



**ANTHELMINTIC ACTIVITY OF METHANOLIC LEAF
EXTRACT OF *TABEBUIA ROSEA (BERTOL) DC.***

**¹K.HEMAMALINI*, ²A.RAJANI, ³DR.UMA VASIREDDY
AND E.G RATNA SUNDARI⁴**

¹*Associate Professor & HOD, Department of Pharmacology,
Teegala Ram Reddy College of Pharmacy, Meerpet, Hyderabad.*

²*Assistant Professor, Sree Dattha Institute of Pharmacy, Sheriguda,
Ibrahimpatnam, Greater Hyderabad.*

³*IPA Treasurer.*

⁴*Dept. of Pharmaceutics, Dhanavanthri College of Pharmacy,
Kothagudem, AP, India*

ABSTRACT

Tabebuia rosea is one of the medicinally important plant belonging to the family Bignoniaceae. *Tabebuia* species are native to tropical rain forests throughout central and South America. The objective of the present study was to evaluate and compare the Anthelmintic activity of methanolic extract of leaves of *Tabebuia rosea* Bertol DC. (Bignoniaceae). Albendazole was used as a standard drug to compare the test results. Indian Adult earth worms (*Pheretima posthuma*) were used for the study. The results were interpreted as time taken for paralysis and death of the earth worms. The study concluded that the methanolic leaf extract of *Tabebuia rosea* showed significant Anthelmintic activity.

KEY WORDS: Anthelmintic activity, *Tabebuia rosea*, methanolic extract.



K.HEMAMALINI

Associate Professor & HOD, Department of Pharmacology,
Teegala Ram Reddy College of Pharmacy, Meerpet, Hyderabad.

INTRODUCTION

Natural products have played an important role in the development of drugs and drug leads for various diseases including cancer¹. Parasitic nematodes cause significant problems to the health and life of many plants and animal, and also of humans. Gastro intestinal parasites create a serious threat to the production of livestock in developing nations². Despite the fact of development of anthelmintic resistance in parasites of high economic significance, chemotherapy is still the most widely used option for the control of helminthes. Helminthes parasite infections are global problems with severe social and economic repercussions in the third world countries³. The diseases affect the health status of a large fraction of human population as well as animals. Some type of dangerous helminthes infections like filariasis has only a few therapeutic modalities at present⁴. *Tabebuia rosea* (Bertol) DC. commonly known as "Pink trumpet tree" can grow up to 15mts, well known for its beautiful flowers. The timber is widely used for general construction and carpentry in many European countries. The fruits are green, long and bean pod-like with a length of 20-40 cms (8-16 inch). The fruits turn dark brown when ripe and contain flat, heart-shaped seeds with tiny wings. The graceful beauty is treat for the eyes, but the tree has medicinal uses as well. Tea made from the leaves and bark is known to have a fever-reducing effect⁵. The plant is reported to be an astringent, anti-inflammatory, anti-bacterial, anti-fungal, diuretic and laxative⁶.

MATERIALS AND METHODS

Plant material

The fresh leaves of *Tabebuia rosea* (Bertol) DC. were collected from Sri Venkateshwara University, Tirupati AP, India in June 2012⁷. The plant was identified and authenticated (*Tabebuia rosea* (Bertol) DC. Voucher No: TRRCP (1447/PO/9/11/CPCSEA) by Dr. K. Madhavachetty, Assistant Professor, Department of Botany, Sri Venkateshwara

University, Tirupati, AP, India. The leaves were cleaned, shade dried and milled into coarse powder by a mechanical pulverizer.

Preparation of plant extract

The powdered material (1.5kgs) was subjected to continuous hot percolation method using Soxhlet extraction apparatus for 24hrs. Then the extract was filtered and the filtrate was concentrated at 30°C under reduced pressure in a rotary evaporator. Finally the extract was dried in a desiccator. From the dried extract, accurately 5mg/ml, 10mg/ml, 15mg/ml, 20mg/ml, 25mg/ml, 30mg/ml suspensions of methanolic extract of *Tabebuia rosea* (Bertol) DC. in 1% gum acacia solution (1% gum acacia solution in normal saline) was prepared.

Animals

Pheretima posthuma (Adult Indian earth worms) of about 5-7 cms long were used for the present study.

Standard Drug used

Albendazole suspension (micronized albendazole suspension in the concentration of 10mg/ml) was used as the standard to compare the test results.

ANTHELMINTIC ACTIVITY

Pheretima posthuma (Indian adult earth worms) of nearly equal size (6cms \pm 1) were selected randomly for the present study⁸⁻¹⁰. The worms were acclimatized to the laboratory conditions before experimentation. The earth worms were divided into four groups of six earth worms in each. Albendazole suspension in the concentration of 10mg/ml served as a standard and poured into petri dishes. The test extract were prepared in the concentrations of 5mg/ml, 10mg/ml, 15mg/ml, 20mg/ml, 25mg/ml, 30mg/ml. Normal saline served as control. Six earth worms nearly equal size 6cms \pm 1 were taken for each concentration and placed in petri dishes at room temperature¹¹. The time taken for complete paralysis and death were

recorded. The mean paralysis time and mean lethal time for each sample was calculated. The time taken for the worms to become motionless was noted as paralysis time and to

ascertain death, each worm was frequently applied with external stimuli which stimulates or induce movements in the earth worm, if alive¹².

Table 1
Anthelmintic activity of methanolic extract of leaves *Tabebuia rosea*

Treatment	Concentration used (mg/ml)	Time taken for paralysis (min) X ± S.D	Time taken for death (min) X ± S.D
Control	---	---	---
Standard (Albendazole)	10mg/ml	17 ± 1.571	39 ± 1.932
Methanolic extract of <i>Tabebuia rosea</i>	5mg/ml	85.50 ± 7.869 [*]	92.17 ± 7.502 [*]
	10mg/ml	47.17 ± 1.222 [*]	5.17 ± 1.138 [*]
	15mg/ml	43.67 ± 0.6146 ^{**}	46.33 ± 0.7601 ^{**}
	20mg/ml	38.83 ± 1.276 [*]	48.2 ± 0.9661 [*]
	25mg/ml	38.83 ± 1.276 [*]	35 ± 0.6831 [*]
	30mg/ml	22.17 ± 0.6009 ^{**}	81 ± 2.921 ^{**}

All values are Mean ± SEM analyzed by one way ANOVA followed by Dunnett's test.
n= 5, ^{*}p<0.05, ^{**}p<0.01, ^{***}p<0.001

RESULTS AND DISCUSSION

The earlier studies on preliminary phytochemical investigations of *Tabebuia rosea* (Bertol) DC. leaves revealed the presence of chemical constituents such as saponins, tannins, phenolic acids, flavonoids and alkaloids. Also the alkaloid extract from *Tabebuia rosea* leaves is preferentially said to be cytotoxic to human T-cell leukemia (MALT - 4) cells in a dose and time dependent manner with the absence of genotoxicity¹³. The leaf extract displayed a significant Anthelmintic activity (p<0.001) in a dose dependent manner as shown in Table: 1. The predominant effect of Albendazole on the worm is to cause flaccid paralysis that result in expulsion of the worm by peristalsis. Albendazole by increasing chloride ion conductance of worm muscle membrane produces hyperpolarization and reduced excitability that leads to muscle relaxation and flaccid paralysis. The methanolic leaf extract of *Tabebuia rosea* (Bertol) DC. demonstrated paralysis as well as death of the worms at a

time comparable to Albendazole especially at higher concentration of 30mg/ml. The Anatomy and Physiology of *Pheretima posthuma* is similar to that *Helminthes*¹⁴. Therefore earth worms were used in this study. It has been demonstrated that all Anthelmintics are toxic to earth worms, and a substance toxic to earth worm is worthy for investigation as an Anthelmintic¹⁵. Further studies are needed to establish the mode of activity. The Anthelmintic activity can be ascertained by testing the drug on other species of helminths which is our future plan of research work.

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