



Study of Antipyretic Effect of Different Extracts of Stem Bark of *Cassia Fistula* Linn

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ABSTRACT

Aim- To perform the evaluation of anti-pyretic activity of the different extracts of *Cassia fistula* by yeast induced pyrexia method on albino rat. **Objective-** The *Cassia fistula* Linn was collected, authenticated and performed the anti-pyretic activity. Moreover, only a limited number of medicinal plants have received detailed scientific scrutiny thereby prompting the World Health Organisation (WHO) to recommend that this area be comprehensively investigated. *Cassia fistula* Linn is used extensively in various parts of the world against a wide range of ailments, the synergistic action of its metabolite production being most probably responsible for the plant's beneficial effects. It was observed that petroleum ether extract at a dose of 300 mg./kg body weight showed maximum antipyretic activity amongst other extracts. The result indicated that the major component responsible for antipyretic activity may be present in the petroleum extract.

Keywords: - Anti-pyretics, pyrexia, WHO, *Cassia fistula* Linn

INTRODUCTION

Since many disease conditions commonly treated with *Cassia fistula* in traditional medical systems are considered self-limiting, its purported benefits need critical evaluation. This current scientific findings and suggests areas where further research is needed and also to verify the therapeutic efficacy of *Cassia fistula*. *Cassia fistula* L. (Caesalpinioideae) [1] a very common plant known for its medicinal properties is a semi-wild Indian Laburnum known as a the golden shower. It is distributed in various regions including Asia, South Africa, China, West Indies and Brazil[2]. Extracts relieve constipation, piles and detoxifier [3]. Many biologically important compounds were isolated and identified from different parts of the plant[4]. The plant extracts were shown as potent antibacterial, antifungal, anti-inflammatory and antioxidant [5] properties and the findings were done using different solvent extracts and parts of the plant. Recognized by the British Pharmacopoeia [6], *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[7] and has been reported to treat many other intestinal disorders like healing ulcers[8,9]. The plant has a high therapeutic value and it exerts an antipyretic and analgesic effect[10]. Besides, it has been found to exhibit antiinflammatory and hypoglycaemic activity [11]. 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 [12,13]. *C. fistula* extract is used as an anti-periodic agent and in the treatment of rheumatism[14,15] and the leaf extract is also indicated for its anti-tussive and wound healing properties[16]. It has been concluded that plant parts could be used as a therapeutic agent in the treatment of hypercholesterolaemia partially due to their fibre and mucilage content[17]. There are reports indicating its antibacterial activity against a wide spectrum of bacteria namely *Escherichia Coli*, *Bacillus mycides*, *Bacillus subtilis*, *Mycobacterium smegmatis*, *Klebsiella aerogenes*, *Pseudomonas aerogenes* and *Proteus vulgaris* [18]. Antitumor[5], hepatoprotective [16], antifertility [19], antioxidant [20] properties of *C. fistula* as well as its actions on the central nervous systems [21] and inhibitory effect on leukotriene biosynthesis [22] have been suggested. Besides its pharmacological uses, the plant extract is also recommended as a pest and disease control agents in India[23,24]. Thus *C. fistula* is well anchored in its traditional uses and has now found widespread acceptance across the world. Hence the present

work was attempted to evaluate the antipyretic activity of the different extracts of *Cassia fistula* by "yeast induced Pyrexia method" on albino rat.

Materials and Methods

Habit:

The tree is one of the most widespread in the forests in India, usually occurring in deciduous forests throughout the greater part of India, ascending up to an altitude of 1,220 m in the sub- Himalayan tract and outer Himalayas. It is both wild and cultivated.

Habitat:

Grow in valleys up to 1200 m in Himalayas. It is a deciduous, medium-sized tree with a gray, smooth, exfoliating bark. 4-8 pairs of leaflets are seen, distinctly stalked, oblong or ovate, with a silvery pubescence; the flowers are bright yellow, in axillary, pendulous, lax racemes; the pods are cylindrical, smooth, hard, dark brown or black; the seeds light brown, hard, shiny, biconcave.

Area of collection:

The plant barks were collected from Naxapali, Sambalpur district of Odisha. The plant barks were collected in morning time. The plant barks were collected in the month of may- June 2021. The sample was identified to be *Cassia fistula* Linn.

Materials:

- (a) Male albino rats
- (b) Clinical rectal thermometer
- (c) Disposable syringe
- (d) Various extracts
- (e) Dried yeast
- (f) Paracetamol
- (g) Sodium lauryl sulphate 0.5% w/v solution
- (h) Gastric tube.

Method:

Healthy wister strain albino rats weighing about 100-200 grams were taken. The rats showing $37.5 \pm 0.5^\circ\text{C}$ were selected. Then they were fasted for 24 hrs before inducing pyrexia. Pyrexia was induced by injecting subcutaneously 12% w/v suspension of yeast (1ml/100gm body weight) and they were allowed to feed. The animals were divided into 6 groups of 3 each and numbered.

10 hours later, rectal temperature was recorded using a clinical thermometer by introducing 1 inch into the rectum and keeping it inside for one minute. The temperature first recorded after 10 hours of yeast administration was taken as "Zero" hour reading. The control, standard and test substances were given to the animals by gastric tube. After the drug was administered, the temperature of all the rats in each group were recorded at an interval of 1 ½, 2 ½ and 3 ½.

The mean temperature was found out for each group and compared with the value of standard drug. The standard error was found.

Control:

The animals marked group-I received orally 1 ml/100 gms. Of body weight of 0.5% w/v solution of sodium lauryl sulphate and served as control.

Standard:

The animals marked-II received orally 30 mg./kg. body weight of paracetamol in 0.5% w/v suspension of sodium lauryl sulphate and served as standard.

Test:

The animals marked test group III to VI received 300 mg. /kg. body weight of various extracts. Petroleum ether, Chloroform, methanol, ethylacetate extracts of the barks of cassia fistula Linn. was screened for antipyretic activity

Result:

It was observed that petether extract at a dose of 300 mg. /kg. body weight showed maximum antipyretic activity amongst other extracts. The result indicated that the major component responsible for antipyretic activity may be present in the methanolic extracts.

Table No:1. Antipyretic effect of different extract of barks of Cassia fistula Linn.

Sl. No.	Treatment	Initial Temp. ($^\circ\text{C}$)	0 Hour	1 ½ Hour	2 ½ Hour	3 ½ Hour
1.	Control	37.5 ± 0.32	37.6 ± 0.26	37.7 ± 0.29	37.9 ± 0.32	38.1 ± 0.39
2.	Paracetamol	37.4 ± 0.4	39.0 ± 0.5	38.6 ± 0.33	38.4 ± 0.39	$38.0 \pm 0.46^*$

3.	Methanolic Extract	37.2 ±0.48	37.5 ±0.92	37.42 ±0.7*	37.25 ±1.47**	37.58 ±0.92
4.	Pet. Ether Extract	37.4 ±0.4	37.77 ±1.46	37.46 ±0.57**	37.27 ±0.62	37.6 ±1.06**
5.	Chloroform Extract	36.1 ±0.07	37.2 ±0.66	36.35 ±1.72*	36.23 ±0.67	37.68 ±1.09
6.	Ethylacetate Extract	36.2 ±0.05	37.36 ±0.65	36.42 ±1.95	36.22 ±1.77	37.23 ±0.76

Mean± SEM, “*” indicates p<0.05, n=6

CONCLUSION

Cassia fistula is an annual herb, coarse and foetid with subopposite deciduous leaves. This is an annual, erect, branched, hairy plant 15 to 50 centimeters in height belongs to the family Boraginaceae. It can also be found at higher elevations. It is found in pastures, wastelands, cultivated lands, roadsides, lawns and planted forests.

It was observed that petroleum ether extract at a dose of 300mg/kg body weight showed maximum antipyretic activity amongst other extract.

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