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## Evaluation of In-vitro Anthelmthic Property of *Passiflora edulis* Linn

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### ABSTRACT

The objective of this work is to determine the anti-helmenthic activity of *Passiflora edulis* Linn, using ethanol and water extracts of leaves at different concentrations (50, 75 and 100mg/ml). The evaluation of in-vitro anthelmenthic activity is done on adult earthworms due to its anatomical similarity with the intestinal parasite. The reaction time is noted as paralysis time and death time for all the concentrations and compared with standard albendazole.

**Keywords:** anthelmenthic activity, earthworms, paralysis time, death time.

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## INTRODUCTION

*Passiflora edulis* Linn (family: Passifloraceae) [1] also known as passion flower is a commercially grown for its fruit. Traditionally the fruit is used to treat asthma [1] and cough and the juice is considered to be good to the heart [1]. Folklore claims to have several medicinal properties such as anti-spasmodic, anti-anxiety, sedative, tranquilizer, diuretic etc. The detail plant survey confirms the presence of anti-inflammatory activity, anti-asthmatic, neuropharmacological effects [2], anti-oxidant [3] etc. Chemical analysis of the fruit was also done which showed the presence of carbohydrates, ascorbic acid, carotene [4], vitamins, alkaloids, glycosides [5], saponins, tannins & triterpens.

## MATERIAL AND METHODS

Maceration [6,7] process is been carried out with ethanol and water. Extracts are obtained for the study by evaporating under vacuum.

The anthelmintic assay [8] was carried as per the method described by Mali et al with minor modifications. The assay was performed on adult Indian earthworm *Eisenia fetida* due to its anatomical and physiological resemblance with the intestinal roundworm parasite of human beings [9,10,11]. Because of easy availability, earthworms have been used widely for the initial evaluation of anthelmintic compounds invitro [12,13,14]. 50ml of formulation containing three different concentration each of ethanol and water extract (50, 75 & 100mg/ml in distilled water) were prepared and six worms were placed in it. Time for paralysis was noted when no movement of any sort could be observed except when the worms were shaken vigorously. Time for death of worms was recorded after when worms neither moved when shaken vigorously nor when dipped in warm water (50°C). Albendazole (10mg/ml) was used as reference standard while distilled water as control [15,16].

## RESULTS AND DISCUSSION

As shown in the Table No.1 the alcoholic and aqueous extract of leaves of *P.edulis* showed significant anthelmintic property at higher concentration. The extract showed a dose dependent activity like shortest time of paralysis (p) and death (d) with 100mg/ml concentration. The ethanol extract of *P.edulis* caused paralysis in 6.7min and 8.4min while water extract showed **p** at 2.2min and **d** at 5min. The reference drug albendazole showed the same at 4min and 34min. respectively.

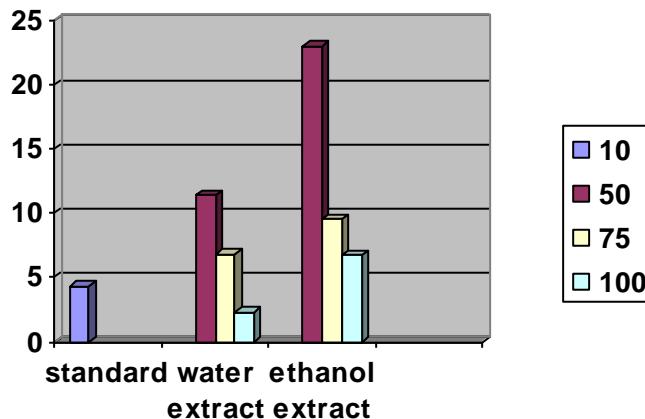
The leaf extract of *P.edulis* not only demonstrated paralysis but also caused death of worms at higher concentration of 100mg/ml in shorter time as compared to reference drug albendazole. Phytochemical analysis showed the presence of tannins as one of the chemical constituent these are said to possess anthelmintic activity [17]. Chemically tannins are polyphenolic compounds [18], synthetic anthelmintics possessing phenolic group eg. Oxyclozanide bithionol etc are shown to interfere with energy generation by uncoupling

oxidative phosphorylation [19]. There is a possibility that the tannins in *P.edulis* produced similar effects. Another MOA of tannins is that they can bind to free protein in GIT of host animal [20] or glycoprotein on the cuticle of the parasite [21] and cause death.

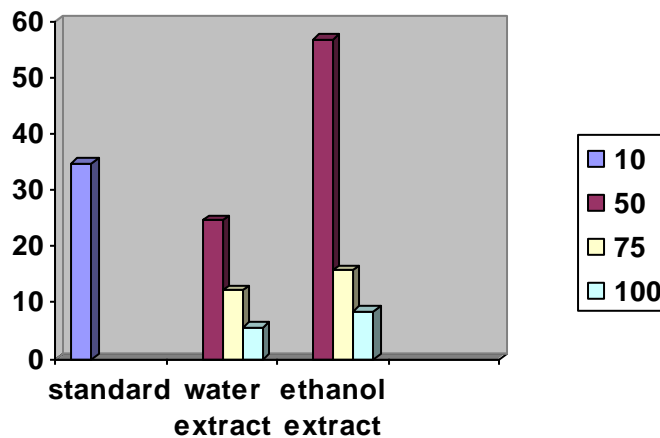
**Table 1 : Anthelmintic Activity of *Passiflora edulis* Linn**

Extracts (mg/ml)	Paralysis Time of <i>Passiflora edulis</i> Linn. (min)			Death Time of <i>Passiflora edulis</i> Linn (min)		
	Standard	Water extract	Ethanol extract	Standard	Water extract	Ethanol extract
10	4.31±0.19			34.91±1.274		
50		11.4±0.63	23.04±1.5		24.65±1.69	56.09±1.19
75		6.8±00.86	9.53±0.3		12.13±1.264	15.7±0.27
100		2.26±0.43	6.7±0.23		5.54±0.67	8.45±0.235

**Figure 1 Anthelmintic activity of *Passiflora edulis* Linn.Paralysis Time**



**Figure 2 Anthelmintic activity of *Passiflora edulis* Linn.,Death Time**



The folklore claim of leaf of *P.edulis* as an anthelmintic have been confirmed as the leaf extract displayed activity against the earthworms used in the study. Further studies to isolate and reveal the active compound present in the crude extract of *P.edulis* and to establish the MOA of anthelmintic activity.

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