



Research Article

ANTIHELMINTIC ACTIVITY OF LEAVES OF *PRUNUS PERSICA*

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ABSTRACT

Present study was undertaken to investigate the antihelmintic potential of methanolic and aqueous extract of leaves of *Prunus persica* on adult Indian earthworm *Pheritima posthuma*. *Prunus persica* is an orchard tree native to China that bears a juicy edible peach. It belongs to the Rosaceae family. It is highly useful in treating inflammatory disorders. The leaves or powdered bark are excellent for inflammatory bowel disease and gastritis. Various concentrations (15, 30, 45, 60, 75 and 100 mg/ml) of methanolic and aqueous extracts were evaluated for antihelmintic activity by recording the time required for paralysis and death of worms. Albendazole (45 mg/ml) was used as reference standard and 1 % acacia in normal saline water as a control group. A significant anthelmintic effects were observed on live adult *Pheritima posthuma* worms in terms of the paralysis and death of the worms at different concentrations. The present study clearly demonstrated the antihelmintic activity of *Prunus persica* supporting the traditional claim.

Keywords: *Prunus persica*, *Pheritima posthuma*, Antihelmintic activity, Albendazole

INTRODUCTION

Helminthic infestations are now being recognized as a cause of chronic ill health and sluggishness amongst the children¹. The World health Organization (WHO) estimated that 80 % of the population of developing countries rely on traditional medicines, mostly plant drugs for their primary health care needs. The use of medicinal plant is growing worldwide because of the increasing toxicity and allergic manifestations of the synthetic drugs. Traditional system of medicine reports the efficacy of several natural products eliminating helminthes. Parasitic diseases cause ruthless morbidity affecting principally population in endemic areas². The gastro-intestinal helminthes becomes resistant to currently available anthelmintic drugs therefore there is a foremost problem in treatment of helminthes diseases³. Hence there is an increasing demand towards natural anthelmintics. *Prunus persica* is an orchard tree native to China that bears a juicy edible peach. It belongs to the Rosaceae family. The leaves, bark, flowers and kernels have medicinal virtue. The fresh leaves were stated by the older herbalists to possess the power of expelling worms, if applied outwardly to the body as a poultice. An infusion of the dried leaves was also recommended for the same purpose⁴.

MATERIALS AND METHODS

Plant material

Plant material used in this study consisted of the leaves of *Prunus persica*, collected and authenticated by Prof. V. Chelladurai, Ph.D., Research officer – Botany, Tirunelveli. A specimen was deposited in the Hindu College of Pharmacy, Guntur, India.

Preparation of extract

The shade dried leaf powdered material was subjected to extraction in Soxhlet apparatus by using methanol as solvent. Appearance of colorless solvent in the siphon tube was taken

as the termination of extraction. The extract was then concentrated by Helidolph rotary vacuum evaporator. Hence forth the Methanolic extract of *Prunus persica* will be called as MEPP. The aqueous extract was prepared by taking the dried powdered leaves of *Prunus persica* and then boiled in distilled water for 60 minutes. The decoction was taken and allowed to cool for 30 minutes at room temperature (24 ± 5°C). This decoction was filtered twice and the filtrate was then concentrated in vacuum at 60 using Rotary vacuum evaporator. Hence forth the aqueous extract of *Prunus persica* will be called as AEPP.

Animals

Indian adult earthworms, *Pheritima posthuma*, of size 4-7 cm in length and 0.1-0.2 cm in width were used in complete experimental protocol. The earthworms collected from the moist soil of the campus Hindu college of Pharmacy and were washed with normal saline to remove the fecal matter.

Evaluation of Antihelmintic Activity

The antihelmintic activity of leaves of *Prunus persica* was evaluated according to the method of Ghosh *et al.* The antihelmintic activity was performed with both methanolic and aqueous extracts of leaves of *Prunus persica*. At first the earthworms are washed with plenty of water in order to remove the soil and the fecal matter. Now these earthworms are ready to evaluate the antihelmintic activity. Albendazole (45 mg/ml) was taken as reference standard.

Study design

The thoroughly washed earthworms are divided into fourteen groups of 5 earthworms in each group

Group 1: normal control received 1 % acacia in normal saline

Group 2: served as standard, received albendazole (45 mg/ml)

Group 3: served as test group received MEPP 15 mg/ml
Group 4: served as test group received MEPP 30 mg/ml
Group 5: served as test group received MEPP 45 mg/ml
Group 6: served as test group received MEPP 60 mg/ml
Group 7: served as test group received MEPP 75 mg/ml
Group 8: served as test group received MEPP 100 mg/ml
Group 9: served as test group received AEPP 15 mg/ml
Group 10: served as test group received AEPP 30 mg/ml
Group 11: served as test group received AEPP 45 mg/ml
Group 12: served as test group received AEPP 60 mg/ml
Group 13: served as test group received AEPP 75 mg/ml
Group 14: served as test group received AEPP 100 mg/ml

The clean and dry petridishes were taken and on to which various concentrations of solutions that were prepared are poured an amount of 20 ml. All the petridishes were kept under room temperature. The time taken by the earthworms to paralyze and were observed. Time for paralysis was observed by slight pin prick method where there will be no movement is seen in the worm. The death of the earthworm was confirmed by color change or by applying external stimuli which induce movements.

Statistical Analysis

The data expressed as the mean \pm SD. Data were analyzed by one-way ANOVA followed by using Dunnetts T test. Instat® (Graph Pad software, U.S.A).

RESULTS AND DISCUSSION

The results revealed that both the methanolic and aqueous extracts of leaves of *Prunus persica* showed significant antihelmintic activity. Compared to methanolic extract the aqueous extract showed very significant results. The phytochemical constituents revealed the presence of tannins, carbohydrates, flavanoids and glycosides. The paralysis and the death time taken for aqueous extract of *Prunus persica* 8 minutes and 14 minutes respectively. The time taken for paralysis and death of the worms is more at low concentrations of MEPP but showed significant antihelmintic activity at higher concentrations. Tannins are polyphenolic compounds which were shown to produce anthelmintic activities⁵⁻⁶. 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 death⁷⁻⁸.

Table 1: Antihelmintic activity of leaves of *Prunus persica*

Treatment	Concentration (mg/ml)	Paralysis time (min)	Death time (min)
Control (1 % acacia in normal saline)			
Albendazole (Standard)	45	15 \pm 0.374	29 \pm 0.381
Methanolic extract of <i>Prunus persica</i>	15	65 \pm 0.583	93 \pm 0.447
	30	52 \pm 0.678	78 \pm 0.510
	45	44 \pm 0.583	67 \pm 0.707
	60	33 \pm 0.60	57 \pm 0.447
	75	29 \pm 0.707	48 \pm 0.510
	100	21 \pm 0.510	36 \pm 0.678
Aqueous extract of <i>Prunus persica</i>	15	45 \pm 0.663	65 \pm 0.316
	30	37 \pm 0.748	45 \pm 0.447
	45	29 \pm 0.40	38 \pm 0.892
	60	19 \pm 0.748	34 \pm 0.548
	75	13 \pm 0.583	23 \pm 0.510
	100	8 \pm 0.374	14 \pm 0.510

Values are expressed as mean \pm SD, here n = 5 in each group values are significant at p < 0.01

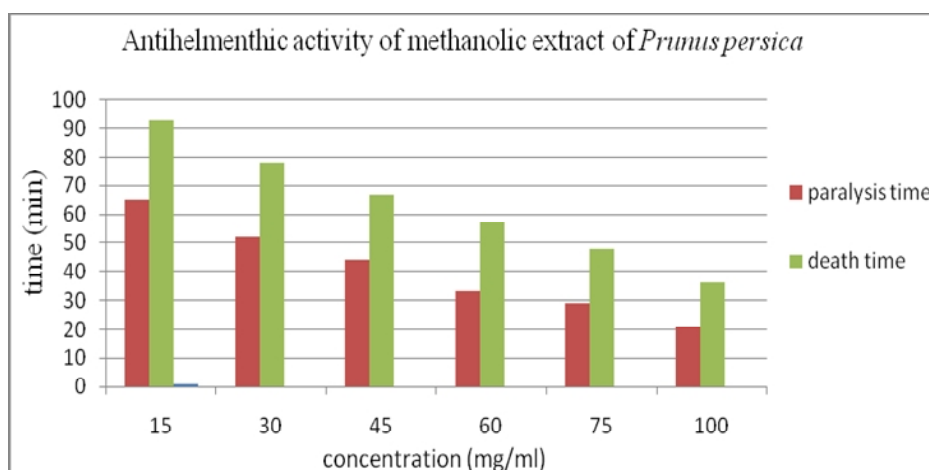


Figure 1: Antihelmintic activity of methanolic leaf extract of *Prunus persica*

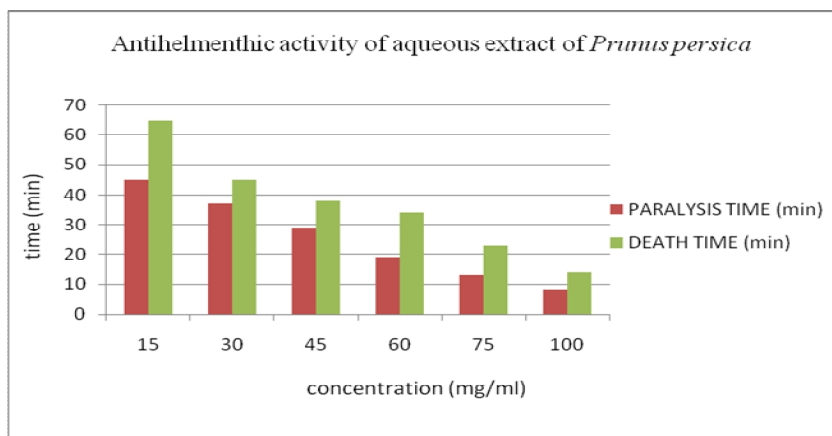


Figure 2: Antihelmintic activity of aqueous leaf extract of *Prunus persica*

CONCLUSION

The results from the present investigation demonstrated the antihelmintic activity of methanolic and aqueous extract of *Prunus persica* leaves which justify the use of this plant in traditional medicine system for helminthic infestations. Further, in future it is necessary to identify and isolate the possible active constituent that is responsible for antihelmintic activity.

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