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Phytochemical screening and anti helmenthic activity on the fruits of ziziphusjujuba

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Abstract

Ziziphus jujuba is a well-known medicinal plant and is widely used in Medicine, Ayurvedic system of medicine. In the present study, solvents namely Distilled Water, Benzene, Diethyl Ether were used in sequentially per crude extraction of ziziphus jujuba fruits. According to the above assessment it is observed that the Benzene extract of ziziphus jujuba has more efficient Anti Helmenthic activity among the other two extracts (Distilled Water, Diethyl Ether) at the concentration 5, 10, 20mg/ml. Anti Helmenthic activity was found to be increased with dose and shortest time of paralysis and death was observed at 10mg/ml and activity was comparable to the well-known anti helmenthic agent Albendazole.

Keywords: Anti Helmenthic Activity, ziziphus jujube, Helminths.

1. Introduction

Helminths are recognized as a major constraint to livestock production as well as blood loss in humans throughout the tropics [1, 2]. They achieve these characteristics because majority of them live as pure obligate parasite in humans and other livestock of economic importance. These worms are grouped into two major phyla namely phylum Platyhelminthes (flatworms) and phylum Nematoda (roundworms) and they have developed various adaptive structures to survive in their hosts [3].

Plants extracts have been used since time immemorial for managing various diseases in traditional medicine especially in Africa and other developing worlds. Plants prescription has found that it's relevant as anti-cancer, anti-malarial, anti-coagulant, anti-histamine, antibiotic, food supplements, etc. However, the rapid spread of intestinal worm induced sickness in the rural populace, which had resulted into many deaths and physical impairments among children from age five to thirteen years, and negligence of orthodox medications by the these rural dwellers, justifies why this research was carried out.

The present research was therefore designed to scientifically validate by using the fruit extract of Ziziphus jujuba. Ziziphus jujuba, also known as commonly called jujube [3]; sometimes jujuba, red date, Chinese date, [3] Korean date, or Indian date is a species of *Ziziphus* in the buckthorn family Rhamnaceae. It is used primarily as a shade tree that also bears fruit.

Previously the extracts of jujuba showed positive results and also shows the activities of anti-cancer, anti-ulcer, anti-pyretic, anti-hepatities, immune-modulatory, anti-oxidant, anti-arterial, anti-microbial, anti-inflammatory, diuretic properties.

2. Materials and Methods

2.1 Collection of plant material [4, 5]

The fruits of plant ziziphus jujube was collected in Sri Sivani College of pharmacy, Srikakulam district, Andhra Pradesh, India in Jan 2016. It was authenticated by Dr. S.B. PADAL, Department of botany, Andhra University, Vishakapatnam.

2.2 Extract Preparation [6, 7]

The freshly collected plant was shade dried and powered in a Whely Mill. The powered material was then subjected to maceration (cold extraction). The air dried powdered materials (50mg) of fruits of plant was extracted with Benzene, Diethyle ether, Distilled water by cold extraction kept for several hours for about seven days of occasional shaking. The extract thus obtained was concentrated under vacuum in rotary evaporator, dried completely and weighed.

2.3 *In vitro* antihelminthic activity of extracts [8, 9]

Adult motility assay: Mature earthworm from clinical isolates were used to determine the effect of Crude Aqueous, methanol, chloroform Extracts by method described previously by Iqbal *et al.* [4]. Briefly, the female mature worms were collected from freshly excreted faeces. The worms were washed and finally divided in to 5 groups in each group taken 2 earthworms. Each group placed in a separate petri dishes at room temperature (25-30°C) 1) group 1 placed in a 10ml of normal saline solution 2) group 2,3,4 Placed in a different concentrations(5,10,20 mg/ml) of Benzene, Diethyle ether and aqueous extracts respectively 3) group 5 placed in a Abendazole 10 mg/ml concentration. Earth worms were observed and the time taken for paralysis and time taken for death was monitored and documented in minutes. Paralysis time was analysed based on the behaviour of the earth worms with no revival body state in normal saline medium. Death concluded on total loss of motility with faded body colour.

3. Results



Fig 1: The effect of distilled water extract on Pheretima posthuma

Table 1: *In vitro* anti helimenthic activity of distilled water extract of ziziphusjuba against pheretima posthuma

Test Sample	Concentration	Time Taken For Paralysis(Min)	Time Taken For Death(Min)
Normal saline solution		63.32 ±0.88	200.37±2.65
Distilled Water	5mg/ml	22±0.52	32±0.72
	10mg/ml	11±0.75	14±0.30
	20mg/ml	10±0.31	13±0.42
Albendazole	10mg/ml	30sec	55sec

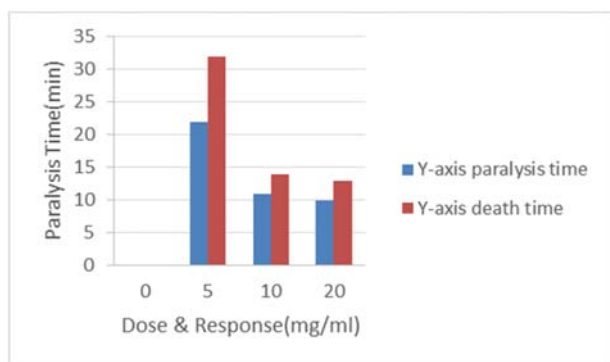


Fig 2: Anti helminthic activity of ziziphusjuba by distilled water extract



Fig 3: The effect of Benzene extract on Pheretima posthuma

Table 2: *In vitro* anti helimenthic activity of Benzene extract of ziziphusjuba against Pheretima posthuma

Test Sample	Concentration	Time Taken For Paralysis(Min)	Time Taken For Death(Min)
Normal Saline solution		63.22±0.88	200.37±2.65
Benzene Extract	5mg/ml	9±0.24	15±0.62
	10mg/ml	7±0.21	9±0.70
	20mg/ml	5±0.68	7±0.85
Albendazole	10mg/ml	30sec	55sec

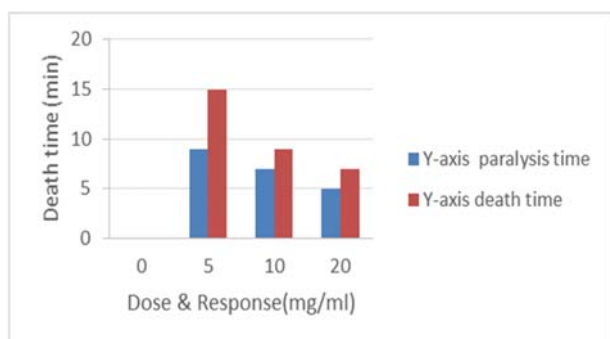


Fig 4: Anti helmenthi activity of ziziphusjuba by using Benzene extract



Fig 5: The effect of diethyl ether extract on Pheretima posthuma

Table 3: *In vitro* anti helminthic activity of diethyl ether extract of ziziphusjujuba against Pheretima posthuma

Test Sample	Concentration	Time Taken For Paralysis(Min)	Time Taken For Death(Min)
Normal saline		63.22±0.88	200.37±2.65
Diethyl Ether	5mg/ml	22±1.72	24±0.31
	10mg/ml	14±1.0	16±0.42
	20mg/ml	6±0.87	9±0.55
Albendazole	10mg/ml	30sec	55sec

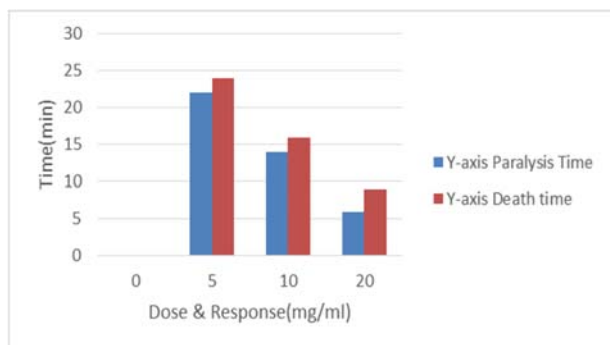


Fig 6: Anti helminthic activity of ziziphusjujuba by using diethyl ether extract:

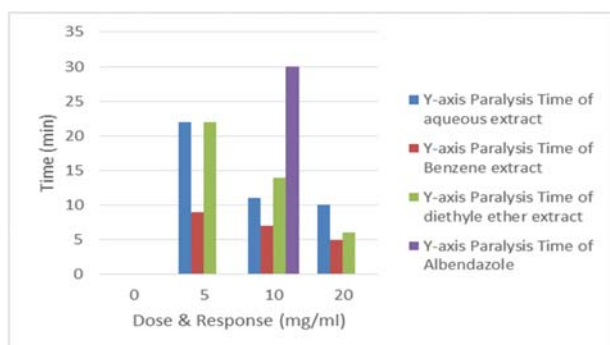


Fig 7: Comparision studies between paralysis time of three extracts of ziziphus jujube With Albendazole (10mg/ml)

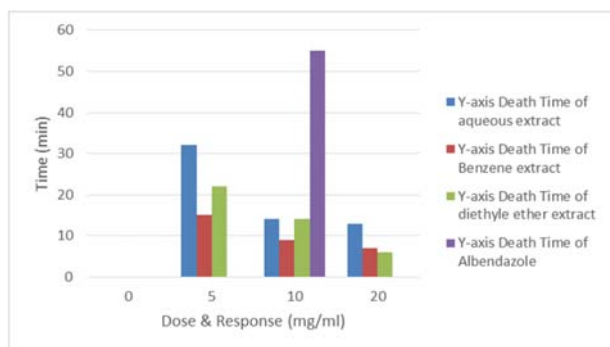


Fig 8: Comparision studies between death time of three extracts of ziziphus jujube With Albendazole (10mg/ml)

4. Discussion

The whole plant of ziziphus jujube was used for anti-helminthic activity for evaluation these activity time taken for paralysis and time taken for death of Pheretima posthuma on administration of ziziphusjujuba fruit extract had been carried out in the study. In this method the concentration of extract increases the time taken for paralysis and decreases respectively which has more then standard group.

5. Summary and Conclusion

Ziziphus jujube is a well known medicinal plant and is widely used in Medicine, Ayurvedic system of medicine in the present study, solvents namely Distilled Water, Benzene, Diethyl Ether were used in sequently per crude extractin of ziziphus jujube fruits.

According to the above assessment it is observed that the Benzene extract of ziziphus jujube has more efficient activity among the other two extracts (Distilled Water, Diethyl Ether) at the concentration 5, 10, 20mg/ml against pheretima posthuma activity was found to be increased with dose(shortest time of paralysis and death was observed at 10mg/ml and activity was comparable to the well-known anti helmenthic agent Albendazole).

6. Acknowledgement

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