

***In vitro* anthelmintic activity of delonixregia leaves extract by using indian earthworms phertima posthuma**

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ABSTRACT

The aqueous and methanolic extracts of *Delonixregia* leaves were investigated for *anthelmintic activity* using Indian earth worms (*PhertimaPosthuma*). Three concentrations (25, 50,100 mg/ml) of plant extracts were tested in bioassay. Albendazole (10 mg/ml) is used as standard reference drug whereas distilled water is used as a control. Determination of paralysis time and death time of the worms were recorded. Dose dependent activity was observed in the plant extract but methanolic extract exhibited more as compared to the aqueous extract.

Keywords: Anthelmintic, *Delonixregia*, *PheretimaPosthuma*, Methanolic extract.

1. INTRODUCTION

Helminthes infection repeatedly emitted helminthiasis is among the most pervasive infection and foremost degenerative disease distending a large portion of world's population. In developing countries, they pose a large threat to public health and contribute to prevalence of malnutrition, anemia, eosinophilia and pneumonia [1] parasitic disease cause rothlen morbidity effecting principally population in endemic areas [2]. The gastro-intestinal helminthes become resistant to currently available anthelmintic drugs therefore there is a foremost problem in treatment of helminthes diseases[3]. The helminthes parasites mainly subsist in human body's intestinal tract but they are also found in tissue as their larvae migrate towards them [4]. Development of resistance in helminthes against conventional anthelmintic is a foremost problem in treatment of helminthes diseases [5,6]. So it is important to look for alternative strategies against helminthic parasites which have led to screening of medicinal plants for their *antihelminthic activity*.

Delonixregia is a flowering plant commonly known as *Royal Poinciana* [7,8] belongs to family *Fabaceae*. This tree is native to Madagascar [9,10] chemical constituents of different classes such as flavanoids, terpenoid and its glycosides, phenolics, phytosterol were reported from leaves and flowers of *Delonixregia*[11]. *Delonixregia* leaves are used by traditional practioners in case of *inflammatory* disorders [12] and leaves were reported for its *antimicrobial* and

antioxidant effects [13,14]. The aqueous and methanolic extracts of the flower reported considerable *anthelmintic activity* [15]. Keeping in mind such astounding properties exhibited by the plant, the present study was intended to investigate *anthelmintic* activity of aqueous and methanolic extracts of *Delonixregia* leaves in Indian Earth worms *PheretimaPosthuma*.

2. MATERIAL AND METHOD

The leaves of *Delonixregia* were collected in the month of June 2015 locally from in and around Rajahmundry, East Godavari district, Andhra Pradesh, India. All the experiments were carried with Indian adult earth worms *pheretimaposthuma*. The worms were collected from the moist soil of Godavari river bank in Rajahmundry and they are washed with distilled water to remove fecal matters and placed in normal saline.

2.1. Preparation of the extract

The plant material were dried under shed dry and pulverized in a small scale blender to form coarse powder and stored in air tight container which is used for further extraction.

The powder was subjected to continuous Soxhlet extraction by using methanol and water as solvents. The extracts were concentrated by hot plate and used for testing *anthelmintic* activity. Preliminary phyto chemical screening was carried out to assess the presence of phyto constituents in the extract.

2.2. EXPERIMENTAL

Alcohol and aqueous extracts of *Delonix regia* leaves were investigated for their *anthelmethic activity* against *pheretimaposthuma*. Various concentrations (25, 50,100mg/ml) of each extract were tested in the bioassay which involved determination of time of paralysis and time of death of worms. Albendazole at a dose of 10mg/ml was included as standard reference and distilled water was used as control. Groups of approximately equal size worms consisting of four earth worms individually in each group were released in to each 10ml of desired concentration of the drug in petridish.

The *anthelmethic activity* was performed according to the method [16] on adult Indian earth worms *pheretimaposthuma* as it has anatomical and physiological resemblance with the intestinal round worm parasites of human beings. *Pheretimaposthuma* was placed in petri dish containing 3different concentrations (25, 50,100mg/ml) of methanolic and aqueous extract of leaves *Delonix regia*. Each petridish is placed with four worms and observed for paralysis and death. Mean time of paralysis was noted when no movement of any sort could be observed ,except when the worm was shaken vigorously; The time of death of worm in min was recorded after ascertaining that worm neither moved when shaken nor when placed in hot water. The test results were compared with reference compound Albendazole (10mg/ml) treated samples.

3. RESULTS AND DISCUSSION

Preliminary phyto chemical analysis shows that the presence of carbohydrates, alkaloids, saponins, flavanoids, steroids, tannins, cardiac glycosides. The revealed that methanolic extract of concentration 100mg/ml where as aqueous extract also showed paralysis and death at similar concentration. The other test concentrations of both the extracts showed marked degree of *anthelmethic activity*.

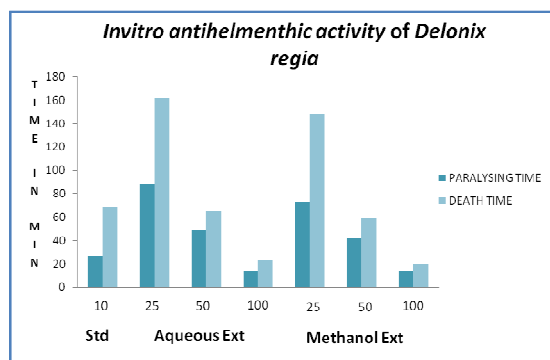


Figure - 1: *In vitro* antihelmethic activity *Delonix regia*.

The *anthelmethic activity* effect is comparable with that of the effect produced by standard drug albendazole (Figure 1 & Table 1). The experimental evidence obtained could provide a rational for traditional use of this plant as *antihelmethic*.

Table - 1: Death and paralysis time of *Delonixregia* leaves extract

Treatment	Concentration (mg/ml)	Delonixregia extract	
		Paralysing Time(min)	Death Time(min)
Distilled Water	-	-	-
Albendazole	10	27.00±0.05	68.95±0.41
	25	88.12±0.08	161.83±0.12
	50	48.88±0.05	65.03±0.07
Aqueous Extract	100	14.06±0.06	23.07±0.05
	25	72.95±0.16	147.89±0.13
	50	42.03±0.03	58.98±0.10
Methonolic Extract	100	13.39±0.15	20.17±0.14

4. CONCLUSION

It was concluded based on the present study that the leaves of *Delonix regia* passes varying degree of *anthelmethic activity* against Indian earth worms the dose extract increase a gradual increase a gradual increase in the activity of extract is dose dependent. This study strongly supports the traditional use of leaves of *Delonix regia* as *anthelmethic*.

5. REFERENCES

1. Bundy DA. Immunoepidemiology of intestinal helmenthic infection:The global burden of intestinal nematode disease. **Trans Royal Soc Trop Med Hyg.** 1994; 8: 259-61.
2. Tagbota S and Townson S. Antiparasitic properties of Medicinal and other naturally occurring products. **Adv parasitol.**, 2001; 50: 199-205.
3. Sondhi SM, Sahu R and Magan Archana. **Indian Drugs**, 1994; 3(7): 317-320.
4. Tripathi KP. **Essentials of meditational pharmacology**. Edn 5th, Jaypee Brothers Medical publishers (p) Ltd., New Delhi, 2003; 759.
5. Tagbota S and Townson S. **Adv parasitol.**, 2001; 50: 199-205.
6. Sondhi SM, Sahu R and Magan Archana. **Indian Drugs**, 1994; 3(7): 317-320.
7. Anonymous. **Wealth of India, A Dictionary of Indian Raw material and Industrial Product**. CSIR, NewDelhi, India. 1952; 3: 30.

8. Anonymous. <http://www.worldagroforestrycentre.org/sea/products/afbases/af/aps/speciesInfo.asp?SPID=648>. World agroforestrycenter. Reterived on July 27,2012.
9. Meenakshi Sudarm M, Santhaguru K and Rajenderan k. Effects of Bioinocculants on quality seedlings production of Delonix regia in tropical nursery conditions. **Asian Journal of Biochemical and Pharmaceutical Research**, 2011; 1(1): 98-107.
10. Abdullahi SA and Abdullahi GM. Effect of boiling on the proximate, anti nutrients and amino acid composition of raw Delonix regia seeds. **Nigerian food**, 2005; 23.
11. Israt Jahan, Mohammad S. Rahaman, Mohammad Z. Rahman and Mohammad A. Rashid. Chemical and biological investigations of Delonix regia Raf. **Acta Pharm.**, 2010; 60: 207-215.
12. Chopra RN, Nayar SL and Chopra IC. **Glossary of Indian Medicinal Plants**, CSIR, New Delhi. 1956; 92.
13. Chang-Hung Chou and Lih-ling Lev. Allelopathic substances and interactions of Delonix regia. **Journal of chemical ecology**, 1992; 18: 12.
14. Mariajancyrani J and Chandra mohan G,kumarvels. Evaluation of Antimicrobial activity of some Garden plant leaves against Lactabacillus SP, Streptococcus mitis ,Candida albicans and Aspergillus niger. **African J. Bassic & Appl. Sco.**, 2012; 4(4): 139-142.
15. Ahirrao RA, Patel MR, Sayyed H Amid and Patil JK. *In vitro* Anthelmenthic property of Gulmohar flowers against Phertima posthuma. **Pharmacology online**, 2011; 1: 728-732.
16. Hosh TG, Maity TK, Bose A and Dash GK. **Indian J nat product.**, 2009;16-19.