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Antipyretic efficacy of Various Extracts of *Sida acuta* leaves

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ABSTRACT

In this study the petroleum ether, acetone, ethanolic and aqueous extracts of the leaf of *Sida acuta* were evaluated for their antipyretic activity by subcutaneous injection of 12% Brewer's yeast suspension in Healthy Wister strain albino rats. It was observed that all extracts lowered the temperature with passage of time but the acetone extract showed lower value as compare to other extract. The antipyretic activity of the ethanol extract was also observed fast as compare to other extracts and its effect was seen within $1^{1/2}$ hours as compare to others extracts.

Keywords: Antipyretic, *Sida acuta,* Brewer yeast, Extract.

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INTRODUCTION

Sida acuta (Malvaceae) is a perennial shrub and found throughout the hotter parts of India and Nepal. It is used for various medicinal purposes such as liver disorders, diuretic & abortifacient, in Ayurvedic preparations, asthma, fever, headache (migraine), cough, cold, ulcer, anthelmintic, snake bite, urinary diseases, female disorders, Antifertility agents and sedative. [1-3]. The present study was undertaken to evaluate the antipyretic activity of various extracts of *Sida acut*a. Fever is a common medical sign characterized by an elevation of temperature above the normal range 36.5-37.5°C (98-100°F) due to an increase in the body temperature regulatory set point. Temperature is regulated in the hypothalamus. A trigger of the fever, called a pyrogen, causes a release of prostaglandin E2 (PgE_2)[4]. Most of the antipyretic drugs act by inhibiting COX-2 expression to reduce the elevated body temperature by inhibiting PgE_2 biosynthesis. [5, 6]

MATERIALS AND METHODS

The collected sample of leaves of plant *Sida acuta* was compared with reference pharmacognostic herbarium specimen sample kept at "National Herbarium" Botanical Garden, Shibpur, Howrah, West Bengal.

Healthy Wister strain albino rats weighing about 200-250 grams were taken. The rats showed temperature range 37.5 ± 0.5^{o}C were selected. Then they were fasted for 24hrs 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.[6] The animals were divided into 6 groups of 6 rats each. Ten hours later rectal temperature was recorded using a clinical thermometer by introducing one inch the rectum and keeping it inside for one minute. The temperature first recorded after 18 hours of yeast administration was taken as zero hour reading. The control, standard and test substances were given to the animals by gastric tube.

Antipyretic Effect of Leaves of *Sida acuta*

Sl. No.	Treatment	Initial Temp.(0C)	Rectal Temperature 0C in Hour ± SEM				
			0 Hour	1 ½ Hour	2 ½ Hour	3 ½ Hour	4 ½ Hour
1.	Control	37.63± 0.28	39.06± 0.18	39.30 ± 0.15	39.40 ± 0.38	39.23 ± 0.18	39.13 ± 0.13
2.	Paracetamol	37.60 ± 0.30	39.00± 0.23*	38.73± 0.23	38.46 ± 0.24	38.08 ± 0.23*	37.82 ± 0.23
3.	Petroleum Ether Extract	37.90 ±0.11	39.06±0.29	39.33 ±0.27*	39.33 ± 0.32	39.16 ± 0.29	39.40 ± 0.13*
4.	Acetone Extract	37.40 ± 0.30	39.10 ±0.36*	38.98 ±0.35*	38.86 ±0.31*	38.63 ± 0.37*	38.26 ±0.29*
5.	Ethanolic Extract	37.60 ± 0.20	39.03 ±0.12	39.00 ±0.25	38.90 ± 0.20	38.86 ±0.21*	38.80 ± 0.20*
6.	Aqueous Extract	37.66 ± 0.17	39.36 ±0.066	39.60 ±0.098	39.33 ±0.088	39.33 ±0.088	39.06 ± 0.13*

Mean± SEM, * indicates p<0.05

Group I- Yeast (12 % suspension) 1 ml/100 g body weight subcutaneously + 0.5 % w/v solution of sodium Lauryl Sulphate and served as control

Group II- Yeast (12 % suspension) 1 ml/100 g body weight subcutaneously + 30mg /Kg body weight of Paracetamol in 0.5% w/v suspension of sodium lauryl sulphate and served as standard.

Group III-Yeast (12 % suspension) 1 ml/100 g body weight subcutaneously + 500 mg / kg *Sida acuta* Petroleum ether Extract.

Group IV-Yeast (12 % suspension) 1 ml/100 g body weight subcutaneously + 500 mg / kg *Sida acuta* Acetone Extract.

Group V-Yeast (12 % suspension) 1 ml/100 g body weight subcutaneously + 500 mg / kg *Sida acuta* Ethanol Extract.

Group VI-Yeast (12 % suspension) 1 ml/100 g body weight subcutaneously + 500 mg / kg *Sida acuta* Aqueous Extract.

After the drug was administered, the temperature of all the rats in each group was recorded at an interval of 90,150,210,270 minutes. The mean temperature was calculated for each group and compared with the value of standards drug.

RESULTS AND DISCUSSION

It was observed that acetone extract at a dose of 500 mg / kg body weight showed better antipyretic activity amongst other extracts. Data was expressed as mean ± SEM and the statistical difference between the groups was analyzed by using Student's t-test. The value of $p<0.05$ was considered as statistically significant.

As shown in figure the temperature was increasing first than decreasing significantly with increase in time for control group. Paracetamol showed decrease in temperature as the time progressed. Furthermore acetone and ethanolic extract of drug had shown a decrease in temperature with time as compared to other groups.

The result indicated that the major component responsible for antipyretic activity may show their activity better in acetone extract.

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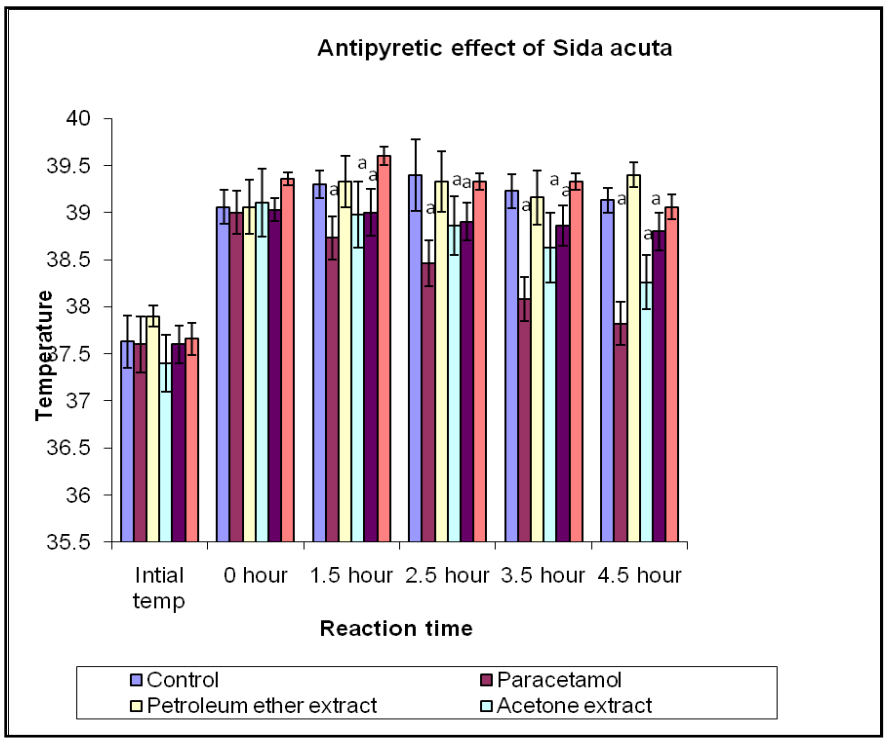

Antipyretic effect of *Sida acuta* extract on various groups

Data are expressed in mean ± SEM
a =p≤0.05 vs normal control group.
b =p≤0.05 vs diclofenac sodium control group.

CONCLUSION

It could be concluded that detailed characterization of various compounds from leaves of *Sida acuta* is needed, so that structure activity relationship in term of antipyretic activity could be investigated. The high degree of antipyretic activity seems to confirm the folk therapy against fever of this herb.

REFERENCES

[1] Akilandeswari S, Senthamarai R, Prema S, Valarmathi. IJPSR 2010; 1(5): 248-250
[2] The Wealth of India, CSIR, New Delhi. 1985; 10: 28.
[3] Kirtikar KR, Basu BD, Blatter E, Caius JF, Mhaskar KS. Indian Medicinal Plants, Allahabad, India. 1993; 2(II): 1182.
[4] Rang HP, Dale MM, Ritter JM, Moore PK: Pharmacology, Churchill Livingstone, Elsevier Science Ltd., London. 2003; 1.
[5] Cheng L, Ming-liang H, Lars B. Acta Pharmacol Sin 2005; 26: 926-933.
[6] Somezeet P, Choudhury SN, Patro VJ, Pradhan DK, Jana GK. Drug Invention Today 2009; 1(2): 150-153