

Antipyretic activity of roots of *Argyreia speciosa* (burm. f.) Bojer

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Abstract: *Argyreia speciosa* is a potent medicinal plant in the Indian systems of medicine. Traditionally it is used as an antibacterial, antifungal, antipyretic, etc. In the present study the hydroalcoholic extract and its acetone, chloroform and methanol fractions of the root of *A. speciosa* were studied for their antipyretic activity by Brewer's yeast-induced pyrexia in rats. It was observed that the hydroalcoholic extract produced significant antipyretic activity ($p < 0.05$), while acetone, chloroform and methanol fraction did not.

Keywords: *Argyreia speciosa*, Brewer's yeast-induced pyrexia, antipyretic activity, hydroalcoholic extract.

INTRODUCTION

Argyreia speciosa (Convolvulaceae), commonly known as Vryddhadaru in Sanskrit is a woody climber and has been used as a 'rasayana' drug in the traditional Ayurvedic system of medicine. The roots of this plant have been regarded as alterative and tonic, and are said to be useful in rheumatism and diseases of the nervous system¹. It is found throughout India, up to an altitude of 300m, viz., Assam, Bengal, Puri district of Orissa, Dehra Dun, cultivated in Rajasthan, Konkan, Deccan, Mysore. Traditionally, the root is useful in anorexia, Loss of appetite, dyspepsia, flatulence, colic, ascites, haemorrhoids, hemiplegia, nervous weakness, neuralgic pains, cerebral disorders, synovitis and general debility². Present study deals with the Antipyretic activity of hydroalcoholic extract and its acetone, chloroform and methanol fractions of the root of *A. speciosa*.

EXPERIMENTAL

COLLECTION AND AUTHENTICATION OF PLANT MATERIAL

Fresh plant/plant parts were collected randomly from Gujarat region, India and authenticated through Department of Biosciences, Saurashtra University, Rajkot, Gujarat, India (Specimen no. PSN492) and a voucher Specimen has been preserved for further reference. The roots were washed under running tap water; air dried under shade, coarsely powdered and kept in airtight container for further use.

PREPARATION OF EXTRACTS

The roots were dried under shade, coarsely powdered and the hydro-alcoholic extract was prepared by maceration. Further the acetone, chloroform and methanol fractions of the concentrated hydro-alcoholic extract were prepared by using percolator.

ANTIPYRETIC ACTIVITY

Animals were selected for the experiment after confirmation of approximate constant rectal temperature for 7 days. The antipyretic activity of the hydro-alcoholic extract and its various fractions were evaluated based on Brewer's yeast-induced pyrexia in rats³. Pyrexia was induced by subcutaneous injection of 10 ml/kg of 15% w/v Brewer's yeast suspension below the nape of the neck. The rectal temperature of each rat was measured at time, 0 hr, using a telethermometer and before injection of the yeast, at 18 hr following yeast injection, the different groups were treated with the

vehicle, hydro-alcoholic extract (200 and 400 mg/kg), its different fractions (100 mg/kg) and standard drug, paracetamol (150 mg/kg). Tween 80 (1% v/v) was used as suspending agent. The rectal temperature was then recorded over a period of 6 hr.

STATISTICAL ANALYSIS

The results were expressed as mean \pm S.E.M. Statistical analysis of the data were carried out using Student's t-test and results were considered significant when $p < 0.05$.

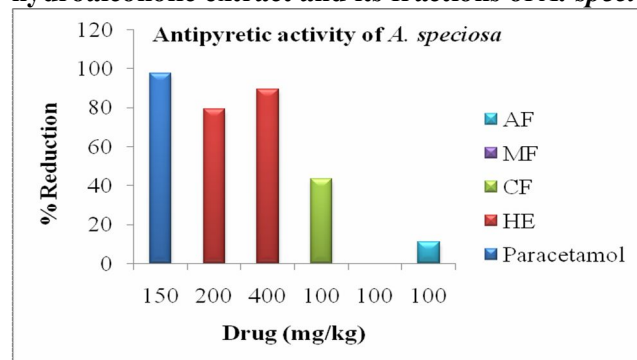
Table 1: Effect of hydro-alcoholic extract of *A. speciosa* root and its various fractions on Brewer's yeast-induced pyrexia in Rats

Treatment	Dose (mg/kg)	Rectal temperature in $^{\circ}\text{C}$ at various times (hr)						%Reduction
		-18	0	1	3	5	6	
Control	-	37.33 ± 0.17	38.08 ± 0.31	38.30 ± 0.06	38.26 ± 0.06	38.25 ± 0.05	38.28 ± 0.06	
Paracetamol	150	37.85 ± 0.01	38.70 ± 0.12	38.43 $\pm 0.08^*$	38.25 $\pm 0.05^*$	38.00 $\pm 0.02^*$	37.87 $\pm 0.02^*$	97.64
HE	200	37.92 ± 0.02	38.78 ± 0.13	38.51 $\pm 0.09^*$	38.38 $\pm 0.07^*$	38.16 $\pm 0.04^*$	38.10 $\pm 0.03^*$	79.06
	400	37.72 ± 0.04	38.55 ± 0.11	38.15 \pm 0.11*	38.11 $\pm 0.05^*$	37.88 $\pm 0.03^*$	37.81 $\pm 0.03^*$	89.15
CF	100	37.82 ± 0.02	38.63 ± 0.11	38.48 ± 0.09	38.41 ± 0.08	38.38 ± 0.08	38.28 ± 0.07	43.20
MF	100	37.52 \pm 0.06	38.20 ± 0.05	38.43 ± 0.08	38.31 ± 0.07	38.25 ± 0.05	38.20 ± 0.05	0
AF	100	37.30 \pm 0.11	38.03 \pm 0.03	38.08 ± 0.04	38.03 ± 0.03	38.00 ± 0.05	37.95 ± 0.04	10.95

Values are expressed as mean \pm S.E.M. ($n = 6$); * $p < 0.05$ compared with 0 h of the same group

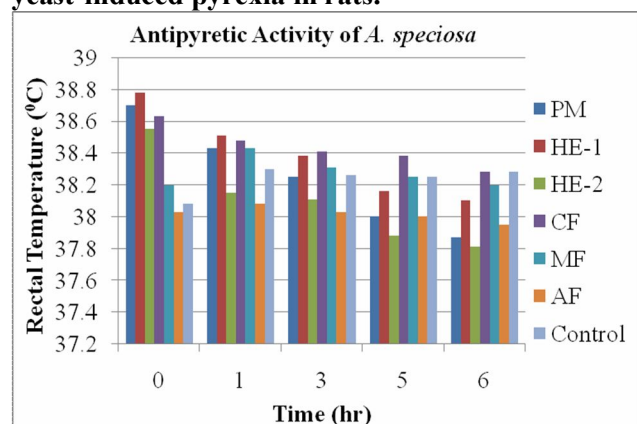
HE, Hydro-alcoholic Extract; MF, Methanol fraction; CF, Chloroform fraction; AF, Acetone fraction.

Fig.1: Percentage reduction of rectal temperature by hydroalcoholic extract and its fractions of *A. speciosa*



HE, Hydro-alcoholic Extract; MF, Methanol fraction; CF, Chloroform fraction; AF, Acetone fraction.

Fig. 2: Effect of hydro-alcoholic extract of *A. speciosa* root and its various fractions on Brewer's yeast-induced pyrexia in rats.



HE, Hydro-alcoholic extract; **MF**, Methanol fraction; **CF**, Chloroform fraction; **AF**, Acetone fraction; **PM**, Paracetamol.

RESULTS AND DISCUSSION

Hydro-alcoholic extract produced significant antipyretic activity ($p < 0.05$), while acetone, chloroform and methanol fraction did not. In general, non-steroidal anti-inflammatory drugs produce their antipyretic action through the inhibition of prostaglandin synthetase within the hypothalamus⁴. Therefore, the antipyretic activity of hydro-alcoholic extract of *A. speciosa* is probably by inhibition of prostaglandin synthesis in hypothalamus.

Further, the hydro-alcoholic extract was found to contain carbohydrates, steroids, flavonoids and tannins, through preliminary photochemical screening⁵. The

antipyretic activity may be due to one/more group of above Phytoconstituents.

Extract reduced the hyperthermia at both 200 and 400 mg/kg doses 1 hr after administration. The initial and final rectal temperatures in the groups treated with hydro-alcoholic extract (400 mg/kg) and paracetamol (150 mg/kg) were 38.55 ± 0.14 and 37.81 ± 0.19 ; and 38.70 ± 0.15 and $37.87 \pm 0.18^{\circ}\text{C}$, respectively. Both Paracetamol and hydro-alcoholic extract showed significant antipyretic activity throughout the test period of 6 hr (Table 1). Representation of percentage reduction and result of Antipyretic activity was shown in fig.1 and fig.2 respectively.

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