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Evaluation of Antipyretic Activity of Methanolic Leaf Extract of *Barleria Prionitis* In Albino Rats

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ABSTRACT

Leaves of *Barleria prionitis* (family- Acanthaceae) are used in traditional medicines for various ailments. The present study is to investigate the antipyretic activity of methanolic extract of *Barleria prionitis* in Albino rats. Brewer's yeast induced pyrexia method was selected for evaluation. The standard drug used was paracetamol (150 mg/kg/p.o). Neck and Rectal temperature were recorded by digital thermometer and compared with the control group. Based on the results obtained, the methanolic leaf extract of *Barleria prionitis* showed significant antipyretic activity.

Keywords: *Barleria prionitis*; Antipyretic activity; Brewer's yeast induced pyrexia method.

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INTRODUCTION

Indian traditional medicine is based on various systems including Ayurveda, Siddha and Unani. The evaluation of drugs is mostly based on phytochemical, Pharmacological and allied approaches including various instrumental techniques like Chromatography, microscopy and others. The medicinal plants play a major role and constitute the backbone of traditional medicine.^{1,2,3}

Pyrexia or fever is a complex physiological response triggered by infection or aseptic stimuli. Elevation in body temperature occurs when concentration of prostaglandin E2 increase within the certain areas of the brain. These elevations alter the firing rate of neurons that control thermoregulation in hypothalamus. Although fever benefits the nonspecific immune response to invading microorganisms, it is also viewed as a source of discomfort and is commonly suppressed with antipyretic medication.^{15,17}

Pyrexia or fever is caused as a secondary impact of infection, tissue damage, inflammation, graft rejection, malignancy or other diseased states. The infected or damaged tissue initiates the enhanced formation of pro-inflammatory mediators near preoptic hypothalamus area and thereby triggering the hypothalamus to elevate body temperature. As the temperature regulatory mechanism is governed by a nervous feedback mechanism which dilate the blood vessels and increase sweating to reduce the temperature.¹⁴ Most of the antipyretic drugs inhibit COX-2 expression to reduce the elevated body temperature by inhibiting PGE2 biosynthesis. Moreover, these synthetic agents irreversibly inhibit COX-2 with high selectivity but are toxic to the other cells, whereas natural COX-2 inhibitors have low selectivity with fewer side effects.^{8,9} A natural antipyretic agent with no or reduced toxicity is therefore, essential. Thereby the present study is intended for the evaluation of antipyretic activity of methanolic leaf extract of *Barleria Prionitis* in Albino rats.^{16,10}

MATERIALS AND METHOD^{13,18}

Chemicals

Various chemicals used for study were procured from Merck specialties pvt.Ltd. Mumbai, RFCL Ltd. New Delhi.

Animals

Albino Rats of Wister strain (150-200g) of either sex were procured from the central animal house of the institute. They were housed in standard polypropylene cages and kept under controlled room temperature (24 ± 2^0) and relative humidity (60-70%) in 12 hr light dark cycle. The rats were given

standard laboratory diet and water at libitum. Food was withdrawn 12 hour before and during experimental protocols was approved by the institutional animal ethical committee.

Plant Material

Barleria prionitis plants were collected from Nahargarh Jaipur in the month of November and authenticated in Rajasthan University Jaipur by senior herbalist Mr. Vinod Sharma. Obtained authentication no. is RUBL-20249.

Preparation of Extracts

Powdered leaves are extracted successively in a continuous soxhlet extractor with the following solvents in the following order, n-hexane, ethyl acetate, methanol, water.

The shade dried course powder of leaves (25.046g) was packed well in soxhlet apparatus and was subjected to continuous hot extraction with n-hexane. The extract was filtered while hot and the resultant extract was distilled in vacuum under reduced pressure in order to remove the solvent completely. It was dried and kept in a desiccator till experiment. Obtained extract was weighed and percentage yield was calculated in term of air-dried powdered crude material. The above same procedure was repeated for ethylacetate, methanol and water.^{5,12}

Experimental Design

Method : yeast induced pyrexia

Standard drug : paracetamol (150 mg/kg/p.o)

Adult albino wister rat of either sex weighing 180-200g each were used. The animals were divided in to four groups of six animals.

Group 1: rats treated with 0.5% cmc solution p.o

Group 2: rats treated with test dose I (200mg/kg) p.o

Group 3: rats treated with test dose II (400mg/kg) p.o

Group 4: rats treated with standard drug (paracetamol) solution p.o

Antipyretic Activity

The antipyretic activity of plant extract was evaluated using Brewer's yeast induced pyrexia in rats. Pyrexia was induced by injecting 1ml/100kg (po) of 15% aqueous suspension of brewer's yeast in CMC below the nape of the neck and rectal temperature was recorded by digital thermometer immediately after brewer's yeast injection. After 18 hrs of treatment, vehicles or drugs (extract & standard drug) were given orally. The rectal temperature was measured at 1, 2, and 3h after administration of vehicle and drug. Prior to the experiment, the rats were maintained in separated cages for 7days and the animals with approx. constant rectal temperature were selected for the study.^{11,7,6,4}

Statistical Analysis

Results were analyzed by One-way ANOVA followed by Tukey's multiple comparison using Graph prism demo software. Values of $P < 0.05$ were considered as significant.

RESULTS AND DISCUSSION

The subcutaneous injection of a yeast suspension elevated the rectal temperature marked after 19h of administration. Treatment with meBPL at doses of 200, 400mg/kg b.w. p.o. decreased the elevated temperature of the rats in a dose dependent manner.

The present results showed that the methanolic extract of *barleria prionitis* leaves possesses a significant anti-pyretic effect in yeast provoked elevation of body temperature in rats and its effect is comparable to that of phenol.

Table 1. Brewer's induced pyrexia in rats

Group	Dose (mg/kg)	Rectal temperature in °C at time (hr.)				
		-19 ^a	0 ^b	1	2	3
Control	0.5 %	37.20±0.02	38.40±0.01	37.78±0.02	37.78±0.02	37.71±0.06
Group I	200	38.35±0.01	39.01±0.10	37.07±0.10*	36.53±0.06*	37.50±0.04*
Group II	400	37.67±0.02	39.12±0.08	38.00±0.11	37.39±0.07**	37.29±0.03**
Standard	150	37.55±0.01	38.56±0.06	37.78±0.05	37.56±0.05*	37.46±0.08*

* $P < 0.05$ Significant, ** $P < 0.01$ More Significant V/S Control treatment

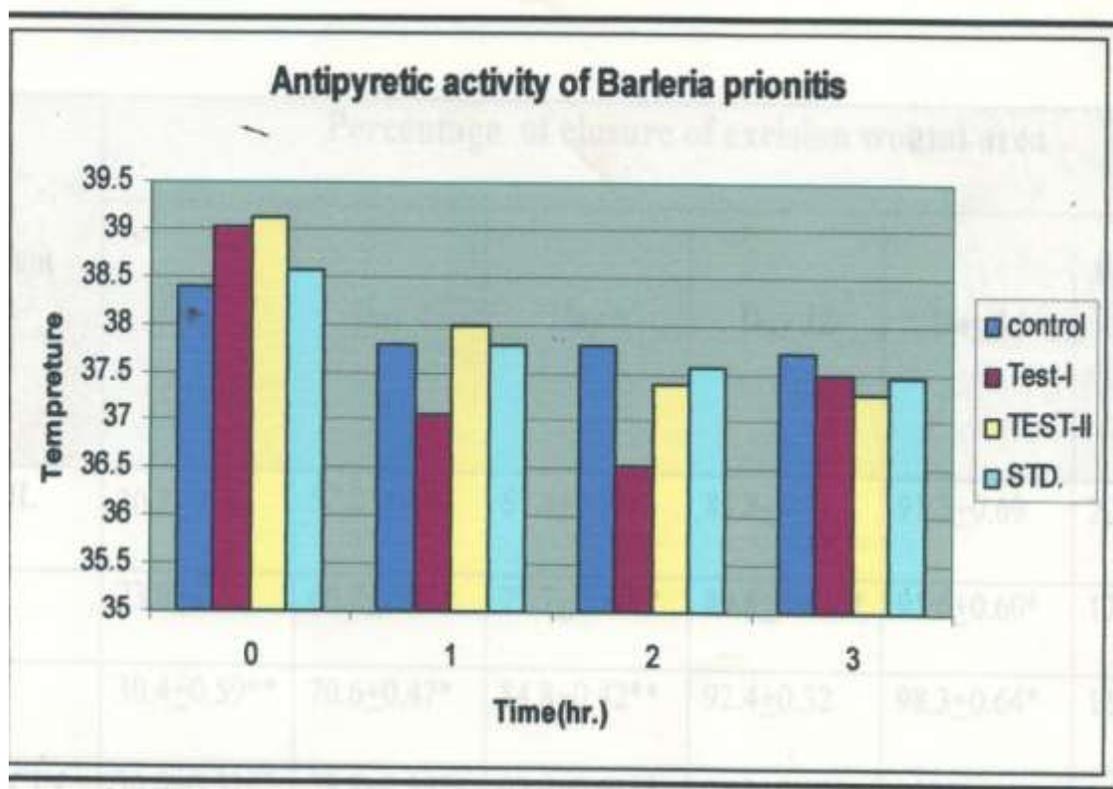


Figure 1 Antipyretic activity of methanolic extract of *Barleria Prionitis* leaves

CONCLUSION

Administration of 15% aqueous suspension of Brewer's yeast induced pyrexia in albino rats. Treatment with methanolic leaf extract of *Barleria prionitis* significantly reduced the elevated temperature in a dose dependent manner. Based on the above conclusion, the methanolic leaf extract of *Barleria prionitis* showed significant anti pyretic activity.

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