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EVALUATION OF ANTHELMINTIC ACTIVITY OF FICUS BENGHALENSIS BARK

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ABSTRACT: The present study evaluated the Anthelmintic activity of *Ficus benghalensis* bark extract against Indian earthworm *Pheretima posthuma* and compared it with the standard drug Albendazole. The results showed that the extract exhibited significant Anthelmintic activity, as evidenced by the time of paralysis and time of death of worms. The extract also contained various phytochemical constituents, including Phenolics, Terpenoids and Miscellaneous constituents. The findings of this study suggest that *Ficus benghalensis* bark extract may be a potential natural Anthelmintic agent. This activity was concentration dependent. As the concentration increases the extract produce maximal effect. Higher concentrations of ethanolic bark extract of *Ficus benghalensis* produce a paralytic effect much earlier and time taken for death was shorter. It shows maximum efficacy at 75 mg/ml concentration than the standard drug. Further studies are recommended to isolate and identify the active principles responsible for its activity. This could lead to the development of new drugs for the treatment of worm infections. The study provides valuable information on the medicinal properties of *Ficus benghalensis* and highlights the potential of natural products as an alternative to conventional drugs for the management of parasitic infections.

INTRODUCTION: Worms are most common parasites which cause intestinal infections in both humans and cattle. Helmintic infections are caused due to worms in chronic conditions it is also leading to death mostly it is happening in cattle [1]. According to WHO reports 1.5 billion people (24% world population) are suffering from Helmintic infections [2]. Till 2025 it reach up to 57% of population are affected by this infections [3]. Common symptoms of these infections are malnutrition, anemia and pneumonia; most of the infections are transmitted through soil.

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For treatment of helmintic infections Anthelmintic drugs are used [4]. Majority of Anthelmintic drugs available in market are Albendazole, Mebendazole, praziquantel, Albendazole is the standard drug available in market, and praziquantel is used for the treatment of intestinal, liver and lungs flukes. But majority of chemical and synthetic drugs shows side effects to avoid such adverse drug reactions and also most of the worms are developing resistance against them [5].

To show effective mechanism most of the population is using natural plant products by replacing chemical and synthetic drugs. Natural plant products do not have any side effects in majority of cases. Plants contain many chemical constituents which contribute for treatment of many diseases. Phytochemicals which are extracted from roots, bark, leafs, fruits and flowers of plants are

used to treat many infections and disease causative organisms as they show effective mechanism against them [6].

[Banyan tree] *Ficus benghalensis*, family belongs to Moraceae; it is called with different names in various languages such as Bargad in Hindi and Urdu, fig in English, bahupada in Sanskrit [7]. There are 800 species and 2000 varieties of *Ficus genus* plants [8]. It is national plant of India and grown in various areas in India, Sri-Lanka, and in most of the areas in Pakistan. Each and every part of plant contains various medicinal values which are used in many ayurvedic preparations. Plant contains supporting roots they are useful for mechanical support and to provide strength to plant [prop roots] they grow downwards to earth. Ficus plant extracts are used for treatment of diarrhea, dysentery, diabetes, antifungal, and antibacterial, to boost immunity, to prevent tooth decay. This plant was discovered to have a variety of pharmacological properties, including anti diabetic activity [9], anti bacterial activity [10], hepatoprotective [11], anti stress activity [12, 13]. The present study is about evaluation of Anthelmintic activity of *Ficus benghalensis*.

MATERIALS AND METHODS:

Plant Collection and Authentication: The bark of the plant *Ficus benghalensis* was collected in the month of January in Narsapur, Medak District, Telangana, India. The plant was authenticated by M. Malla Reddy (M.Sc, M.Phil in Botany), Retired lecturer in Botany, Vikarabad, Telangana.

Material Used: In the present investigation of Anthelmintic activity, Carboxy Methyl Cellulose (CMC), Water, Saline was used. All the material was used in laboratory grade.

Worm Collection: The Indian adult earthworm *Pheretima posthuma* were collected from water logged areas and washed with water to remove all kinds of dirty water from them. They have physiological resemblance with the intestinal round worm parasites of human beings [14, 15, 16].

Preparation of Plant Extract: The bark of *Ficus benghalensis* was shade dried and crushed in an electrical blender into powder and sieved to get a coarse powder. The powder was subjected to Soxhlet extraction using ethanol for 72 hours. The solvent was evaporated using rotary evaporator then the extract was used for the evaluation of Anthelmintic activity.

Preparation of Concentrations: The ethanolic bark extract of *Ficus benghalensis* was made into three different concentrations such as 25 mg/ml, 50 mg/ml, and 75 mg/ml by dissolving in normal saline. Albendazole was used as reference drug. 0.5% w/v Carboxy Methyl Cellulose (CMC) used as a suspending agent.

Anthelmintic Assay: The Anthelmintic activity was carried according to the standard method [17, 18, 19]. Adult Indian earthworm *Pheretima posthuma* has an anatomical and physiological resemblance to the intestinal roundworm parasites of human beings. Indian earthworms were placed in a Petridish containing different concentrations (25 mg/ml, 50 mg/ml and 75 mg/ml) of ethanolic bark extract of *Ficus benghalensis* and standard drug Albendazole. Each Petri dish contains earthworms and observed for time of paralysis as well as time death. Time of paralysis recorded when no movement of any sort could be observed, except when the worm was shaken vigorously as well as the time of death was recorded after ascertaining that worms neither moved when shaken. Finally, the test results were compared with standard reference compound Albendazole **Fig. 1.**

FIG. 1: *IN-VITRO* EXPERIMENTAL MODEL SETUP TO EVALUATE THE ANTHELMINTIC ACTIVITY

RESULTS AND DISCUSSION: The ethanolic bark extract of *Ficus benghalensis* shows potent Anthelmintic activity on *Pheretima posthuma*. This activity was concentration dependent. As the concentration increases the extract produce maximal effect. Higher concentrations of ethanolic bark extract of *Ficus benghalensis* produce a paralytic effect much earlier and time taken for death was shorter **Fig. 2.** It shows maximum efficacy at 75 mg/ml concentration than the standard drug (Albendazole) **Table 1.**

TABLE 1: ANTHELMINTIC ACTIVITY OF ETHANOLIC BARK EXTRACT OF *FICUS BENGHALENSIS* AND STANDARD ALBENDAZOLE

Extract	Concentration	Paralysis	Death
Ethanolic Extract	25mg/ml	7min±13	10min±13
	50mg/ml	3.5min±10	6.5min±18
	75mg/ml	3min±15	5.6min±14
Albendazole	25mg/ml	16min±12	21min±16
	50mg/ml	15min±15	19min±18
	75mg/ml	13min±14	18min±15

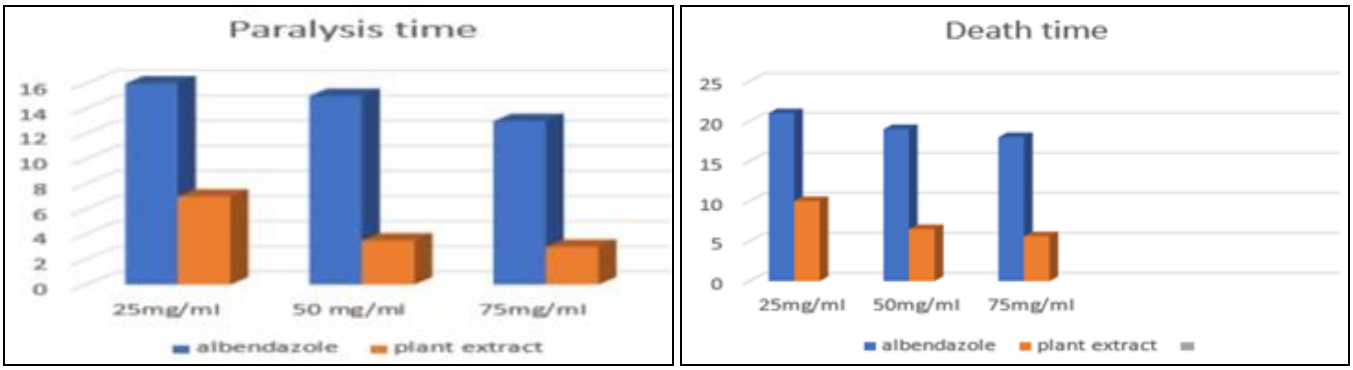

FIG. 2: PARALYSIS AND DEATH TIME OF ETHANOLIC BARK EXTRACT OF *FICUS BENGHALENSIS* AND STANDARD ALBENDAZOLE

CONCLUSION: It can be concluded that the ethanolic bark extract of *Ficus benghalensis* has shown more significant Anthelmintic activity when compared to Albendazole against Indian earthworm *Pheretima posthuma*. The product of *Ficus benghalensis* is used as an Anthelmintic agent. Further, the active constituents responsible for Anthelmintic activity can be explored.

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CONFLICTS OF INTERESTS: The authors have no conflicts of interest regarding this investigation.

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