IN VITRO STUDY OF *PASSIFLORA EDULIS SINS* LEAF EXTRACT FOR DETERMINATION OF ANTHELMINTIC ACTIVITY

[1]Bhavik Sharma, [2]Kush biswas

[1]Assitant Professor, Department of pharmacy, Madhav University, Rajasthan, 307026

[2] Assistant Professor, One Beat College of Medical Sciences, Bhira, Kheri,262901

Abstract

Now a day, traditional medicines are used for the most types of diseases. In this study, Ethanolic extraction of *Passiflora edulis sims* extract is used for anthelmintic activity. This plant extract is also used in treating different types of diseases. Leaves of *Passiflora edulis sins* are dried, powdered and extracted with ethanol in Soxhlet extractor. Indian adult earthworms (*Pherithema posthuman)* are used to check the anthelmintic activity by using these extracts. Result shows that leave part is been taken less time for the death and paralysis of earthworm. This extract was screened for anthelmintic activity.

KEYWORDS: *Passiflora edulis sims,* anthelmintic activity, *Pherithema posthuman*

1. INTRODUCTION

Passiflora edulis sims is obtained from vines and passion flower. It belongs to the family *Passifloraceae*. All part of this plant is used for medicinal purpose.[1,2] The development of anthelmintic resistance in the parasites. Chemotherapy is used for the control of helminthes.[3,4] Helminthiasis is caused by helminthes infection. It is a livestock production all over the globe.[5,6] Chemotherapeutic remain the corner stone for treating the helminthiasis by overcoming certain factor like chemical residue and toxicity, cost increases, drugs non-adaptability and non-availability in the remote aera.[7,8] Synthetic anthelmintics are the soul source for the control of the gastrointestinal nematode by means of continues and intensive use in recent era.[9,10] The usage of medicinal plants for above problem is more acceptable from the ancient period since they have the advantages of sustainable supply and acceptable.[11,12]

2. MATERIAL AND METHODS

2.1 Preparation of Plant Extract

The plant were collected from local farm behind NCP, Erode District, Tamil nadu. The plant material was identified as *Passiflora edulis sims* (family Passifloraceae). The leaves were washed and air dried for five days and pulverized into coarse powder. The coarse powder was packed tightly in the Soxhlet apparatus and extracted with 500 ml 95% ethanol at 55 ˚C for 72 hours by continuous hot percolation method.

2.2 EXPERIMENTAL ANIMAL

All experimental animals were Indian adult earthworms (*Pherithema posthuma*) were collected from moist soil, washed with normal saline. The earthworms of 3-5 cm in length and 0.1-0.2cm in width were used for all the experimental protocol. Four groups were made as given below, each contains six adult earthworms and it must be of approximately equal size.

2.3 EXPERIMENTAL DESIGN FOR ANIMAL STUDY

Group I -animals served as normal controls. Group II - received 10mg/ml of EEPE. Group III – received 30mg/ml EEPE. Group IV-received 50mg/ml of EEPE. Group V – received 10mg/ml of Albendazole suspension. Group VI-received 30mg/ml of Albendazole suspension. Group VII-received 50mg/ml of Albendazole suspension. The observation was made for the time taken to cause 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 when dipped in warm water (50^{o}C) followed with fading away of their body colors.

STATISTICAL ANALYSIS

Results were expressed as mean ± SEM. Statistical significance were determined by one way Analysis of Variance (one way ANOVA) followed by Dunnett's 't' test with level of significance set at $P < 0.01$ to determine the significance.

RESULT AND DISCUSSION

The result shown ethanolic extract exhibited anthelmintic activity in dose dependent manner giving significantly ($p<0.01$) shortest time of paralysis and death with 50 mg/ml concentration. The ethanolic extract of *passiflora edulis sims* caused paralysis in 6.70±0.70 min and time of death in 11.86 min, against the earthworm. The reference drug Albendazole showed the same at 7.22 and 11.69 min, respectively.

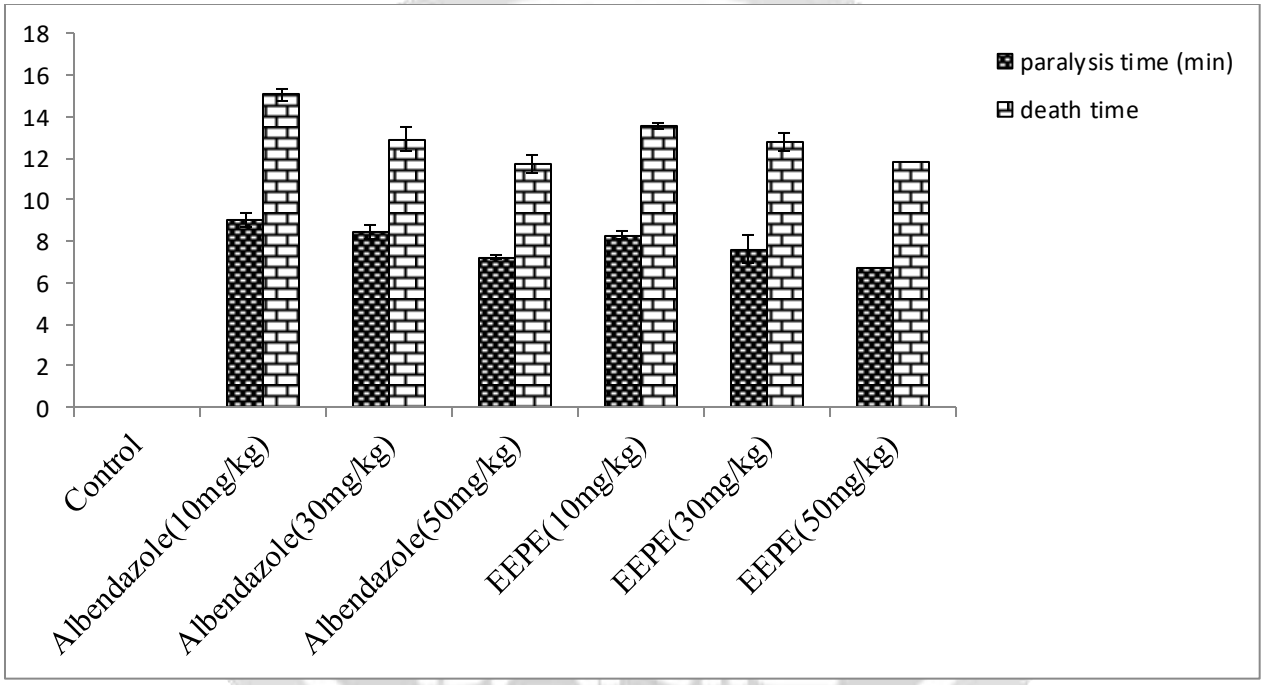

Figure 1.effect of ethanolic extract of Passiflora edulis sims on anthelmintic activity indicating death time & paralysis time

s. no	treatment	Dose mg/ml	Paralysis time(min)	Death time (min)
1	Control saline	…….	…….……	…….……
2	EEPE	10	8.29±0.12**	13.55±0.42**
3	EEPE	30	7.62±0.19**	12.74±0.13**
4	EEPE	50	6.70±0.70**	11.86±0.43**

5	Albendazole	10	9.05±0.50	15.07±0.20
6	Albendazole	30	8.46±0.32	12.92±0.30
7	Albendazole	50	7.22±0.37	11.69±0.60

Table 1. Effect of ethanolic extract of Passiflora edulis sims on anthelmintic activity indicating death time & paralysis time

Figure 2. Control saline

Figure 3. Albendazole 10mg/ml

Figure 4. Albendazole 30mg/ml

Figure 5. Albendazole 50mg/ml

Figure 6. EEPE 10mg/ml

Figure 7. EEPE 30mg/ml

Figure 8. EEPE 50mg/ml

DISCUSSION

It was found that ethanolic extract of *Passiflora edulis sims* exhibited anthelmintic activity in dose dependent manner showed shortest time of paralysis and death with 50 mg/ml concentration compared to reference drug Albendazole. Albendazole by blocking glucose uptake and depletion of glycogen stores in the parasite exhibits anthelmintic activity. Reported anthelmintic effect of *P.edulis sims* may be due to tannins, flavonoids, triterpenoids bind to free proteins in the gastrointestinal tract of host animal or glycoprotein on the cuticle of the parasite and may cause death and Phytochemical screening of the extracts revealed the presence of alkaloids, saponins, flavonoids, triterpenoids, tannins and steroids.

CONCLUSION:

The result of this study confirms the use of the ethanolic extract of leaves of *passiflora edulis sims* in traditional management of anti-anthelmintic effect. Further study is required to isolate the active phytochemical constituents present in the extract and pharmacological studies on the healing action of drug as well as on the possible side effects. The investigation on mode of action may pave way for establishment of new anti-anthelmintic therapy regimen.

REFERENCES

1) Abreu, E.F., Aragao, F.J. Isolation and characterization of a myo-inositol-1-phosphate synthase gene from yellow passion fruit (*Passiflora edulis* f. flavicarpa) expressed during seed development and environmental stress, Ann Bot (Lond), 99, 2, 2007, 285-92.

2) Akhondzadeh, S., Naghavi, H.R., Vazirian, M., Shayeganpour, A., Rashidi, H., Khani, M. Passionflower in the treatment of generalized anxiety: a pilot doubleblind randomized controlled trial with oxazepam, J Clin Pharm Ther, 26, 2001b, 363–67.

3) Aoyagi, N., Kimura, R., Murata, T. *P. incarnata* dry extract: Isolation of maltol and pharmacological action of maltol and ethyl maltol, Chemical and Pharmaceutical Bulletin, 22, 1974, 1008–1013.

4) Hanjeet K., Mathias R.G., The efficacy of treatment with albendazole, Acta Tropica 1991;50: 111-114.

5) Carera B.D., Valdez E.V. & Go T.G., Clinical trials of broad spectrum anthelmintics against soiltransmitted helminthiasis, Southeast Asian Journal of Tropical Medicine & Public Health, 1980; 11: 502- 506.

6) Rossignol J.F. & Maisonneuve H., Albendazole: A new concept in the control of intestinal helminthiasis, Gastroenterology and Clinical Biology,1984; 8: 569- 576

7) Shan, Q., Haddrill, J.L., and Lynch, J.W., Ivermectin, an unconventional agonist of the glycine receptor chloride channel, Journal of Biological Chemistry 2001; *276*:12556–12564.

8) Khakh, B.S., Proctor, W.R., Dun widdie, T.V., Labarca, C., and Lester, H.A. Allosteric control of gating and kinetics at P2X(4) receptor channels, Journal of Neuroscience, 1999; *19*: 7289–7299

9) Rang HP, Dale MM, Ritter JM, Moore PK: "Pharmacology", Churchill Livingstone; Elsevier Sites Publication, 2003; Ed. 5th : 687-92.

10) Andrews, P., Tiiosl H., Pom., R. & Seubert J., Praziquantel, Journal of Medical Research Reviews, 1983; 3; 147-200.

11) Aubry, M.L., Cowell, P., Davey, M.J., and Shevde, S., Aspects of the pharmacology of a new anthelmintic: pyrantel, British Journal of Pharmacology, 1970; *38*: 332–344.

12) Lacey E., The role of the cytoskeletal protein, tubulin, in the mode of action and mechanism of drug resistance to benzimidazoles I, Journal of Parasitology 1998;18: 885±936.