IN VITRO EFFICACY OF *BUTEA MONOSPERMA* AGAINST AMPHISTOMOSIS IN CATTLE

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Received - 15.02.13
Accepted - 10.05.13

Abstract

Butea monosperma is a moderate sized tree widely distributed throughout India. Hot aqueous extract of the Butea monosperma seeds were prepared. Ethyl acetate, ethanol and methanolic fractions were performed. In vitro analysis of Methanolic fraction of Butea monosperma revealed the active ingredient against amphistomosis in cattle.

Keywords:- *Butea monosperma, Amphisto mosis, Methanolic extract*

Helminthosis is one of the most important animal diseases worldwide that can cause heavy production losses in grazing animals' especially in developing countries and is always associated with poor management practices and inadequate and inappropriate control strategies. Various problems have emerged with the use of anthelmintics such as resistance, chemical residues and toxicity problems. A number of medicinal plants have been used to treat parasitic infections in man and animals *Butea monosperma* is a moderate sized deciduous tree which is widely distributed throughout India, known as 'dhak' or palas', commonly known as 'Flame of forest'. Its seeds have anthelmintic property especially for roundworms and tapeworms (Kumar and Samantha 2012).The *in vitro* efficacy of *Butea monosperma* against amphistomosis was studied in the present study.

Materials and Methods

Preparation of hot aqueous extract

About 250 g of shade dried powdered seeds were gathered in a clean muslin cloth bag and tied properly. This was kept immersed in a large bowl containing 4 litres of water to facilitate extraction. When the volume of water was about half, two more litres of water was added and repeated till 12 litres of water was added totally. Finally the muslin bag was taken out and the extract was placed on a boiling water bath till complete evaporation of water. The residue was taken out and weighed to assess the yield 8%.

Phytochemical analysis

Phytochemical analysis was done as per the procedure of Harbourne (1991).

In vitro trials - Effect of hot aqueous extract of the seeds against amphistomes was studied *invitro*. Amphistomes were maintained in Tyrode's saline containing the hot aqueous extract at three concentrations, *viz.*, one, two, and five percent. This was compared with another triplicate of untreated control. Observations were taken for a period of 24 h and results were recorded.

Fractionation studies - Soxhlet extraction of hot aqueous extract of seeds was carried out using ethyl acetate, ethanol and methanol and the yield was two, twenty and twenty four percent respectively. The resulting fractions were further analysed for the *in vitro* activity.

In vitro analysis of fractions –*In vitro* trials were conducted on each fraction. Ten percent of ethyl acetate, ethanolic and methanolic fractions was prepared in Tyrode's saline. Amphistomes were maintained as stated earlier and six amphistomes were transferred to each tube containing the fractions. One tube

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Table 1. Invitro trials of hot aqueous extract of seeds of *Butea monosperma*

Group	Total live Worms	2h	4h	6h	8h	10h	12h	24h
Control	20	0	0	0	0	0	0	0
1 percent	20	0	0	2	8	12	16	18
2 percent	20	0	5	12	16	20	---	---
5 percent	20	0	12	20	---	---	---	---

Table 2. In vitro analysis of fractions of seeds of *Butea monosperma*

Group	Total live worms	Worms dead.					
		2 h	4 h	6 h	8 h	20h	24h
Control	6	0	0	0	0	0	0
10 percent Ethyl acetate fraction	6	0	0	0	0	0	0
10 percent ethanol Fraction	6	0	0	0	0	0	0
10 percent methanol fraction	6	6	-	-	-	-	-

was maintained as control containing only 5 ml of Tyrode's saline. The tubes were incubated for 24 h at 37 ^{o}C.

Results and Discussion

Phytochemical analysis -Phytochemical analysis of the seeds revealed the presence of alkaloids, tannins, terpenes and saponins. Glycosides and flavanoids were not present in the sample.

In vitro trials of hot aqueous extract

The hot aqueous extract of seeds was found to be effective in killing amphistomes over a period of 24 h *in vitro*. Five percent solution could kill all the worms by 6 h. Also, activity of the flukes reduced drastically within 3 to 4 hours in all the test groups (Table-1).

In vitro analysis of fractions

The methanolic fraction was found to be effective in killing all amphistomes within 2 h. Ethyl acetate and ethanolic fractions did not show any activity. No mortality occurred in control sample (Table 2).

It was concluded that the methanolic fraction contained the active ingredient against amphistomosis and further studies are necessary to separate the active component from the seeds of *Butea monosperma.*

Acknowledgement

The authors are thankful to the ICAR, New Delhi,for providing financial support.

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