

ANTI-PYRETIC ACTIVITY OF SOME PLANTS IN FEMALE ALBINO RATS : A PRELIMINARY REPORT

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ABSTRACT: *Ethanollic extracts of *Ailanthus exceisa* (AE). *Toddalia asiatica* (TA) and *Araucaria bidwilli* (AB) were screened by the anti-pyretic activity in yeast induced hyperthermic test model in the laboratory. Dose of AE (100), TA (60) and AB (30) mg., equivalent of the plant material per kg. Body weight of the extracts were administered orally to the female albino rats. Acute toxicity and preliminary phytochemical screening were conducted for all the extracts. LD 50 values on oral administration of the extracts were found to be AE (1000), AB (350) and TA (250) mg. per kg. body weight respectively. Both the root and aerial part fractions of TA displayed a pronounced anti-pyretic activity comparable to the standard drug paracetamol. AB oleoresin fraction was also found to show anti-pyretic effect. These observations however, confirm the folk-medical practices still prevailing among the tribes.*

INTRODUCTION

Udhagamandalam (Anglicized as Ooty), - is considered to be a veritable paradise for ethno-pharmacological studies because of its rich diversified flora, its occupancy by aboriginal tribal groups of anthropological significance. The Nilgiri district consists all in all group namely the Todas, Kotas, Kurumbas, Irulas, Paniyas and Kattunayakkas.

Ethno-pharmacology however, aims to study of pharmacological properties of the medicinal plants that are in vogue in the traditional system of medicine as practiced by the primitive groups. The leaves of the plant *A.bidwillii* is used as a cure of insomnia in children by the Lahu tribals of Northern Thailand (Anderson,

1986). Documented source of literature in regard to ethno-pharmacological studies of medicinal plants from the Nilgiri district is not exhaustive. Some of the earlier reports are worth mentioning at this juncture (Abraham, 1981 & 1991, Dhanasekaran, 1993 & 1994, Raghunathan, 1978, Rajan & Sethuraman, 1991 & 1993 et. al). As the available data is skimpy, the present study is undertaken to screen anti-pyretic activity of three plants namely, AE, TA and AB used by the Kotas, Irulas and the Lahu tribals of Northern Thailand in their medicinal ethos.

MATERIAL AND METHODS

The plants *Ailanthus excelsa* (Simaroubiaceae), *Toddalia asiatica* (Rutaceae) and *Araucaria bidwillii* (Araucariaceae) were collected from the Nilgiri district, Tamil Nadu. They were identified and authenticated by one of us (SR). Voucher specimens of all the plants were deposited in the Department of pharmacology, J.S.S. College of Pharmacy, Udhagamandalam for future reference. The fresh samples of plant materials such as root, stem, leaves and oleoresin were collected. They were subjected to standard methods of processing for them to produce samples suitable for pharmacological testing as per the method detailed by us elsewhere (Dhanasekaran et al., 1993 & 94). Oleoresin, a gummy exudates collected from *A.bidwillii* was subjected to cold maceration in ethanol for 48 hrs, as a measure to prevent deterioration of plant constituents at low temperature below 40 – 50 c. Preliminary phytochemical screening has been done a recommended (Farnsworth 1966).

Anti-pyretic activity in female albino rats:

Healthy adult wistar strain rats were maintained at room temperature and natural daylight and fed with water ad-libitum. The ethanolic fractions of all the extracts were tested for anti-pyretic activity in yeast induced experimental hyperthermic test model in the laboratory. Female albino rats weighing 170 -200 gm. were given s.c. 20% w/v suspension of yeast and the anti-pyretic activity tested as per the method (Robert Turner 1965). Control temperatures were recorded after 24 hrs of yeast injection to determine the hyperthermic response to the yeast. Temperature recorded before 1 hr of drug administration served as control. The plant extracts were suspended in 2% gum Acacia for oral administration to the test animals after injecting the yeast. The rectal

temperatures were recorded at 0,30, 60, 90, 120 and 24 hrs, using Shan lab digital telethermometer. Six animals were used in each group.

Acute Toxicity Study: Graded doses of plant extracts were orally administered in adult albino rats of either sex in groups of 20 animals (5 M : 5F) kept in a transparent Perspex observation chamber at room temperature. Morality was observed for 24 hrs.

RESULTS AND DISCUSSION

The results of anti-pyretic screening carried out on *Ailanthus excelsa*, *Toddalia asiatica* and *Araucaria bidwillii* are shown in table.1. It is evident from this table that all the 3 plants are found to exhibit ranging from moderate to high degrees of anti-pyretic effect in test animals ($P<0.05$). The root and aerial parts of TA are found to possess in them a well-marked anti-pyretic activity comparable to the paracetamol.

Results of preliminary phytochemical screening in the plants are given in table – 2. A closer look at this table indicates that TA and AE plants share in common all the organic constituents like alkaloids, glycosides, sugars, sterols, phenolic compounds and tannins. A special point in this context is to note total absence of phenolic compounds and tannins in AE and the occurrence of only diterpenes and falvanoids in AB.

Thus, it can be inferred from the results that all the 3 plants indeed show definite anti-pyretic activity in test animals. However, the present findings of this study is subject to confirmation through future studies in different models.

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TABLE – 1

EFFECT OF ETHANOLIC EXTRACTS ON ANTI-PYRETIC ACTIVITY IN FEMALE ALBINO RATS.

Name of the Plant	Part Used	Dose mg/kg	Rectal Temperature in Centigrade \pm S.D					
			0 min	30 min	60 min	120 min	240 min	24 hrs
<i>Toddalia asiatica</i>	Whole plant with root	60	41.60	39.63	38.63	39.97	39.70	39.70
		60	± 0.26	± 0.32	$\pm 0.32^*$	$\pm 0.19^*$	± 0.28	± 0.14
			40.83	38.28	38.17	39.57	40.53	39.23
			± 0.11	± 0.26	$\pm 0.08^*$	± 0.21	± 0.10	± 0.42
<i>Araucaria bidwillii</i>	Oleoresin	30	40.05	39.40	38.70	38.80	38.95	39.80
			± 0.13	± 0.23	$\pm 0.26^*$	$\pm 0.11^*$	± 0.08	± 0.09
<i>Ailanthus excelsa</i>	Leaves	100	39.65	39.10	38.95	38.35	37.95	39.60
			± 0.38	± 0.09	± 0.18	± 0.29	$\pm 0.08^*$	± 0.08
Paracetamol	--	100	40.95	39.20	38.30	37.30	38.20	38.10
			± 0.22	± 0.18	$\pm 0.34^*$	$\pm 0.20^*$	$\pm 0.32^*$	$\pm 0.22^*$
Solvent Control 2% Gum acacia	--	100	40.57	40.40	40.42	40.00	39.90	39.73
			± 0.48	± 0.32	± 0.42	± 0.02	± 0.12	± 0.18

*P < 0.05 level

TABLE – 2

ORGANIC CONSTITUENTS OF THE THREE PLANTS

Sl. No.	Name of the Plant and Family	Part Used	Organic Constituents	Results
1	<i>Toddalia asiatica</i>	Whole plant with root	Alkaloids Glycosides & Sugar Sterols, Tannins & Phenolic compounds	+ + + +
2	<i>Ailanthus excelsa</i> Simaroubiaceae	Leaves	Alkaloids Glycosides & Sugar Sterols	+ + +
3	<i>Araucaria bidwillii</i> Araucariaceae	Oleoresin	Diterpenes Flavanoids	+ +

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