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Evaluation of Anthelmintic Activity of *Kyllinga triceps*

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Abstract

The aim of the study was to investigate for Anthelmintic activity of *Kyllinga triceps* using *Pheretima posthuma* as test worms. Methanolic extract of *Kyllinga triceps* was screened for its anthelmintic activity against *Pheretima posthuma*. The parameters like the time of paralysis and time of death were determined by using the extract at the concentrations of 25, 50 and 100 mg/ml. The extract exhibited significant anthelmintic activity at the highest concentration of 100 mg/ml as compared with *Piperazine citrate* as standard reference and normal saline water as control.

Key-Words: *Kyllinga triceps*, *Pheretima posthuma*, Methanol, *Piperazine citrate*

Introduction

Prior to the earliest history, helminthes which are also well known as parasitic worms had been infecting humans and animals [1]. Parasitic worms usually cause gastro intestinal infections to mammals. In this era the common helminthes which effect humans are tapeworms, hookworms, roundworms and flukes [2]. The disease is highly prevalent particularly in third world countries due to poor management helminthiasis practices [3]. A number of medicinal plants have been used to treat parasitic infections in man and animals [4-6]. Scientific studies have proven that number of plants used in human ethno medical practices have pharmacological activity and may also be useful as ethno veterinary practice. In the human body gastro intestinal tract is the adobe of many human helminthes, but also some live in tissues, or their larva migrates in to tissues [7]. They harm the host by depriving him of food, causing blood loss, injury to organs, intestinal or lymphatic obstruction and by secreting toxins [8]. *Kyllinga triceps* is the herb belonging to the family *Cyperaceae*. It grows in moist places. Fresh juice of the plant is used externally to wash the wounds. It is used in the treatment of indigestion [9]. Decoction of roots is used in diabetes and to relative thirst in fever [10]. The roots yield oil which is used to promote the action of the liver and relative pruritus [11].

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The literature search reveals that still no work have been done on this plant. And nobody identified anthelmintic activity. With this knowledge the present study was intended to determine the phytochemical constitutions and evaluation of anthelmintic activity of *Kyllinga triceps*.

Material and Methods

Collection of the plant material

The plant *Kyllinga triceps* was collected from the Tiruneveli Dist., Tamil nadu, India in the month of December 2012. The plant materials was identified and authenticated by Dr. V.Chelladuri, Retired Research officer botany, Central Council for Research in Ayurveda and Sidha (C.C.R.A.S), Govt. of India, Tiruneveli. The collected plant material must be free from disease and also free from contamination of other plant materials.

Preparation of the plant extract

The entire plant material of *Kyllinga triceps* 100 gms was taken and air dried. Then the dried material and coarsely powdered plant material extracted with 500 ml methanol by using Soxhlet extractor. The sample was kept in dark for 72 hrs with intermittent shaking. Then the solvent was evaporated using rotary evaporator under reducing pressure to obtain viscous semisolid masses (g).

Phytochemical screening

Phytochemical screening of methanolic extract of *Kyllinga triceps* was carried out according to the standard method. In this the methanolic extract was tested for steroids, alkaloids, sugar, phenolic compounds, flavanoids, saponins, tannins, anthraquinone and amino acids.

Selection of worms

To carry out the anthelmintic evaluation, Indian adult earthworms (*Pheretima posthuma*) were used. The earth worms were collected from the moist soil of Yeragondapalem. Worms were washed with saline water to remove the fecal matter and stored in freshly prepared tyrode solution. The selected worms are about 10 cm length and 0.3 to 0.4 cm wide is taken to perform the Experiment.

Evaluation of Anthelmintic activity

According to Ghosh *et al.* (2005) the anthelmintic activity was performed on the adult Indian earth worms (*Pheretima posthuma*)^[12]. The earthworms of 10 cm length and 0.3 to 0.4 cm wide were used. The methanolic extract of *Kyllinga triceps* is prepared into three different concentrations (25mg/ml, 50 mg/ml, and

Results and Discussion

The ethanolic extract of *kyllinga triceps* displayed a significant anthelmintic activity ($p < 0.05$) in dose dependent manner as shown in Table 1. The predominant effect of Piperazine citrate on the worm is to cause of flaccid paralysis that result in expulsion of the worm by paralysis. Piperazine citrate by increasing chloride ion conductance of worm muscle membrane produces hyperpolarization and reduced excitability that leads to muscle relaxation and flaccid paralysis.

Conclusion

Finally, it can be conclude that all concentration of *Kyllinga triceps* extract revealed significant anthelmintic activity but in higher concentration (100 mg/ml) the methanolic extract of *Kyllinga triceps* shown potent activity. It has been seen from the Table 1. Further study can be continued for in vivo evaluation of some species other than *Pheretima posthuma* followed by isolation and characterization of the particular chemical moiety for the activity.

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100 mg/ml). The drug Piperazine citrate was taken as reference compound and concentrations are taken in same manner as like as test sample. The reference and test compounds are made with normal saline solution. Normal saline (0.9 % NaCl) alone served as negative control and accordingly poured into petridishes. The petridish of equal sizes were taken and labeled. Six earthworms (n=6) of above mention sizes were placed in each petridish at room temperature. Each was placed and observed for paralysis or death. The mean time of paralysis was noted when no movement of worms observed when shaken vigorously. The time death of worms was recorded after ascertaining that worms neither moved when shaken nor given external stimuli. Finally test results were compared with reference.

The extract demonstrated paralysis as well as death of worms at a time comparable to Piperazine citrate especially at higher concentration of 100 mg/ml as shown in shown in Graph 1 & 2. Phytochemical screening of crude extract revealed the presence of steroids, alkaloids, sugar, phenolic compounds, flavanoids, saponins, tannins, anthraquinone and amino acids. Polyphenolic compounds shown anthelmintic activity; chemically tannins are polyphenolic compounds^[13].

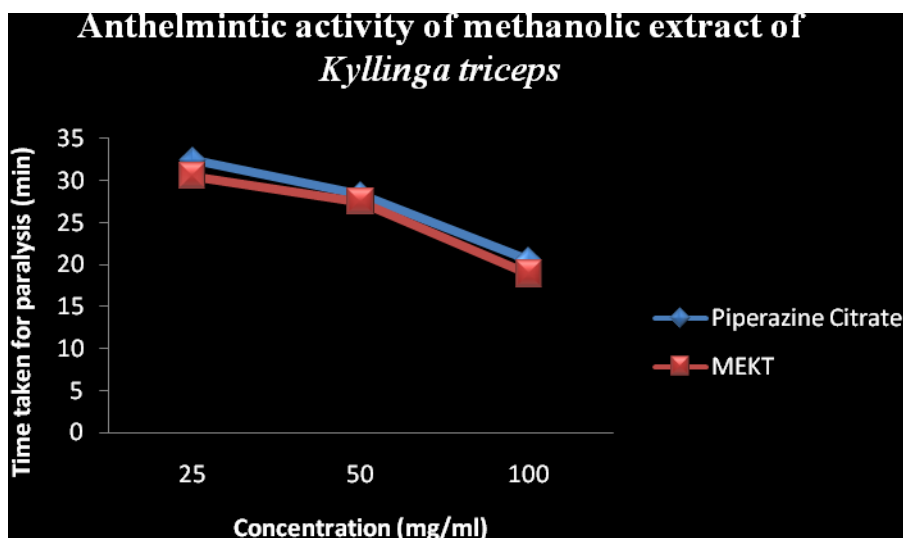
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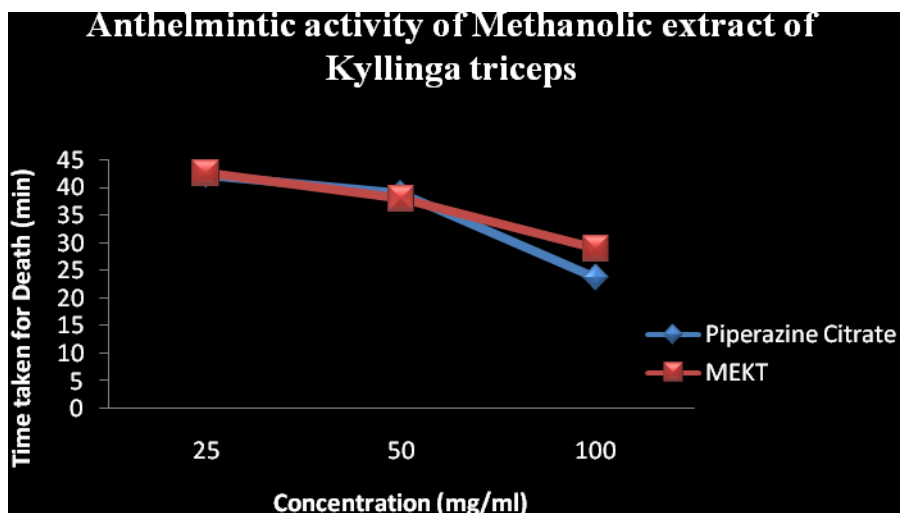
Table 1: Anthelmintic activity of Methanolic extract of *Kyllinga triceps*

S/NO.	Test Sample	Conc. (mg/ml)	Time taken for paralysis (min.)	Time taken for Death (min.)
1	Control(Normal Saline)	-	-	-
2.	Piperazine citrate (Standard)	25	32.40 ± 0.06	42.21 ± 0.10
		50	28.30 ± 0.05	38.93 ± 0.05
		100	20.50 ± 0.04	23.68 ± 0.03
3.	Methanol Extract	25	30.51 ± 0.04	42.64 ± 0.09
		50	27.45 ± 0.03	38.01 ± 0.07
		100	18.85 ± 0.01	29.01 ± 0.04

values are Mean ± SEM; n=6 worms in each group* P<0.05 when compared with standard drug.



Graph 1: Time taken for paralysis using methanolic extract of *kyllinga triceps* for evaluation of Anthelmintic activity



Graph 2: Time taken for Death using methanolic extract of *kyllinga triceps* for evaluation of Anthelmintic activity

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