

## A Study On Antipyretic Activity Of *Capparis zeylanica* Linn. Plant Methanolic Extract

Amiya Ranjan Padhan\*, Anuj kumar Agrahari , Ashutosh Meher

1. The Pharmaceutical College, Department of Pharmacognosy, Samaleshwari vihar, Tingipali, Barpali - 768029, Bargarh, Odisha, India

### ABSTRACT:

**Objective** - The objective of the present work was to study the antipyretic activity of plant *Capparis zeylanica* Linn. belonging to family Capparaceae, known as “Karambha” in Sanskrit & “Asadhua” in Oriya. **Materials & Methods** - The Methanolic extract was taken for the study and evaluated for antipyretic activity using Brewer’s yeast induced pyrexia in Wister strain albino rats. The methanolic extract at a dose of 100mg/kg & 200mg/kg were evaluated for antipyretic activity. **Result** - The extract of *C. zeylanica* plant showed a significant ( $P < 0.01$ ) dose dependent antipyretic effect in yeast induced elevation of body temperature in experimental rats. **Conclusion** - The Methanolic extract of *Capparis. zeylanica* Linn. plant have significant antipyretic activity when compared with the standard drug. So. It can be recommended for further studies.

**Key – words:** *Capparis zeylanica* plant, Methanolic extract, Antipyretic activity, Brewer’s yeast.

### INTRODUCTION:

*Capparis zeylanica* Linn. (Capparaceae) is a many branched thorny, sub-scandent climbing shrub. Plants are 2-3 m in height, armed with 3-6mm long recurved thorns, branched, leaves are elliptic or broadly lanceolate, base rounded, apex mucronate; flower profuse, pinkish white, later turning pink, berries are globular or elliposide, 3-4 cm in diameter, and seeds are globase, embedded in white pulp. It is grows in moist habitat. The plant distributed through out the major parts of India, Bangladesh and some parts of Pakistan. *Capparis zeylanica* Linn. (Capparaceae) commonly known as ‘Asadhua’ in Oriya & ‘Ardanda’ in Hindi [1]. *Capparis zeylanica* have been used as folkmedicine and as ingredient in various Ayurvedic preparations. Traditionally it is use as Antidote to snake bite, to cure swelling of testicle, small pox, boils, cholera, colic, hemiplagia, neuralgia, sores, pneumonic & pleurisy [2 - 5].

The whole plant was much more used in traditional as well as in modern era. Whole plant showed the presence of saponin, p-hydroxybenzoic, syringic, vanillic, ferulic and p-coumanic acid. Leaves & seeds showed presence of  $\beta$ -carotene, thioglycoside, glycocapparin, n-tricortane,  $\alpha$ -amyrin & fixed oil where as root bark showed presence of an alkaloid, a phytosterol, a water soluble acid and a mucilaginous substance. Pharmacological study revealed Anti-rheumatic, anti-inflammatory & in-vitro antibacterial activities [6, 7].

An extensive search of the literature reveals no reports on the antipyretic activity of the plant. Thus, present investigation was planned to find out the therapeutic level of methanolic extract of *Capparis zeylanica* Linn. plant in antipyretic activity.

### MATERIALS AND METHODS:

The *Capparis zeylanica* Linn. (Capparaceae) was collected from the rural belt of Barpali in the district of Bargarh, Orissa. The plant was authenticated from Botanical Survey of India (BSI), Howrah, Kolkata, India (Ref.no.CNH/I-I(5)/2009/ Tech.II/35). An authentic herbarium specimen was deposited in the Hebarium Museum of Department of Pharmacognosy, The Pharmaceutical College, Barpali for future reference.

The whole plant were dried under shade and powdered by the help of mechanical process. The powder plant have stored in airtight container for further studies.

### Preparation of Extract and Dose:

For the preparation of extract 500gm of dried coarse powdered plant were charged in to soxhlet’s apparatus (hot extraction) and successively with petroleum ether ( $60^{\circ}$  -  $80^{\circ}$ C), chloroform, etyal acetate and methanol in order of their increasing polarity.

The successive methanolic extract (deep brown colour) was filtered and dried under reduced pressure to get a solid mass free from the solvent. The yield was 6.9% with respect to dry starting materials with characteristic odour & greasy consistency.

In this study, Propylene glycol was used as vehicle and Paracetamol suspended in propylene glycol was used as standard drug. Methanolic extract suspended in Propylene glycol was used as test drug.

**Preparation of fever inducing agent::**

In this investigation 0.5 % methyl cellulose solution was prepared in normal saline. 15 % of yeast was suspended in this prepared 0.5 % w/v methyl cellulose solution.

**Animals used:**

Adult albino rats (Wister strain) of either sex with weighing 150 - 180gm were used. The animals were maintain on the suitable nutritional and environmental condition through out the experiment. The animals were housed in polypropylene cages with paddy house bedding under standard laboratory condition for an acclimatization periods of 7 days prior to performing the experiment. The animals had access to laboratory chow and water *ad libitum* [8].

The experimental protocols were approved by institutional Animal Ethical Committee & a written permission from in house ethical committee has been taken to carry out (Reference no. PCB/AEC/04/09) and complete this study.

**Antipyretic studies (Brewer’s yeast induced hyperpyrexia method):**

Animals of either sex were divided in to four groups containing six in each group for this experiment. The normal body temperature of each rat was measure rectally at one hour interval on a thermometer and recorded. The antipyretic activities of extract were evaluated using Brewer’s yeast induced pyrexia in Wister rats [9]. Before yeast injection the basal rectal temperature of rats was recorded and after recording animals were given subcutaneous injection of 10 ml/ kg of 15 % w/v yeast suspended in 0.5 % w/v methyl cellulose solution for elevation of body temperature of rats. Rats were then returned to there housing cages. At the 18hrs after yeast injection, the vehicle, standard drug and test drugs were administered in to different groups. Propylene glycol at dose of 5 ml/kg was administered orally to the control groups of animals and Paracetamol at dose of 150mg/kg was administered orally to standard group of animals.. The methanolic extract of *Capparis zeylanica* plant was administered orally at a dose of 100 mg/kg and 200 mg / kg of body weight to two groups of animals respectively. Rectal temperature was recorded by clinical thermometer at 0,1,2 3hrs after drug administration and tabulated in table no.1. [8].

Table no.1: Antipyretic effect of *Capparis zeylanica* plant Methanolic extract on Adult albino rats

Sr. No.	Group	Treatment	Dose	Initial Rectal Temp. in °C before Yeast Injection	Rectal Temperature in °C after 18hrs of Yeast Injection (Mean± SEM)			
					0hr	1hr	2hrs	3hrs
1	I	Control Propylene Glycol	5ml/kg	37.64 ± 0.1	40.93 ± 0.11	40.48 ± 0.17	39.21 ± 0.14	39.13 ± 0.16
2	II	Standard Paracetamol	150mg/kg	37.21 ± 0.2	40.43 ± 0.19	38.65 ± 0.17	38.46±0.09*	37.88 ± 0.18*
3	III	Methanolic Extract	100mg/kg	37.71 ± 0.4	40.61 ± 0.14	39.63 ± 0.19	39.13 ± 0.24	38.68 ± 0.12
4	IV	Methanolic Extract	200mg/kg	37.32 ± 0.3	40.58 ± 0.11	39.23 ± 0.12	38.01±0.14*	37.93 ± 0.16*

n = 6 in each group, “\*” indicate P < 0.01 compared to control

**STATISTCAL ANALYSIS :**

Data was expressed as mean ± standard error of mean. . The results were analyzed statistically by ANOVA is followed by Dunnet’s test [10, 11]. The result of experiments by proper statistical analysis as stated above are tabulated in table. no.1

## RESULTS :

The effect of methanolic extract of *Capparis zeylanica* plant on yeast induced pyrexia has been shown in table no.1. Treatment with extracts at dose of 100 mg/kg and 200 mg/kg body weight and Paracetamol at dose of 150mg/kg decreased body temperature of yeast induced rats. The results obtained from both standards and extracts treated groups were compared with the control group. A significant reduction in the yeast elevated rectal temp. was observed in the test drug.

## DISCUSSION :

The present results showed that the methanolic extract of *Capparis zeylanica* plant possesses a significant antipyretic effect in yeast induced elevation of body temperature in experimental rats. It was revealed that the extract showed dose dependent antipyretic activity. At a dose of 200mg/kg it showed significant antipyretic activity. From this, normalization of body temperature was maintained sufficient periods of time. Flavonoids are known to target prostaglandins which are involved in the pyrexia [12]. Hence the presence of flavonoids in the methanolic extract of *Capparis zeylanica* plant may be contributory to its antipyretic activity.

## CONCLUSION:

Hence from the present investigation it may be concluded that the methanolic extract of *Capparis zeylanica* Linn. plant have antipyretic activity.

Further, study regarding isolation and characterization of active principle responsible for antipyretic activity are under planning in our laboratory.

## ACKNOWLEDGEMENT :

The Authors are grateful to extend special thanks to Mr. R.L. Hota, Chairman, G.B of The Pharmaceutical College, Barpali for his constant encouragement & support throughout the work. The authors are extend sincere thanks to Mr. N.K. Hota, President, Mr. S.K.Sahu, Secretary, Mr. S. K. Panda, Principal & Mr. M.R. Mishra, Associate Prof. of The Pharmaceutical College, Barpali for providing all kind of facilities for this work.

## REFERENCES:

- [1] D.N. Guhabakshi, P. Sensarma, D. C. Pal, A Lexicon of Medicinal Plant in India, Naya Prokash, Calcutta, 1999, Volume – 2, 364-365.
- [2] K.R. Kirtikar, B.D. Basu, Indian Medicinal Plants, Second Edition, International Publisher, Deheradun, 1993, Volume – I, 200-201.
- [3] R. N. Chopra, S. L. Nayer, I. C. Chopra, Glossary of Indian medicinal plants, CSIR, New Delhi, 1992, 50-52
- [4] S. G. Joshi, Medicinal plants, Oxford & IBH Publication, 1997, 126-127
- [5] Wealth of India: A Dictionary of Indian Raw Material and Industrial Products, CSIR, New Delhi, 1992, Volume – 3, 213 - 214.
- [6] K. Raghunathan K, R. Mitra, Pharmacognosy of indigenous drugs, Central council for research in Ayurveda and Siddha, New Delhi, 2003, Volume – II, 1101-1112.
- [7] B. V. Ghule, G. Muruganathan, P.D. Nakhat, P. G. Yeole, Immunostimulant effect of *Capparis zeylanica* Linn. leaves, J. of Ethnopharmacology, 2006, Volume-108, issue-2, 311-315.
- [8] H. G. Vogel, Drug Discovery and Evaluation Pharmacological Assays, 2nd edition, Springer, New York, 2002, 716.
- [9] R. A. Turner, Screening method in Pharmacology, Academic Press, New York & London, 1965, 268.
- [10] M. N. Ghosh, Fundamentals of experimental pharmacology, 2nd edition., Scientific book Agency, Calcutta, 2005, 156-157.
- [11] S. K. Kulkarni, Hand Book of Experimental Pharmacology, 3rd revised edition, Vallabh Prakashan, New Delhi, 2006, 178-180.
- [12] K. Rajnarayana, M. S. Reddy. M. R. Chaluvadi, Bioflavonoids classification, pharmacological, biochemical effects and therapeutical potential, Indian J. of Pharmaceutical Sciences, 2006, 68(3), 380-384.