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Antipyretic activity of *Cassia fistula* Linn. pods

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ABSTRACT

The plant Cassia fistula Linn. belonging to family leguminosae, known as Cassia in English, Amaltas in Hindi. The methanolic extract of plant pod showed the presence of glycoside, steroids, amino acids, flavanoids. The present study was focused to evaluate antipyretic activity of pod of Cassia fistula Linn. The methanolic extract showed antipyretic activity, which was significantly ($P<0.05$) higher than control rats. The antipyretic activity of Cassia fistula Linn. is due to individual or combined action of bioactive constituent present in it.

The present finding results provide scientific evidence of ethanobotanical use of the plant of Cassia fistula Linn.

Keywords: Antipyretic, Methanolic extract, *Cassia fistula*.

INTRODUCTION

Native to India, the Amazon and Sri Lanka, *Cassia fistula* pod., a semi-wild Indian Labernum also known as the Golden Shower, has become extensively diffused in various countries including Mauritius, India, South Africa, Mexico, China, West Indies, East Africa and Brazil as an 'ornamental tree for its beautiful bunches of yellow flowers. Recognized by the British Pharmacopoeia [1], *C. fistula*, a member of the Leguminosae family, is widely used for its medicinal properties, its main property being that of a mild laxative suitable for children and pregnant women. It is also a purgative due to the wax aloin and a tonic [2] and has been reported to treat many other intestinal disorders like healing ulcers [3]. Besides, it has been found to exhibit antinflammatory and hypoglycaemic activity [4]. In the Indian literature, this plant has been described to be useful against skin diseases, liver troubles, tuberculous glands and its use in the treatment of haematemesis, pruritus, leucoderm and diabetes has been suggested. [5]

MATERIALS AND METHODS

Collection of plant materials

Healthy fruit was purchased from Hakimm's brother, medicinal plant supplier, Savarkundala (Gujarat). It was identified and authenticated by Dr. A. S. Reddy, Taxonomist, Bioscience Department, S.P. University, Vallabh Vidyanagar, Gujarat, India.

Preparation of the plant extract
The powdered pod was extracted with methanol by Soxhlet apparatus. The solvent was concentrated by evaporating methanol using a rotary evaporator [6]**.** The *Cassia fistula* methanolic extract (MC-EE) was further concentrated by allowing it to stand overnight in an oven at 30°C.

Phytochemical tests
Cassia fistula methanolic extract were subjected to preliminary, qualitative phytochemical investigation [7].

Animals used
Wister rats weighing 200-220 g and Swiss albino mice weighing 18-25 g of either sex were procured from the animal house of the Shree Leuva Patel Trust Pharmacy Mahila College, Amreli Gujarat, India. All the animals were kept in standard polypropylene cages and maintained under standard conditions: temperature (24±1°C), relative humidity (45-55 %) and 12:12 light:dark cycle. The animals were fed with standard rodent diet and water was given *adlibitum*. The animals were allowed to acclimatize to laboratory conditions 48 hrs before the start of the experiment.

Acute toxicity study
Six Wistar rats (200-220 g) of either sex were dosed with extracts in different concentrations and were observed for any symptoms of toxicity for 48 hrs as per guidelines no. 425 (OECD 2001) and LD_{50} was estimated > 5000mg/kg. Based on the results obtained from this study the doses of further pharmacological studies were fixed to be 250 and 500 mg/kg [8].

Antipyretic activity
The test was performed in rats by injecting 10 ml/kg s.c. of 15% aqueous solution of Brewer's yeast to induce pyrexia. Rectal temperature of each animal was taken before and 24h after the yeast injection using digital clinical thermometer. Animal that did not show a minimum increase of 0.7 ^{o}C in temperature 24 hrs after yeast injection were discarded. The selected animals were divided in to 4 groups and treated as follows:

Group I (Control) : Vehicle (3ml/kg, p.o.), 1% suspension of Tween-80
Group II (Standard) : Paracetamol (20mg/kg, i.p.)
Group III (Test-1) : Methanolic pod extract (500mg/kg, p.o.)
Group IV (Test-2) : Methanolic pod extract (250mg/kg, p.o.)

The rectal temperature (Table 1) of each animal was again recorded at 0.5, 1, 1.5 and 2 h after treatment [9].

Table 1: **Effect of methanolic extract of *Cassia fistula* pod on yeast induced pyrexia in rats**

Group	Treatment	Rectal Temperature (^{o}C)					
		-24 h	0 h	0.5 h	1 h	1.5 h	2 h
Group-I	Control 3ml/kg, p.o.	36.7±0.4	38.6±0.9	38.1±0.8	38.8±0.9	37.7±0.3	37.6±0.4
Group-II	Paracetamol 20mg/kg, i.p.	36.1±0.9	38.9±0.5	36.5±0.9**	35.6±0.3**	35.6±0.5**	35.3±0.9**
Group-III	CF-ME 500mg/kg, p.o.	36.7±0.2	39.8±0.4	37.6±0.3*	36.7±0.9**	36.1±0.5**	36.3±0.5**
Group-IV	CF-ME 250mg/kg, p.o.	36.7±0.4	37.7±0.6	36.5±0.3*	36.2±0.8**	36.3±0.6**	36.5±0.9*

*Values are expressed as mean ± SEM of six samples. * represents P<0.05 and ** represents P<0.01 when compared to control.*

Statistical analysis
Data were subjected to statistical analysis using ANOVA and statistical comparison was done using Turkey Kramer multiple comparison test. Values of p<0.01 were considered statistically significant.

RESULTS

Phytochemical tests
The crude extract was found to be positive for the presence of glycoside, steroids, amino acids, flavanoids.

Antipyretic effect

Both the extracts showed a marked antipyretic effect (Fig. 1) by causing a reduction in yeast-induced fever. Methanolic extract (500mg/kg) showed the effect to the same degree as paracetamol (20 mg/kg, i.p.).

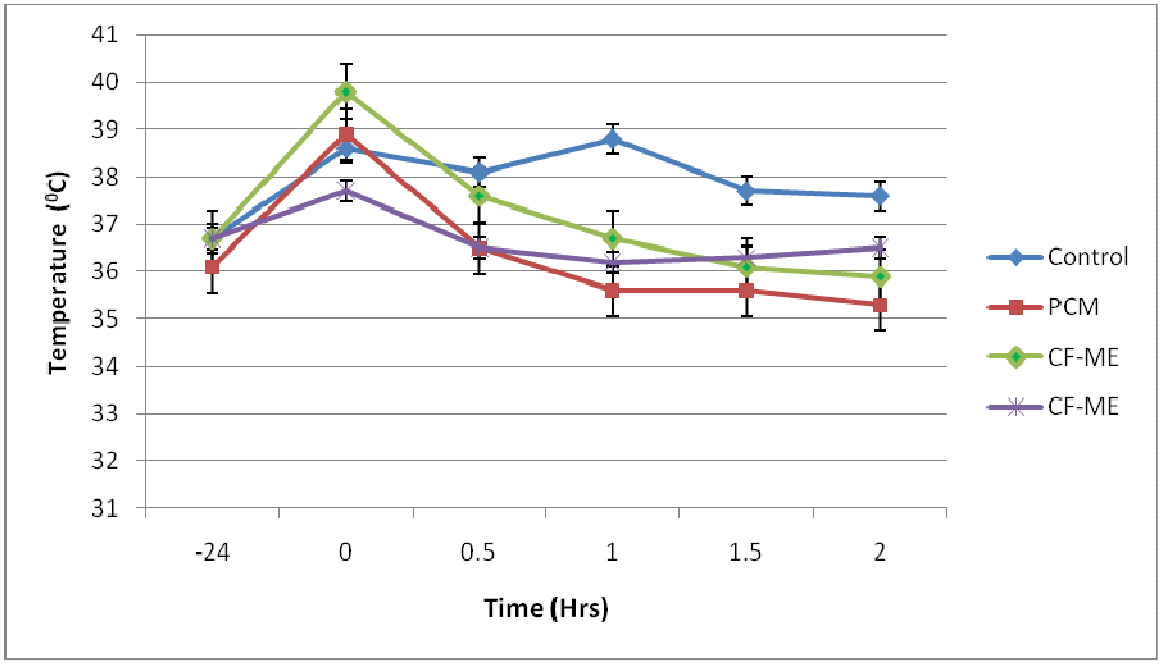

Fig 1: Antipyretic effect methanolic extract of of *Cassia fistula* pod on yeast induced pyrexia.

DISCUSSION

The experimentally induced laboratory model was employed in evaluating the antipyretic activities of methanolic extracts of *Cassia fistula*. The extract caused a better hypothermal activity against yeast-induced pyrexia in rats. Subcutaneous injection of yeast induces pyrexia by increasing synthesis of prostaglandin and is used to screen agents for antipyretic effect [10].

The antipyretic activity of *Cassia fistula* Linn. may be due to the individual or combined action of bio-active constituents present in it. The findings will be helpful for further phytochemical and pharmacodynamic investigations to find the active constituents responsible for the activity, which may explore some new and promising leads.

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