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Laxative effect on methanol extracts of leaves of *Basella alba*

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ABSTRACT

The present study was aimed to evaluate scientifically the laxative effect of methanolic extract of leaves of *Basella alba*. (MEBA) was studied on experimental albino rats. The laxative effect was expressed as the faecal output at 8hrs and 16hrs. MEBA at the doses of 200 and 400 mg/kg significantly increased ($P < 0.001$) the faecal output in albino rats. The results obtained for establishing the efficacy and substantiate the traditional uses as a laxative agent. Further studies are needed to completely understand the mechanism of laxative effect of *Basella alba*.

Keywords: Laxative activity, *Basella alba*, Traditional medicine.

INTRODUCTION

Basella alba is a perennial fast-growing, soft-stemmed vine. Leaves are thick, semi-succulent, heart-shaped with mild flavour and mucilaginous texture. It is reported to possess laxative, anti-inflammatory, rubefacient, soothing as well as its cooling effects when applied to burns and scalds. The present study was aimed to conduct the laxative activity of the leaves of *Basella alba* on experimental albino rats [1].

Basella alba has been used for many of its useful products from ancient times. Nowadays its properties have been utilized for the extraction of some useful material so that it can be used for the beneficial human activities. Some of the uses of this plant parts in the cure of certain problems occurred to humans has been explained here: Daily consumption of *Basella alba* has a positive effect on total-body vitamin A stores in men. [2] The paste of root of red

Basella alba along with rice washed water is taken in the morning in empty stomach for one month to cure irregular periods by the rural people of Orissa, India. Leaves of *Basella alba* is used for the treatment of hypertension by Nigerians in Lagos, and malaria in Cameroonian folk medicine [3]. The plant has been reported for its antifungal, anticonvulsant, analgesic, anti-inflammatory and androgenic activities and for the treatment of anemia. The leaves of *Basella alba* are traditionally used in ayurveda system of medicine to bring sound refreshing sleep when it is applied on head about half an hour before bathing. [4] A paste of the root is applied to swellings and is also used as a rubefacient. Sap is applied to acne eruptions to reduce inflammation. Decoction of leaves used for its mild laxative effects [5].

MATERIALS AND METHODS

Plant collection

The Plant material of *Basella alba* used for investigation was collected from Tiruchirappally district. The plant was authenticated by the botanist. The voucher specimen of the plant was deposited at the department of botany, herbarium section for further reference.

Preparation of extracts

The leaves of the plant was dried in shade, separated and made to dry powder. It was then passed through the 40 mesh sieve. A weighed quantity (100 gms) of the powder was subjected to continuous hot extraction in Soxhlet apparatus by using methanol as a solvent. The extract was evaporated under reduced pressure using rotary evaporator until all the solvent has been removed to give an extract sample. Percentage yield of methanolic extract of *Basella alba* was found to be 17.5 % w/w.

Animals used

Albino wistar rats (150-230 g) of either sex were obtained from the animal. The animals were maintained in a well-ventilated room with 12:12 hour light/dark cycle in polypropylene cages. The animals were fed with standard pellet feed (Hindustan Lever Limited., Bangalore) and water was given ad libitum. Ethical committee clearance was obtained from IAEC (Institutional Animal Ethics Committee) of CPCSEA to perform our study.

Laxative activity

The test was performed according to Capasso et. al. [9] on rats of either sex, Rats were fasted for 18 h divided into four groups of six animals each.

Group I received 25 ml/kg, normal saline orally, Group II received agar-agar (300 mg/ kg, p.o.) in saline,

Group III and IV received MEBA 200 and 400 mg/kg p.o respectively,

Immediately after dosing, the animals were separately placed in cages suitable for collection of faeces. After 8h of drug administration, the faeces were collected and weighed. Thereafter, food and water were given to all rats and faecal outputs were again weighed after a period of 16 h.

Statistical analysis

The data were expressed as mean \pm standard error mean (S.E.M).The Significance of differences among the groups was assessed using one way and multiple way analyses of variance (ANOVA). The test followed by Dunnet's test P values less than 0.05 were considered as significance.

RESULTS

Laxative activity

In the evaluation of laxative activity, the methanolic extract was found to produce significant dose dependent activity at both the tested level of doses (200 and 400 mg/kg, p.o.). The effect was superior to that of the standard tested at 400mg/kg, p.o. dose level.

Table 1: Laxative effect of methanolic extract of *Basella alba* in rats

Groups	Treatment / Dose (mg/kg)s	Faecal output (gms)	
		8hrs	8-16hrs
I	Control (Saline 25ml/kg p.o.)	0.88 \pm 0.13	1.33 \pm 0.05
II	Agar-agar (300 mg/ kg, p.o.)	4.12 \pm 0.23**	5.35 \pm 0.05
III	MEBA (200 mg/kg p.o.)	3.48 \pm 0.24*	4.30 \pm 0.02
IV	MEBA (400 mg/kg p.o.)	4.29 \pm 0.33**	5.38 \pm 0.02

Values of expressed as mean \pm SEM, ANOVA followed by Dunnet's test in each group rats **P<0.01; *P<0.05, as compared to control group.

DISCUSSION AND CONCLUSION

A constipation cause of two types, first one is obstructed defecation and another one is colonic slow transit (hypo motility). Constipation is a highly prevalent after chronic gastrointestinal disorder that affects adult. Laxative are widely prescribed drug for the treatment for constipation. The MEBA may be increased the intestinal transit as compared with control group (Table 1). In this study, MEBA increased intestinal transit possibly due to its cholinergic effect. Probably MEBA decreased the reabsorption of NaCl and water by increasing intestinal motility. Laxative properties of medicinal plants were found to be due to tannins, alkaloids, saponins, flavonoids, sterols and/or triterpenoids and reducing sugars [10-12]. The phytochemical analysis of MEBA revealed the presence of flavonoids,

triterpenoids carbohydrates, tannins, phenols, gums and mucilage. These constituents may mediate the laxative property of the MEBA.

In conclusion, the present study has shown that *Basella alba* is a potential therapeutic option in the effective management of constipation, thus justifying its widespread use by the local population for these purposes. Concerted efforts are being made to fully investigate the mechanisms involved in the pharmacological activities of *Basella alba* and phytochemical studies are also in progress to isolate and characterize the active constituents of *Basella alba*. The isolated compound may serve as useful prototypes of laxative drugs of natural origin possessing the desired pharmacological activities while lacking certain untoward effects.

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