates peristaltic activity in the small intestine (Zavala et al. 1988; Hardman and Limbird, 2001).

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