

## Comparative study of *Stylosanthes fruticosa* & *Indigofera linnae* for anthelmintic activity

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### ABSTRACT

The present study aimed at the *in-vitro* evaluation of anthelmintic activity of aqueous, hydro-alcoholic, alcoholic and hot continuous methanolic soxhlet extracts of whole plants of *Stylosanthes fruticosa* & *Indigofera linnae* were assayed against adult earth worms (*Peritima posthuma*) for the comparative evaluation of anthelmintic activity. All the extracts were tested against various concentrations. The results were documented as time taken for paralysis and death. All extracts showed anthelmintic activity at 100, 200 and 500 µg/ml concentration. The activities were compared with the standard drug-Albendazole. The comparative study showed that alcoholic extracts of cold maceration and hot continuous soxhletation extracts of *Stylosanthes fruticosa* & *Indigofera linnae* were higher than that of other extracts. Both the extracts exhibited significant anthelmintic activity at highest concentration of 500 mg/ml. Albendazole in same concentration as that of sample extract was included as standard reference and distilled water as control.

**Key words:** Anthelmintic activity, *Peritima posthuma*, *Stylosanthes fruticosa* and *Indigofera linnae*

### INTRODUCTION

Helminthiasis is still among the most important human and animal diseases. The WHO estimates that a staggering two billion people harbor parasitic worm infection. Anthelmintic that are obtained from the natural resources may play an important role in the treatment of worm infection with less side effects. The whole plants of *Stylosanthes fruticosa* & *Indigofera linnae* found an ethnobotanically important medicinal plants belonging to the family Fabaceae. *Indigofera linnae* is used in traditional medicine and is pharmacologically active. Various parts of the plant are useful for promoting growth of hair, chronic bronchitis, asthma, ulcers, skin diseases, in gastropathy and in epilepsy. *Stylosanthes Fruticosa* is a copiously branching woody herb or ascending shrub, and traditionally it has been used for diabetes, antihelminthiasis and various other disorders.

### MATERIALS AND METHODS

**Plant material collection, authentication and preparation for extracts:** The plant was identified and Authenticated by Dr.B.Ravi Prasad Rao, Professor, Dept of Botany, S.K.University, Anantapur, Andhra Pradesh. Prepared herbarium was submitted and the plant was certified as *Stylosanthes Fruticosa* Linn & *Indigofera Linnae* (family: Fabaceae) were washed with fresh water and dried under shade at room temperature. The whole plants were powdered and stored. 100g of powdered drug was extracted separately with Aqueous, alcoholic, hydro-alcoholic

and continuous hot percolation in soxhlet apparatus. The extracts were filtered and evaporated using a rotary evaporator. Dried extracts were stored at 20°C until used.

**Phytochemical screening:** After the phytochemical study it was observed that dried whole plant extracts of *Stylosanthes fruticosa* & *Indigofera linnae* contains phenolic compounds, flavonoidal content, carbohydrates, glycosides and phytosterols in minimal amount.

**Selection of worms:** Indian adult earthworms (*Pheretima posthuma*) were used to carry out the anthelmintic evaluation. The earthworms were collected from the moist soil of nearby villages in anantapur, Andhrapradesh. Worms were washed with saline water to remove the faecal matter. Worms were of about 9-11 cm length and 0.3 to 0.4 cm wide was selected for the experiment.

**Experiment:** Alcohol, Aqueous, Hydro-alcoholic and continuous hot percolation soxhlet extracts of the whole plant of *Stylosanthes fruticosa* & *Indigofera linnae* were evaluated for their anthelmintic activity against *Pheretima posthuma*. Various concentrations (100-500µg/ml) of each extract were tested in the bioassay, which involved determination of time of paralysis and time of death of the worms. Albendazole was included as standard reference and distilled water as control.

**Drugs and chemicals:** Albendazole suspension [Zentel (micronized albendazole), Glaxo Smithkline

Pharmaceuticals Ltd., Bangalore] and Methanol [Loba chemie pvt. Ltd, Mumbai] and petroleum ether [Merck Ltd., Mumbai] were used during the experimental protocol.

**Evaluation of anthelmintic activity:** Anthelmintic activity was carried out on adult Indian earthworm (*Pheretima posthuma*) of nearly equal size, six in each group. Each extract was suspended in 1% w/v CMC (Carboxy Methyl Cellulose) solution prepared in distilled water to obtain concentration of 100, 200 and 300 µg/ml. Reference standard albendazole suspension was diluted by the same suspending agent

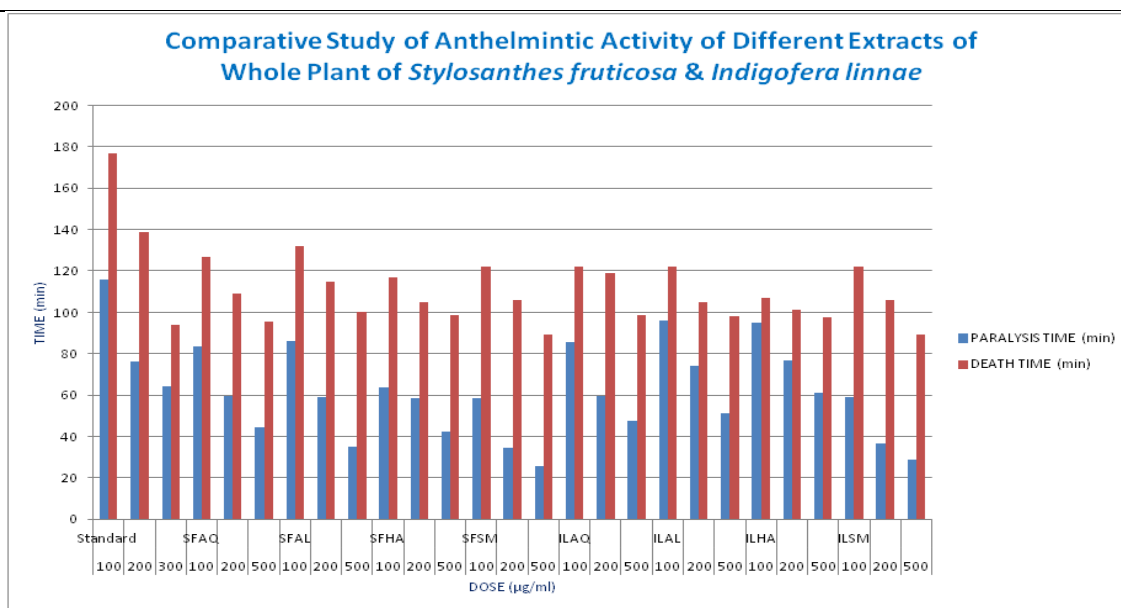
to obtain concentration of 100, 200 and 300 µg/ml. Worms were placed in petridishes containing 15 ml of sample solution. Time for paralysis was noted either when any movement could not be observed except when the worms were shaken vigorously or when dipped in warm water (50°C). Death was included when the worms lost their motility followed with white secretion and fading away of their body colours.

## RESULTS AND DISCUSSIONS

Comparative Study of Anthelmintic Activity of Different Extracts of Whole Plant of *Stylosanthes fruticosa*, *Indigofera linnae* were showed in Table.1.

**Table.1. Comparative Study of Anthelmintic Activity of Different Extracts of Whole Plant of *Stylosanthes fruticosa*, *Indigofera linnae***

Particulars	Dose (µg/ml)	Time taken for paralysis (min) Mean±SEM	Time taken for DEATH (min) Mean±SEM
Control (Distilled Water)	---	---	---
Standard (Albendazole.Tab)	100	116±0.49	177±0.49
	200	76.0±0.57	139±0.57
	500	64.0±0.49	94±0.49
SFAQ ( <i>Stylosanthes fruticosa</i> aqueous extract)	100	83.5±0.42	127±0.42
	200	59.5±0.42	109±0.42
	500	44.5±0.42	95.5±0.42
SFAL ( <i>Stylosanthes fruticosa</i> alcoholic extract)	100	86.0±0.47	132±0.47
	200	59.0±0.70	115±0.57
	500	35.0±0.57	100±0.57
SFHA ( <i>Stylosanthes fruticosa</i> hydro alcoholic extract)	100	63.5±0.42	117±0.42
	200	58.5±0.42	105±0.42
	500	42.5±0.42	98.5±0.42
SFSM ( <i>Stylosanthes fruticosa</i> methanolic extract)	100	58.3±0.49	122±0.49
	200	34.8±0.47	106±0.47
	500	25.8±0.47	89.1±0.47
ILAQ ( <i>Indigofera linnae</i> aqueous extract)	100	85.5±0.42	122±0.42
	200	59.5±0.42	119±0.42
	500	47.5±0.42	98.5±0.42
ILAL ( <i>Indigofera linnae</i> alcoholic extract)	100	96.0±0.47	122±0.47
	200	74.0±0.70	105±0.57
	500	51.0±0.57	98.0±0.57
ILHA( <i>Indigofera linnae</i> hydro alcoholic extract)	100	95.0±0.42	107±0.42
	200	77.0±0.42	101±0.42
	500	61.0±0.42	97.5±0.42
ILSM( <i>Indigofera linnae</i> methanolic extract)	100	59.3±0.49	122±0.49
	200	36.8±0.47	106±0.47
	500	28.8±0.47	89.1±0.47



**Figure.1. Comparative Study of Anthelmintic Activity of Different Extracts of Whole Plant of *Stylosanthes fruticosa*, *Indigofera linnae***

## CONCLUSION

The comparative study of both the plant extracts showed significant anthelmintic activity also taken lesser time in terms of paralysis and death. Future scope of our study is suggested to isolate and characterize the phytoconstituents which is responsible for showing the anthelmintic activity in the tested plant extracts.

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