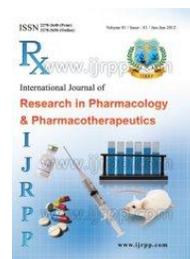




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Study of antipyretic activity of *Basella alba* leaf extract

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ABSTRACT

In the present investigation preliminary phytochemical screening on leaves extract of *Basella alba* revealed the presence of Proteins, fat, carbohydrates, fiber, ash, calcium, vitamins, thiamine, riboflavin, niacin. The antipyretic activity of ethanolic and aqueous extract of leaves of *Basella alba* was evaluated in albino rats. The ethanolic and aqueous extracts showed significant activity against yeast induced pyrexia at 200 mg/kg and 400 mg/kg respectively. The antipyretic effects of the extracts were comparable to that of standard drug (Paracetamol 150 mg/kg).

Keywords: *Basella alba*, Phytochemistry, Anti-pyretic activity.

INTRODUCTION

Basella alba belongs to the family Basellaceae, in vernacular language it is known as vellamuttagam, Traditionally it is used as an antidiarrhoeal, aperient, astringent, demulcent, diuretic, febrifuge, laxative, rubefacient and the Juice of fruits used as a dye. The ethno-pharmacology of the leaves revealed the uses anti-inflammatory properties. Various parts of the plant are used for treatment of the diseases as well as for different healing activities of human beings as well as animals across the globe especially in India and China. Its use has been discovered as catarrhal infections. Some of the compounds available especially in the plant are basella saponins, kaempferol, betalin, etc. Several extracts like aqueous, chloroform, ethanol and petroleum has been used for different pharmaceutical activities [1, 2].

Basella alba is a widely cultivated, cool season vegetable with climbing growth habit. It is a

succulent, branched, smooth, twining herbaceous vine, several meters in length. Stems are purplish or green. Leaves are fleshy, ovate or heart-shaped, 5 to 12 cms long, stalked, tapering to a pointed tip with a cordate base. Spikes are axillary, solitary, 5-29 cm long. Fruit is fleshy, stalk less, ovoid or spherical, 5-6 mm long, and purple when mature. Mainly leaves and stems are used for the medicinal purpose [3].

The plant is febrifuge; its juice is a safe aperient for pregnant women and a decoction has been used to alleviate labour. It is also an astringent and the cooked roots are used in the treatment of diarrhea. The leaf juice is a demulcent, used in cases of dysentery. [4] This plant serves as a Thai traditional vegetable. The fruit provides dark violet color for food colorant. *Basella* mucilage has been used in Thai traditional medicine as topical application for irritant, bruise, ringworm and laboring. Stem and leaves are used as mild laxative, diuretic and

antipyretic. In India, it has been used for anti-pruritic and burn [5],

Based on the above information the present study was carried out to evaluate the antipyretic activity of the leaves of this plant in an experimental animal model using rats.

MATERIALS AND METHODS

Collection and Preparation of the Plant

Extract

The leaves of the plant were collected from the area of Ranga Reddy district and authenticated. Further the plant leaves were dried under shade at 27-30°C for 15 days and the plant material was grounded into coarse powder. The powder was extracted with ethanol and water by continuous hot percolation by using soxhlet apparatus [6]. The extract was filtered, concentrated and dried under reduced pressure using a rotary evaporator.

Preliminary Phytochemical Screening

Extract was subjected to Preliminary phytochemical screening followed by standard methods showed the presence of alkaloids, flavonoids, glycosides, terpenoids, lipids and saponins [6, 7].

Animals used

Adult Albino rats of both sexes weighing between 120-180 g, provided with standard diet and water ad-libitum, maintained under standard laboratory conditions were used for the study. The animal experiment was performed according to the institute's ethical committee approval and guidelines

Antipyretic activity

Yeast Induced Pyrexia Method [8, 9]

A suspension of Brewer's yeast (15%) in saline (0.9%) was prepared. Six groups each containing 6 rats of either sex were taken. The thermocouple was inserted 2 cm deep into the rectum and the rectal temperatures were recorded. After measuring the basal rectal temperature, the animals were febrile by injection of brewer's yeast suspension (10 mg/kg) subcutaneously in the back below the nape of the neck. The site of injection was massaged in order to spread the suspension beneath the skin. Immediately after yeast administration, food was withdrawn, and

the animals were returned to their housing cages. After 19 hrs of yeast injection the rise in rectal temperature was recorded. The dose of the test compound and standard drug was given orally. The rectal temperature was recorded again after 1, 2, 3 and 4 hrs. Paracetamol (150 mg/kg) was selected as a standard drug. The various extracts were dissolved in saline with the help of Gum acacia (2% w/v).

There after treatment was carried out as follows,

Group I: Control

Group II: Paracetamol (150mg/kg)

Group III: Alcoholic extract of *Basella alba* (200mg/kg)

Group IV: Alcoholic extract of *Basella alba* (400mg/kg)

Group V: Aqueous extract of *Basella alba* (200mg/kg)

Group VI: Aqueous extract of *Basella alba* (400mg/kg)

Statistical analysis

Data was expressed as mean \pm standard error of means. Statistical analysis was made by using the difference between experimental groups was compared by one-way analysis of variance (ANOVA) followed by Newman-Keuls test.

RESULTS AND DISCUSSION

Subcutaneous injection of Brewer's yeast induces pyrexia by increasing the synthesis of prostaglandins. It is considered as a useful test for the screening of plants materials as well as synthetic drugs for their anti-pyretic effect. Yeast induced pyrexia is called pathogenic fever and its etiology could be the production of prostaglandins. The inhibition of prostaglandin synthesis could be the possible mechanism of antipyretic action as that of Paracetamol and the inhibition of prostaglandin can be achieved by blocking the cyclooxygenase enzyme activity. There are several mediators for pyrexia and the inhibitions of these mediators are responsible for the anti-pyretic effect [10].

The effect of extract of *Basella alba* leaves on yeast induced pyrexia has been shown in table-1. Treatment with the leaves extract at the doses of 200 and 400 mg/kg of body weight and the Paracetamol

decreased the yeast-induced elevation of temperature in rats. The results thus obtained from both the standard group and leaves extract treated groups were compared with the control group. The significance in reduction of yeast elevated rectal temperature was observed in all the groups.

The present results showed that the ethanol extract of *Basella alba* leaves possess a significant antipyretic effect in yeast provoked elevation of body temperature in rats and it exhibit moderate antipyretic effect when compared with standard drug Paracetamol.

Fig. 1: Antipyretic Activity by Yeast Induced Pyrexia Method

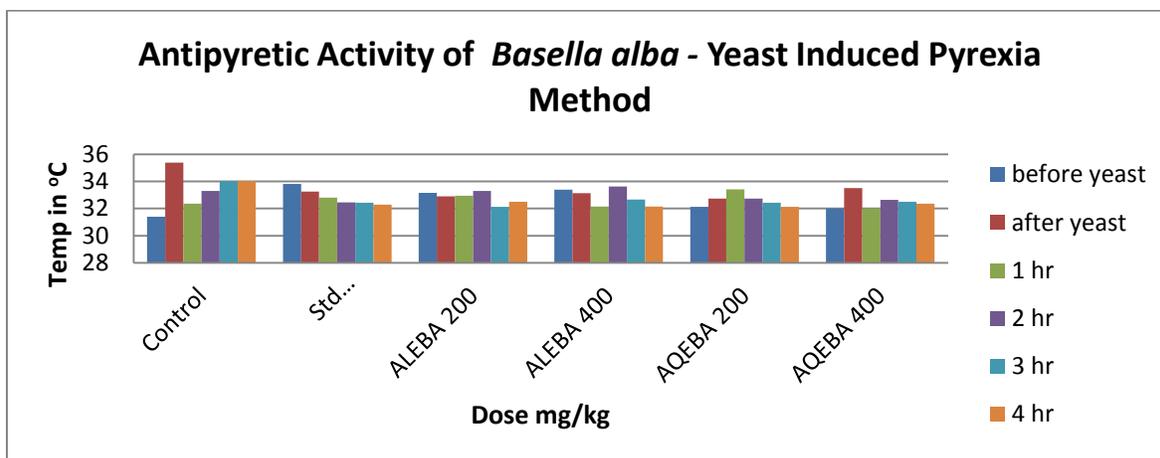


Table 1: Antipyretic Activity by Yeast Induced Pyrexia Method

Drug dose	Before yeast	After yeast	After drug administration			
			1 hr	2 hr	3 hr	4 hr
Control	31.4±0.05	35.46±0.06	32.36±0.08	33.3±0.05	34.03±0.08	34.03±0.06
Std Paracetamol (150mg/kg)	33.83±0.03	33.26±0.23	32.8±0.11	32.46±0.14*	32.43±0.08*	32.3±0.05***
ALEBA 200mg/kg	33.16±0.12	32.91±0.08	32.96±0.08	33.31±0.11	32.13±0.08*	32.51±0.05*
ALEBA 400mg/kg	33.41±0.10	33.13±0.03	32.16±0.08	33.63±0.08	32.68±0.08*	32.16±0.12*
AQEBA 200mg/kg	32.13±0.12	32.73±0.08	33.43±0.03	32.73±0.12*	32.43±0.06	32.13±0.05*
AQEBA 400mg/kg	32±0.15	33.51±0.12	32.02±0.13*	32.65±0.12*	32.51±0.08*	32.36±0.05*

P<0.001***, P<0.01**, P<0.05*

ALEBA-Alcoholic Extract of Basella alba; AQEBA-Aqueous Extract of Basella alba;

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