EXPERIMENTAL EVALUATION OF ANTHIHELMINTIC ACTIVITY OF CARICA PAPAYA LATEX USING INDIAN EARTH WORM [PHERITIMA POSTHUMA]

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ABSTRACT
This study was aimed to investigate the antihelmintic activity of carica papaya latex as the herbal drug of choice on common Indian earth worm (Pheretima posthuma). Alcohol and aqueous extract from the carica papaya latex were investigated for their antihelminthic activity against Pheretima posthumous. Various concentrations (25-100 mg/ml) of each extract were tested in the experiment, which involved in determination of time of paralysis and time of death of the worms. Piperazine citrate was used as a standard reference which increase the chloride ion conductance of worm muscle membrane and produce hyper polarization and reduce excitability that leads to muscle relaxation and flaccid paralysis. From the present study it is evident that ethanol and aqueous extract of carica papaya latex has shown significant and comparable antihelminthiac activity with the piperazine citrate as standard.

KEYWORDS: Carica papaya latex, Antihelmintic activity, Piperazine citrate, Paralysis.

INTRODUCTION
Helminthiasis is a disease in which a Part of the body is infested with worms such as pinworm, round worm or tape worm or typically. The worms reside in the gut but may also burrow into the liver and other organs.

Helminthiasis is prevalent globally (I/3 of world’s population harbors’ them). But is more common in developing countries with poorer personal and environmental hygiene. Multiple
Infestations in the same individual are not frequent. In the human body GIT is the abode of many helminthes but some also live in tissues, are their larvae migrate into tissue. They harm the host by depriving him on food, causing blood loss, injury to organs, intestinal or lymphatic obstruction and by secreting toxins. It is rarely fatal but it is major cause of ill health. The formation of worms occurs most frequently in childhood. Sometimes the worms are hereditary (they have even been found in the fetus); they occur rarely in infants at the breast, most common in the period of dentition, very rarely in the age of adolescence (except Taenia, which is frequent at the age), and rather more frequently in the declining age; they are more apt to be found in females, and in person of a leuco-phelegmatic constitution with disposition to excessive formation of mucus and blennorrhoea. Exciting causes are bad food, vegetable diet in preference to meat, uncleanliness, and a damp, tepid atmosphere, which may convert helminthiasis into an endemic or epidemic disease.

Several ways of infection are possible: through human faces, animal faces, infected meat, infected fish, infected crabs and Cray fish, contaminated plants and water etc. Larvae of *Strongyloides* and hookworm enter through the skin form soil. They then penetrate deeper. It stays in the skin and gives rise to cutaneous larva migrants. Filariases are transmitted by the bite of various Diptera: mosquitoes and flies.

The objective of the present study is to evaluate the anathematic activity of *carica papaya* latex using *Indian earth worm* (*pheretima posthumous*) and comparison of anthelmintic activity of ethanol and aqueous extracts of *carica papaya* latex with piperazine citrate (synthetic drug).

**MATERIALS AND METHODS**

**Evaluation of Antihelminthic Activity of carica papaya latex using Pheretima Posthuma**

The anthelmintic activity of ethanol (95%) extracts of *carica papaya* latex was evaluated on earthworms (*pheretima posthuma*).

**Experimental animal:** Adult Indian earthworm’s *pheretima posthumous* resembling anatomical and physiological features with intestinal round worm parasites of human beings of nearly equal sizes were taken for each concentration.

**Experimental plants:** The raw papaya fruit from *carica papaya* grown locally (markapuram, prakasham (DT) Andhra Pradesh) was used as stating materials for collection of latex.
Drugs and chemicals
Piperazine citrate (glaxo smithkline), ethanol, Nacl, were used during the experimental protocol.

Experimental design
Alcohol and aqueous extract from the carica papaya latex were investigated for their antihelminthic activity against pheretima posthumous.

Various concentrations (25-100 mg/ml) of each extract were tested in the experiment, which involved determination of time of paralysis and the time of death of the worms.

Piperazine citrate was included as standard reference and normal saline (0.9%Nacl) as control.

Isolation of latex from C.papaya
Fresh latex was collected from locally grown C.papaya.
Initially four to six longitudinal incision was made on the unripe fruit using a stainless steel knife.

The exuded latex was allowed running down the fruit and dripping into collecting device attached around the trunk.

Following collections, the latex was transferred to a plastic bottle and stored at -20°C.

Preparation of the extract
The collected latex is dried in the hot air oven in the range of 65°C-80°C. The enzyme is extremely temperature stable in comparison to the other proteases.

After thoroughly drying the latex become tan to light brown color.

Dried papaya latex was extracted by maceration method.

MACERATION METHOD
In this process powered material of dried papaya latex (250 gm) was taken in container.
Then 1000ml each of solvents ethanol (95%) and water were poured into power so, that the power was fully dipped in the solvent.

These solvents are chosen by getting non polar components at first and it tends to polar components.
The components are being soluble in solvent for 7 days and eluted from sample using muslin clot or whatman no.1 filter paper and stored in container.

After complete filtration the eluent was concentrated by evaporation on water bath. At last the residue is being allowed for evaluation.

**EVALUATION OF ANTIHELMINTHIC ACTIVITY**

The antihelminthic assay was carried as per method of Ajaiyeobaetal with minor modifications.

Adult Indian earth worms (*phereetima posthuma*) were collected (*due to their anatomical and physiological resemblance with the intestinal round worm parasite of human beings*) from moist soil and thoroughly washed with normal saline to remove the adhering material. The earth worm of 3-5cm in length and 0.1-0.2cm in which were used for all the experiment protocol.

In the first set of experiment, six group of six earthworms were released in to 50 ml of solution of *piperzine citrate, aqueous and alcoholic extract* of *carica papaya* latex(25, 50 and 100 mg/ml each) in distilled water.

Piperazine citric was used as reference standard while normal saline (0.9%Nacl) as control.

Observations were made for the time taken to paralysis and death of individual worms. Time for paralysis was noted, when no movement of any sort could be observed except when the worms were shaken vigorously. Death was concluded when the worms lost their motility followed with fading away of their body colour.

**RESULTS AND DISCUSSION**

The result of the above studies demonstrated that, the alcoholic extract of papaya latex posse’s potent antihelminthic activity with varying magnitudes, which is more effective than the standard piperzine citrate.

From the observations, higher concentration of extract produced paralytic effect much earlier and the time to death was shorter for all worms. The control that is normal saline did not show any activity against earthworm. Aqueous extract showed antihelminthic activity in dose-dependent manner giving shortest time of paralysis (p) and death (D) with 100 mg/ml
concentration i.e. at 25.60min and 40.50 respectively. Ethanolic extract exhibits more potent activity at higher concentration (100mg/ml) with paralysis and death times 21.65 and 29.00 min. 

The difference in time taken for induction of paralysis between Piperazine citrate and Carica papaya ethanolic extracts was insignificant i.e. 1.05 min especially at higher concentration of 100mg/ml. The mode of action for piperazine is generally by paralyzing parasites, which allows the host body to easily remove or expel the invading organism the present study justifies the folklore claims of its potential antihelminthic activity.

NORMAL SALINE

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<th>TIME TAKEN IN MIN</th>
<th>PARALYSIS</th>
<th>DEATH</th>
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PIPERAZINE CITRATE

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ETHANOL EXTRACT

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AQUEOUS EXTRACT

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CONCLUSION

We here by conclude that the drug Carica papaya we have taken shows more antihelminthic activity than that of the standard one i.e. piperazine citrate. Hence the research upon these should be encouraged in accordance to get the accurate results than that of the standard one. The plant based antihelminthic drugs is more effective and are more highly potent. At higher concentration the aqueous extract is more effective than that of the standard one when compared the difference of the time taken for paralysis and death is different in all concentration the mean time of difference is very much similar.
The availability of the carica papaya latex is more and is cheaper in coast hence the extraction of these is also very much easy. In tropical areas these cultivation is also very high in ratio hence these is helpful in serving the purpose with in the lower spam of time cheaper and efficient. At low concentration it shows broad spectrum of activity.

REFERENCES
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