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 Basellaalba.(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 laxativeeffect of Basellaalba.

Keywords: Laxative activity, Basellaalba, Traditional medicine.

INTRODUCTION

Basellaalba is a perennialfast-growing, soft-stemmed vine. Leaves arethick, semi-succulent, heart-shaped with mildflavour and mucilaginous texture. It is reported to possess laxative, antiinflammatory,rubefacient, soothing as well asits cooling effects when applied to burns and
scalds. The present study was aimed to conduct the laxative activity of the leaves of Basella albaon experimental albino rats[1].

Basellaalba has been used for many of its useful productfrom ancient times. Nowadays its properties have beenutilized for the extraction of some useful material so that itcan be used for the beneficial human activities. Some of theuses of this plant parts in the cure of certain problemsoccurred to humans has been explained here:Daily consumption of Basellaalba has a positive effect ontotal-body vitamin A stores in men. [2] The paste of root ofred Basellaalbaalong with rice washed water is taken in themorning in empty stomach for one month to cure irregular periods by the rural people of Orissa, India. Leaves of Basella albais used for the treatment of hypertension by Nigerians inLagos, and malaria in Cameroonian folk medicine[3]. The planthas been reported for its antifungal, anticonvulsant,analgesic, anti-inflammatory and androgenic activities andfor the treatment of anemia. The leaves of Basellaalba aretraditionally used in ayurveda system of medicine to bringsound refreshing sleep when it is applied on head about halfan hour before bathing. [4] A paste of the root is applied toswellings and is also used as a rubefacient. Sap is applied toacne eruptions to reduce inflammation. Decoction of leavesused for its mild laxative effects [5].

MATERIALS AND METHODS

Plant collection

The Plant material of Basellaalbaused for investigation was collected from Tiruchirapally 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 (100gms) 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 Basellaalbawas found to be 17.5 % w/w.

Animals used

Albino wistar rats (150-230g) 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 Capassoet. 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 ± 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 Basellaalbain rats

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

Values of expressed as mean ± SEM, ANOVA followed by Dunnet'stest 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 (hypomotility). 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, triterpinoids carbohydrates, tannins, phenols, gums and mucilage. These constituents may mediate the laxative property of the MEBA.

In conclusion, the present study has shown that Basellaalbais 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 Basellaalbaand 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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