

## Pharmacological investigations of *Crotalaria laburnifolia*

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### ABSTRACT

In present work the methanolic extract of whole plant *Crotalaria Laburnifolia* was evaluated for its antimicrobial activity employing the standard cup-plate method. The Anthelmintic activity was also studied on adult earth worms (*Pheretima posthuma*). The analgesic activity was performed on mice using tail-flick method. The extract showed significant activities and the results were compared with standard drugs.

**Key words:** *Crotalaria Laburnifolia*, antimicrobial, anthelmintic, analgesic effect.

### INTRODUCTION

The plant *Crotalaria laburnifolia* belonging to family Papilionaceae have been in use as a cure for snake and scorpion bites<sup>1,2</sup>. The seeds of this plant has been traditionally used as an anticancer agent. Much phytochemical work was carried and several alkaloids were isolated from *Crotalaria* species. Pyrrolizidine<sup>3,4</sup> alkaloids were isolated from *Crotalaria laburnifolia* plant and the activities may be due to the presence of Pyrrolizidine alkaloids.

### EXPERIMENTAL

#### Collection

The plant *Crotalaria laburnifolia* was collected in march-may 2007 from the campus of Bangalore University, Bangalore-India. The plant was authenticated by Prof.K.Gayathri Dept. of Botany Yuvaraja's college University of Mysore. The whole plant was removed dried under shade and then powdered in a mechanical grinder. The coarse

powder was extracted with methanol and the obtained extract was used for pharmacological work. All chemicals and reagents used for the study of pharmacological activities are of analytical grade.

#### Antimicrobial activity

The antimicrobial activity was studied employing standard cup-plate method. Microbes used were *Bacillus subtilis*, *staphylococcus aureus*, *Pseudomonas aeuroginosa* and *Escherichia coli*. The activity was compared with that of standard drugs streptomycin and gentamycin.

#### Anthelmintic activity

The anthelmintic activity was evaluated on adult earthworms (*Pheretima posthuma*) due to its anatomical and physiological resemblance with the intestinal roundworm parasites of human beings. The activity of methanolic extract of *Crotalaria laburnifolia* was compared with that of the effect produced by the standard drug Albendazole. The data is given in table 2 and fig. 1-2.

**Table 1: Antimicrobial activity of *Crotalaria laburnifolia* extract Zone inhibition (mm)**

Extract (µg/ml)	<i>Bacillus subtilis</i>	<i>Staphylococcus aureus</i>	<i>Pseudomonas aeuroginosa</i>	<i>Escherichia coli</i>
100	13	13	12	-b
150	14	15	14	-b
200	15	16	17	-b
Ref. (10µg/ml)	23	21	24	22
Streptomycin	Streptomycin	Gentamycin	Gentamycin	

Results are mean s.d. values of 3 replicates

-b indicates no activity diameter of the inhibition zone is less than 10mm.

**Table 2: Anthelmintic activity of *Crotalaria laburnifolia* extract**

Type of extract	Dose (mg/ml)	Time taken for Paralysis(min)	Time taken for death (min)
Methanolic	10	103.2 ± 0.96	146.4 ± 0.28
	20	44 ± 0.40	62.4 ± 0.72
	30	17.5 ± 0.30	42.5 ± 0.40
Albendazole	10	23 ± 0.20	52 ± 0.42
Vehicle (D.Water)	-	-	-

**Table 3: Observations in mice (Tail flick method)**

S. No.	Basal reaction time (sec)					Reaction time(sec)after <i>Crotalaria laburnifolia</i> extract	
	1	2	3	4	5	15min	30min
1.	2	2	3	4	3	4	5
2.	3	3	2	2	3	4	6
3.	2	3	3	2	3	3	4
4.	3	4	3	2	2	4	5
5.	3	2	3	3	2	3	6

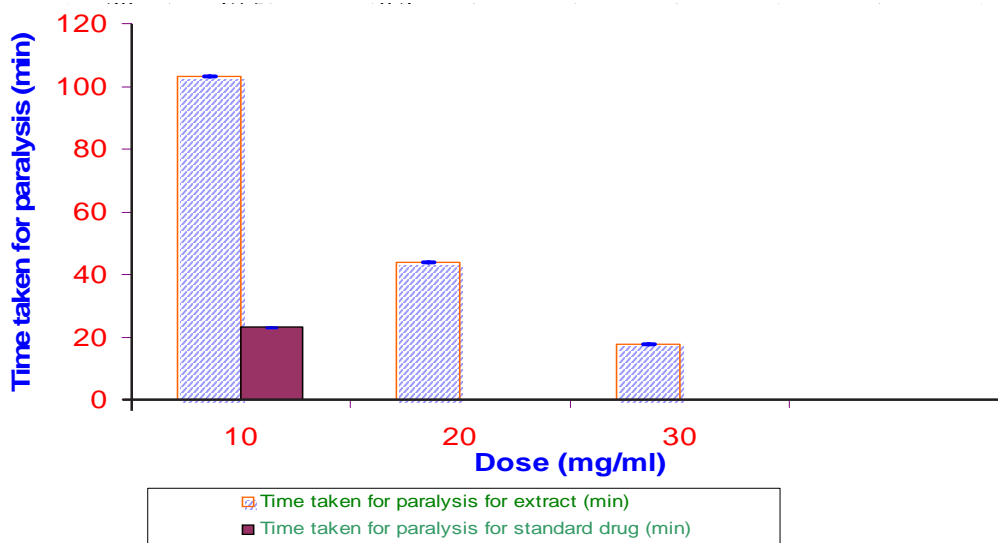
*Crotalaria laburnifolia* extract 10mg/Kg

### Analgesic effect

The study of analgesic effect in mice was performed and the commonly used procedure is tail-flick (tail with drawn from the radiant heat) method using analgesiometer. In this method heat is used as source of pain and the animals are weighed (15-20gm) and numbered the basal reaction time to radiant heat by placing the tip (last 1-2cm) of the tail on the radiant heat source. The tail with drawl from the heat (flicking response) is taken as the end point. Normally the mouse with drawl its tail within 2-4 seconds. Analgesics increase the reaction time a cutoff period of 10 seconds is observed to prevent damage to the tail. At least 3-5 animals basal reaction time for each mouse at a gap of 5min. to conform normal behavior of the animal.

### RESULTS AND DISCUSSION

The methanolic extract of *Crotalaria laburnifolia* showed significant antimicrobial activity and is compared with standard antibiotic Streptomycin and Gentamycin (Table 1). The anthelmintic activity was studied and the extract at high concentration showed significant activity (Table 2, and Fig. 1-2) and this is compared with the effect produced by the standard drug Albendazole. The analgesic activity of the extract of *Crotalaria laburnifolia* on mice using tail flick method possessing mild analgesic activity.



**Fig. 1: Effect of *Crotalaria laburnifolia* extract (Anthelmintic) and standard drug Dose vs Time taken for paralysis**

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