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## Evaluation of anthelmintic activity of flower extract of *Butea monosperma* var. *lutea*

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**ABSTRACT**

The study aims to evaluate the anthelmintic potential of water extract of flower of *Butea monosperma* Var. *Lutea* belongs to the family Fabaceae. *Butea monosperma* is distributed all over India and has been used by triable as well a local people widely. popularly known as 'dhak' or 'palas', commonly known as 'Flame of forest' and a cool infusion of the flowers is taken in the treatment of diabetes. It has been found to have antimicrobial, wound healing, antifungal, antidiarrhoeal, hypoglycemic, hepatoprotective, antioxidant, anti-convulsive, antistress, anti diabetic, anti-inflammatory activity. It also used in treatment of goiter, spermatorrhoea and antidote for snake bite. In the present work the aqueous and alcoholic extracts of flowers of *Butea monosperma* were evaluated for its anthelmintic activity against adult earthworms (*Pheretima posthuma*). The activities of the extracts were compared with standard Piperazine citrate. Both the extracts and standard were prepared in saline water. The alcoholic and aqueous extract of the leaves showed significant anthelmintic activity.

**Keywords:** *Butea monosperma*, *Pheretima posthuma*, anthelmintic, Piperazine citrate.

**1. Introduction**

*Butea monosperma* (Var. *Lutea*) belonging to family Fabaceae (sub family Papilionaceae) is a medium size tree. It is generally called as Palash, Dhaka, Khaki in mixed or dry deciduous forests in western and central part of India. Its leaves are large & 3- foliate, flowers are scarlet red with orange tinge. Pods are flat and one seeded. The species of *Butea monosperma* are found in India include *Butea monosperma* var. *lutea* Taub, *B. Parviflora*, *B. minor*, & *B. subperba*. It is also known as flame of forest. All part of plant has been used but flowers are a particular interest from a medicinal point of view as an anti-diabetic [1], anti-asthmatic and anti-inflammatory [3] Antimicrobial and antibacterial [8], Antifungal activity [7], Activity Anticonceptive [5], Hepatoprotective [6] used in the treatment of leprosy, gout, diarrhea [2], wound healing [4], diuretic and leucorrhoea [9]. The present study deals with the anthelmintic effect of leaves using a standard laboratory models [10].

**2. Material and Method:** Plant material: The flowers of *Butea monosperma* (var. *lutea*) were collected from Butibori M.I.D.C., (M.S.) and identified. Fresh flowers were collected in bulk, washed under running tap water to remove adhering dust, dried under sunlight and pulverized in a mechanical grinder. The powder was passes through sieve no. 40 and used for extraction [11].

**3. Preparation of aqueous extract:** The dried powdered of plant (100 gm) were macerated with water. The drug was macerated for 72 hrs. After that filtered the extract and dried on water bath. The percentage yield of aqueous extract was 3% w/w [12].

**4. Preparation of ethanolic extract:** A weighed quantity of dried powdered flowers of plant (100 gm) subjected to hot solvent extraction in a soxhlet apparatus (50 cycles per each batch) using ethanol (95%), at a temperature range of 55 °C to 65 °C. The filtrate was evaporated to dryness at 40 °C under reduced pressure in a rotary vacuum evaporator. The percentage yield of ethanolic extract was 5% w/w [12]. The extract thus obtained was used directly for the assessment of anthelmintic activity through *in vitro* method.

**5. Evaluation of Anthelmintic activity:** The anthelmintic activity of extract was evaluated using the adult Indian earthworm *Pheretima posthuma*, and reference substance for comparison.

It was used due to its anatomical and physiological resemblance with the intestinal roundworm parasite of human being<sup>[16-18]</sup>. The earthworms were collected from moist soil. The suspensions of extracts were prepared in normal saline in different concentration. Solution of similar concentration of the reference drug piperazine citrate was also prepared in normal saline<sup>[13]</sup>.

**6. Activity against Earthworms:** 10 mg/ml, 25 mg/ml, 50 mg/ml, concentration of aqueous extract of *Butea monosperma*. (AEBM),

ethanolic extract of *Butea monosperma* (EEBM) and standard drug piperazine citrate were prepared and poured in to Petri-dishes. Six earthworms were placed in each petri dish. The Anthelmintic activity was determined by the method followed by Gaiind and Budhiraja<sup>[14]</sup>. The living and viable worms were kept in observation and the paralysis and dead time was recorded. The motionless worms were transferred to warm water at 40 °C to confirm that they were dead<sup>[15]</sup>. The paralysis and dead time of earthworms.

**Table 1:** Anthelmintic activity of aqueous and alcoholic extract of *Butea monosperma*

S. No.	Extract	Conc. (mg/ml)	Paralysis (P) (Time in min.) (P)	Death (D) (D)
1.	AEBM	10	26.24 ± 0.34	52.15 ± 0.79
		20	24.29 ± 0.23	40.23 ± 0.73
		50	20.11 ± 0.39	30.54 ± 0.28
2.	EEBM	10	23.33 ± 0.85	46.21 ± 0.45
		20	18.55 ± 0.82	35.10 ± 0.16
		50	13.36 ± 0.39	24.17 ± 0.47
3.	Piperazine Citrate	10	20.16 ± 0.31	61.25 ± 0.42

Result expressed as Mean ± SEM from four observations), AEBM: Aqueous Extract of *Butea monosperma*, EEBM: Ethanolic Extract of *Butea monosperma*

**7. Result and discussion:** It was observed that the ethanolic extract is more potent than aqueous extract even through both the extract are endowed with significant Anthelmintic property. The activity reveals the concentration dependence nature of different extract. Potency of extract was found to be inversely proportional to the time taken for paralysis/death of the worm. The activity was compared with the aqueous and ethanolic extract.

**8. Conclusion:** Based on the results we can suggested that the anthelmintic effect of *Butea monosperma* var. lutea aqueous extract as well as ethanolic extract, is related to the possible presence of alkaloid and tannins in the extract. The present study justifies the folklore claims of its anthelmintic property.

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