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ANTHELMINTIC ACTIVITY OF EXTRACTS OF GLOCHIDION ELLIPTICUM LINN.

Sandeep R. Kane[1], Somkant V. Jawarkar*[2]

[1]Rajarambapu College of Pharmacy, Kasegaon, MS, India.

[2]S. D. Patil Institute of Pharmacy, Islampur, MS, India

Abstract:

Helminthes are recognized as a major problem to livestock production throughout the tropics. Parasitic helminthes affect human being and animals by causing considerable hardship and stunted growth. Most diseases caused by helminthes are of a chronic and debilitating in nature. The parasitic gastroenteritis is caused by mixed infection with several species of stomach intestinal worms, which results weaknesses, loss of appetite, decreased feed efficiency, reduced weight gain and decreased productivity. We here in explore scientifically the anthelmintic potential of medicinal plant of India and substantiate the folklore claims. In present communication aqueous and ethanolic extract of Glochidion ellipticum Linn. were investigated for their anthelmintic activity against Pheretima posthuma and Ascardia galli. Various concentrations were used in the bioassay, which involved paralysis and death time of the worms. Both the extracts showed significant anthelmintic activity.

Keywords: *Anthelmintic activity, Extracts, Glochidion ellipticum Linn; Ascardia galli, Pheretima posthuma.*

Corresponding author:

Dr. S. R. Kane,

Dept of Pharmaceutical Chemistry,
Rajarambapu College of Pharmacy,
Kasegaon.
Tal-Walwa, Dist-Sangli, MS, India.
kanesandeep@gmail.com

QR code

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INTRODUCTION:

Helminthes are recognized as a major problem to livestock production throughout the tropics [1]. Parasitic helminthes affect human being and animals by causing considerable hardship and stunted growth. Most diseases caused by helminthes are of a chronic and debilitating in nature. The parasitic gastroenteritis is caused by mixed infection with several species of stomach and intestinal worms, which results weaknesses, loss of appetite, decreased feed efficiency, reduced weight gain and decreased productivity [2]. Glochidion ellipticum Linn. in ayurveda prescribe as an ingredient of vegetable soup for diarrhoea, painful bleeding piles [3]. The latex of plant was applied on ring worm and eruptive boils. According to Bhaavaprakaasha, plant is expectorant cures aggravated cough, skin disease, parasitic infection, promotes conception possesses aphrodisiac and age-sustaining properties [4]. The leaves and seeds are given in worm cases and in certain bowel affections of children in the Tamil country. In Northern India, they are considered stimulant and laxative. In Konkan, the juice is used to cure ringworm. The expressed juice or the powered plant is administered internally with wine as a remedy for snake-bite, and it is applied externally to the part bitten [7]. G. ellipticum has also shown beneficial effects when used n the treatment of Diarrhea and Dysentery [5]. G. ellipticum possesses antioxidant and antiviral activities [6]. The plant is commonly used as an herbal medicine. It is believed to possess antioxidant, antitumour, anti-malarial, anti rash, anti dysentery, anti carbuncle detoxification and anti hemorrhoidal activity. Present study aims at exploring the details of anthelmintic action of extracts of Glochidion ellipticum Linn.

Table No.1 Anthelmintic activity of extracts of Glochidion ellipticum Linn.

Test subs	Concentrations (mg/ml)	Time taken for paralysis (P) and death (D) of worms in Mins			
		P. posthuma		*A. galli*	
		Paralysis	Death	Paralysis	Death
Control	-	-	-	-	-
Aqueous extract	10	28.17 ± 0.47	66.83 ± 0.60	19.72 ± 0.46	50.06 ± 0.58
	50	18.67 ± 0.71	49.67 ± 0.55	11.30 ± 0.3	37.25 ± 0.54
	100	07.66 ± 0.33	32.33 ± 0.66	8.10 ± 0.29	29.25 ± 0.33
Alcoholic extract	10	29.11 ± 0. 74	75.83 ± 0.06	34.72 ± 0.64	60.07 ± 0.78
	50	19.76 ± 0.81	56.87 ± 0.75	31.30 ± 0.34	47.35 ± 0.54
	100	09.46 ± 0.37	36.33 ± 0.86	11.10 ± 0.49	39.15 ± 0.13
Piperazine citrate	10	17.83 ± 0.60	59.33 ± 0.49	14.17 ± 0.47	40.67 ± 0.76

Results are expressed as mean ± SEM from six observations

MATERIALS AND METHODS:

PLANT MATERIAL

The leaves of Glochidion ellipticum were collected from Sangli District during July 2010 and were authenticated in Department of Botany, Gopal Krishna Ghokale College, Kolhapur, M.S., India. The specimen no was 1547.

PREPARATION Of AQUEOUS EXTRACT

The leaves of Glochidion ellipticum were air dried and coarsely powdered. The powdered material was macerated in distilled water: chloroform (9:1) to form an aqueous extract. The extract was concentrated to a small residue (5 gm). Alcoholic extract was prepared by using soxhlet extractor. The aqueous and alcoholic extract was tested for preliminary phytochemical studies.

ANIMALS

Indian adult earthworms (*Pheretima posthuma*) were collected from water logged areas and *Ascardia galli* (nematode) worm were obtained from freshly slaughtered fowls (*Gallus gallus*).Both worm types were identified at the Department of Zoology, Willingdon College, Sangli.

EVALUATION Of ANTHELMINTIC ACTIVITY [7,8]:

The anthelmintic assay was carried as per method of Ajaiyeoba et al[1] with minor modifications.

The anthelmentic activity was evaluated on adult Indian earthworm *Pheretima posthuma* worm due to its anatomical and physiological resemblance with the intestinal round worms parasites of human beings *Ascardia galli* (nematode) worms are easily available in slaughtered fowls and it can be used as screening model for anthelmintic drugs as advocated earlier. Three different concentrations, each of crude alcoholic and aqueous extract (10, 50,100 mg/ml in distilled water) were prepared and six worms (same type) were placed in it. This was done for both type of worms Observation were made for the time taken to cause paralysis and death of the individual worms. Mean time for the paralysis (P) in min was noted when no movement of any sort could be observed ,except when the worm was shaken vigorously; time of death (D) in min was recorded after ascertaining the worms neither moved when shaken vigorously nor when dipped in warm water (50°C). Piperazine citrate (10mg/ml) was included as reference compound [7,8].

STATISTICAL ANALYSIS

All results are expressed as mean ± standard error. The data was analyzed using two ways of analysis of variance (ANOVA). The statistical significance of the difference of the means was evaluated by Dunnet's test.

RESULTS AND DISCUSSION:

Preliminary phytochemical screening of plant of Glochidion ellipticum Linn showed the presence of diterpenoids, steroids, tannins and resins. Aqueous extract exhibited anthelmintic activity in dose-dependent manner giving shortest time of paralysis (P) and death (D) with 100 mg/ml concentration. It shows in (Table I) the aqueous extract revealed paralysis of 8.66 and 33.33 min. and alcoholic extract shows paralysis of 8.66 and 33.33 min 10.46 and 37.33 against the earthworm *Pheretima posthuma.* The reference drug Piperazine citrate showed the same at 18.83 and 60.33 minutes, respectively. *Ascardia galli* worms also showed sensitivity to the aqueous extract of Glochidion ellipticum Linn. The aqueous extract displayed paralysis and death in 9.10 and 30.25 min and the alcoholic extract showed paralysis and death in 12.10 and 40.15 min and respectively, at higher concentration of 100 mg/ml. Piperazine citrate did the same at 15.17 and 41.67 min. Thus Tannins were shown to produce anthelmintic activities chemically tannins are polyphenolic compounds. It is possible that tannins contained in the extracts of Glochidion ellipticum Linn. produced similar effects. Reported anthelmintic effect of tannins is that they can bind to free proteins in the gastrointestinal tract of host animal or glycoprotein on the cuticle of the parasite and may cause death. Further studies are in process to identify the possible Phytoconstituent responsible for anthelmintic activity.

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