# Antipyretic Activity of methanolic extract of *Cappparis brevispina*

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## *Abstract:*

*Aim and objective: The main aim and objective to evaluate the anti-pyretic activity of Capparis brevispina.*

*Materials and methods: In the present work methanolic extract of Capparis brevispina was taken to evaluate the Antipyretic activity using yeast extract induced pyrexia Rabbit model.*

*Results and discussion: Methanolic extract of Capparis brevespina (200 mg / kg and 400 mg / kg) and Paracetamol (150 mg / kg) administration have considerably decreased rectal temperature. Extract performance at 400 mg / kg is almost similar to the standard Paracetamol procedure at 150 mg / kg. The 200 mg / kg extract dosage also reduced the temperature. Therefore, the study supports the traditional use of these plants for fever and promotes their use in fever with a higher degree of effectiveness guarantee.*

*Key words: pyrexia Rabbit model, methanolic extract, Antipyretic*

## 1.Introduction

Non - steroidal anti-inflammatory medicaments are generally referred to as being one of their features, owing to their inhibitory effects on the biosynthesis of prostaglandin in the central nervous system. The development of prostaglandins, especially the most active pyretic component, PGE2, seem to be the final way to produce the fever induced by several pyrogens.[1]

A set point increases the discomfort, and a medication such as paracetamol does not influence the temperature of the body by factors such as exercising or an increase in the ambient temperature. Pathogenic fever is called yeast-induced fever. The etiology includes prostaglandin production, which decreases the temperature of the thermoregulatory center. The possible mechanism for antipyretic activity could also be an inhibitor of the prostaglandin synthesis, as paracetamol. Pyrexia is a side effect of cancer, malignancy or other diseases.[2] it is the natural defense of the body to establish a habitat which does not function and infectious agents or damaged tissues. Some antipyretics suppress the development of COX-2 by inhibiting biosynthesis of prostaglandin E2 (PGE2).[ 3] The comparison, these synthetic agents irreversibly block COX-2, which are highly selective and are harmful for hepatic cells, glomeruli, the brain cortex and cardiac muscles, whereas natural COX-2 inhibitors have a decreased selectivity with less adverse effects. For the purpose of testing anti- pyretic properties, it is therefore essential to choose a natural antipyretic agent with reduced to no toxicity in the animal model.[4,5]

## 2. Materials and methods

### 2.1 Plant Collection and Authentication

The herb, *Capparis brevispina*., was collected at Tirupati during September 2017. The examined herb was recognised and verified by the botanist Dr .K. Madhava Chetty. A specimen of the herb, with the voucher number 3210, was deposited at A. M. Reddy memorial college of Pharmacy, Narsaraopet, Andhra Pradesh.

### 2.2 Preparation of Extract

The freshly gathered herbs (two plants) were shade dried and pulverized. The powder (1 kg) was extracted by way of petroleum ether meant for removing fatty and waxy materials. It was air-dried and then macerated by way of methanol, strained and then concentrated at 45$^{o}$C in Buchi rotavapor.

Finally, the weight of methanolic extract acquired was 75g (7.5% w/w yield).This crude extract used for evaluation of anti cancer activity.

### 3. Experimental work

For measuring Antipyretic Activity the author selected the Brewer's Yeast Extract rabbit model

### 3.1 Brewer's Yeast Extract

Brewer's subcutaneous injection of suspension leaven is likely to contribute to rabbit fever. 15 percent yeast extract Brewer is packed in 0.9 percent saline. We are using 5 male rabbits weighing between 1.5 and 2 kilograms. When a thermocouple is inserted into the rectum at a depth of 2 cm, the initial rectal temperature is registered. Subcutaneously, the livestock are injected with the 10 ml / kg yeast suspension of Brewer. The injection site is massaged and the solution under the skin is spread. The ambient temperature is set at 22-24 ° C. Feed is delayed directly after administration of the yeast. During the fourth hour, the temperature changes from 0.5 to 1 ° C were recorded. The body temperature in both measures is at least 38 ° C. A sample was stored orally at 0.5% v / v Tween-80 with a syringe after 4 hours of yeast injection, i.e. Paracetamol 150 mg / kg (200 to 400 mg / kg b.wt, MELR, MEAC and MECB). Rectal temperature was registered half an hour after dosing for 3 hours after administration of the medication.[6]

### 3.2 Experimental protocol

Group, I animals were given with 0.5% v/v tween 80 and served as negative control.
Group II animals were treated with Paracetamol 150 mg/Kg b.wt by oral administration and considered as the positive control.
Group III animals were treated with MECB 200 mg/kg b.wt
Group IV animals were treated with MECB 400 mg/kg b.wt

Table no .1 Effect of Methanolic extract of *Cappparis brevispina* on yeast extract induced pyrexia in Rats.

| **Groups** | **BBT** | **Rectal Temperature (°C) after 10h of yeast injection** | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | **0 min** | **30 min** | **60 min** | **90 min** | **120 min** | **150 min** | **180 min** |
| Control | 37.12 ± 0.23 | 38.68 ± 0.21 | 38.65 ± 0.25 | 38.91± 0.35 | 38.83 ± 0.32 | 38.81 ± 0.18 | 38.73 ± 0.58 | 38.45 ± 0.43 |
| Standard (Paracetamol 150 mg/kg) | 37.16 ± 0.21 | 38.7 ± 0.12$^{\#}$ | 37.96 ± 0.18$^{\#}$ | 37.3 ± 0.45$^{\#}$ | 36.85 ± 0.15$^{\#}$ | 36.92 ± 0.43$^{\#}$ | 36.96 ± 0.22$^{\#}$ | 37.01 ± 0.42$^{\#}$ |
| MECB (200 mg/kg) | 37.52 ± 0.11 | 38.87± 0.45$^{a}$ | 38.83 ± 0.48$^{a}$ | 38.78 ± 0.21$^{a}$ | 38.72 ± 0.58$^{a}$ | 38.65 ± 0.42$^{a}$ | 38.61 ± 0.12$^{a}$ | 38.58 ± 0.44$^{a}$ |
| MECB (400 mg/kg) | 37.21 ± 0.16 | 38.55 ± 0.24$^{b}$ | 38.49 ± 0.32$^{b}$ | 38.35 ± 0.43$^{b}$ | 38.28 ± 0.53$^{b}$ | 37.19 ± 0.44$^{b}$ | 37.18 ± 0.23$^{b}$ | 37.14 ± 0.32$^{b}$ |

All values represented as mean±SEM; n = 6 rats in each community, accompanied by one-way ANOVA Multiple Comparison Test of Tukey. #, $p<0.001$ Vs Paracetamol (150 mg/Kg); a, $p<0.01$ Vs Paracetamol (150 mg/Kg) and b, $p<0.05$ Vs Control.

## 4. Results and Discussion

Fever is the key defense reaction, the "acute phase reaction," that takes place in various inflammatory processes. Brewer's yeast is an exogenous pyrogen bound to a protein named lipopolysaccharide-containing antibody. The produce and release of different endogenous cytokine factors, for example, interleukin (IL-1 , IL-6 and TNFα), which activate the route to arachidonic acid and eventually contributes to the synthesis and release of prostaglandin E2. Yeast induced pyrexia is classified as fever-causing illness. [7,8]

An efficient antipyretic like Paracetamol has a humiliating impact on the temperature responsive neurons of such pyrogens in the preoptic area of the hypothalamus, contributing to PGE2 COX formation.[9,10,11]

Methanolic extract of *Capparis brevespina* (200 mg / kg and 400 mg / kg) and Paracetamol (150 mg / kg) administration have considerably decreased rectal temperature. Extract performance at 400 mg / kg is almost similar to the standard Paracetamol procedure at 150 mg / kg. The 200 mg / kg extract dosage also reduced the temperature, but the effect was slower and lower than the higher dose. In all groups with no negative control, after 3 hours of study, the temperature was natural Methanolic extract are assumed to have antipyretic involvement. This study therefore supports the traditional use of these plants for fever and promotes their use in fever with a higher degree of effectiveness guarantee. Nevertheless, more phytochemical and biological tests are recommended for the detection of the other active chemicals responsible for the antipyretic actions.

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