Arasan Elayaraja et al /J. Pharm. Sci. & Res. Vol.4(1), 2012, 1654-1656

ISSN:0975-1459
Journal of Pharmaceutical Sciences and Research
www.jpsr.pharmainfo.in

Preliminary Phytochemical Investigation and *in vitro* Evaluation of Anthelmintic Activity of *Pergularia extensa*

Arasan Elayaraja[1] ,Sheikh Abdul Rahaman[2]

[1]*Research Scholar, Department of Pharmacology,*
SriChandrasekharendra Saraswathi Viswa Mahavidyalaya (Deemed University),
Enathur, Kanchipuram District, Tamil Nadu state.
[2]*Nirmala Pharmacy College, Atmakur, Mangalagiri Mandal,*
Guntur District, Andhra Pradesh State.

Abstract

The main objective of the present study is to screen the presence of different phytoconstituents present in various extracts of the whole plant of *Pergularia extensa*. These phytoconstituents were analysed by thin layer chromatography (TLC) by spraying suitable reagents which showed the pertinent intensity of the colour determining the significant phytoconstituents. Different concentrations (10, 20 and 40 mg/ml) of various extracts had been investigated in the bioassay using albendazole as reference drug to determine the time of paralysis and death of the worms. The benzene extract showed more potent found not only to paralyse but also to kill the worms.

Key words: *Pergularia extensa, Extracts, Pheretima posthuma.*

INTRODUCTION

Helminthiasis is still one among the most significant human and animal infectious diseases. For the past few decades, despite numerous advances made in understanding the mode of communication and the healing of these parasites, there are still no efficient products to control certain helminths and the indiscriminate use of some drugs has generated several cases of resistance[1]. As an important component of complementary and alternative medicine, ayurvedic medicinal plants may be useful for the discovery and development of new chemical substance for helminth control which are generally considered to be very important sources of bioactive substances[2].

Pergularia extensa is also called as *Daemia extensa* (Tam:- Uttamani). It is a climber belongs to the family Asclepiadeae. This is a common twiner found throughout India. Its leaves are like tobacco and adathoda. The major alkaloid of this plant is Daemine which is soluble in ether, alcohol and water. It also contains a bitter glycoside. It's flowers and leaves are found to show emetic, expectorant and anthelmintic.The decoctions of its leaves and entire plant is also used in treatmentof asthma, antidote in sanke bite and as an expectorant[3].

The aim of the present study is to evaluate the *in vitro* anthelmintic activity of various extracts of the whole plant, *Pergularia extensa*.

MATERIALS AND METHODS

Plant material

The entire herb *Pergularia extensa* was collected from Acharya N.G.Ranga Agricultural University, Muthukur Road, Nellore. The plant was authenticated by Dr.S.Md.Khasim, Head, Department of Botany, Acharya Nagarjuna University, Guntur. A plant specimen was also planted in the medicinal garden of Narayana Pharmacy college and a voucher specimen(BN/PE/008) was also submitted to the head of the Institution

Chemicals

All the Chemical reagents used for the entire experiment work are procured from S.D.Fine Chemicals and BDH Fine Chemicals in Mumbai, which are analytical grade.

Experimental Activity

After the whole plant was collected including the roots, they were washed with fresh water to remove the soily and adhered matters. Then they were dried under shade at room temperature and fumigated. Then they were powdered by using a pulveriser and sieved with 40 mesh size. About 1kg of powdered drug was weighed and subjected to successive soxhlete extractions with petroleum ether (60-70°C) and Benzene for a period of 48 hours[4]. Then the

dried marc was further subjected to cold maceration[5] by using acetone and hydro alcohol (1:1) for 3 consecutive days respectively. Finally the obtained extracts were filtered through a muslin cloth. Then they were concentrated under reduced pressure and dried in vacuum condition to get a semisolid mass whose yields were chartered in table -1.The dried extracts were subjected to various chemical tests to detect the presence of different phytoconstituents[6-10] present in them.

Selection of worms

Indian adult earth worms *Pheretima posthuma* were used to carry out the anthelmintic evaluation. The earth worms were collected from the moist soil of the medicinal garden. Worms were washed with saline water to remove the faecal matter. Worms of about 11 cm length and 0.3 to 0.4 cm width were selected for the experiment. Ready availability, anatomical and physiological resemblance of *Pheritima posthuma* made it to be used initially for *in vitro* evaluation of anthelmintic activity[11-13].

Evaluation of Anthelminthic Activity

Anthelmintic activity was carried out on adult Indian earthworm (*Pheretima posthuma*) of nearly equal size, six per group. Each extract was suspended in 1% w/v CMC (carboxy methyl cellulose) solution prepared in distilled water to obtain concentration of 10, 20 and 40 mg/ml. Reference standard albendazole suspension (40mg/ml, zentel (micronized suspension) was diluted by the same suspending agent to obtain concentration of 10 and 20mg/ml. The worms were placed in petridishes containing 15ml of sample solution. Time for paralysis was noted either when any movement could not be observed except when the worms were shaken vigorously or when dipped in warm water (50^0). Death was included when the worms lost their motility followed with white secretions and fading away of their body colours[14].

RESULTS

The phytochemical assessment of *pergularia extensa* showed that alkaloids are more intensely present in all the extracts except acetone extract. Pet-ether extract and benzene extract showed the presence of fixed oils and phenolics more intensely. Carbohydrates, glycosides and tannins are more intensely present in hydroalcohol extract. Also increase in concentration of all the extracts showed the decrease in paralysis and death time. Comparing to all the extracts, benzene extract showed significant activity with the standard albendazole at various dilutions. The anthelmintic activity is due to the presence of more intense alkaloids, phenolic compounds and tannins which have antimicrobial and antioxidant activity[15-16].This study is proved to be strong evidence for its anthelmintic property.

TABLE-1 Preliminary Phytochemical Evaluation of Various extracts of *Pergularia extensa*

S.No	*Name of the Phytoconstituets*	*Pet-ether extract*	*Benzene extract*	*Acetone extract*	*Hydroalcohol extract*
1.	Alkaloids	++	++	-	++
2.	Carbohydrates and glycosides	-	-	+	++
3.	Fixed oils and fats	++	++	-	-
4.	Flavones and Flavonoids	-	-	-	-
5.	Gums	+	+	-	-
6.	Phenolics and Poly phenolics	+	++	-	-
7.	Proteins and Aminoacids	-	-	-	+
8.	Saponins	-	-	+	-
9.	Tannins	+	++	-	++
10.	Triterpenoids	-	-	-	-
11.	Amount (grams)	0.0568	0.1205	0.235	1.206
12.	%yield w/w	0.42	0.891	0.635	0.986

TABLE 2: Anthelminitic activity of various extracts of whole plant of *Pergularia extensa*

Groups	*Concentration (mg/ml)*	*Time (min)*	
		Paralysis	*Death*
Control	-	-	-
Standard (Albendazole)	10	4.14±0.04	22.11± 0.18
	20	3.17±0.42	14.12± 0.66
	40	1.38±0.20	8.46± 0.47
Pet-ether extract	10	164.16±0.12	250.45± 0.44
	20	115.19±0.25	147.90±0.12
	40	97.26±0.08	128.22± 0.31
Benzene extract	10	52.30±0.17	90.26± 0.14
	20	32.13±0.04	60.31± 0.31
	40	12.41±0.22	38.16± 0.17
Acetone extract	10	151.33±0.24	190.07±0.18
	20	112.67±0.27	146.12±0.22
	40	83.11±0.16	90.06±0.34
Hydroalcohol extract	10	164.25±1.6	250±1.2
	20	91±1.2	187.25±2.2
	40	69±1.3	107.30±2.1

Values are expressed as mean ± SEM, n =6.
***P*<0.05* when compared to control.**

REFERENCES

[1] Lateef M *et al*. Anthelmintic activity of *Adathoda vasica* roots. *International Journal of Agricultural Biology*. 2003:5(1); 86-90.

[2] Deore SL and Khadabadi SS. *In vitro* anthelmintic activity of *Chlorophyllum borivilianum* Sant and Fernandez tubers. *Indian Journal of Natural Product Resources*. 2010:1(1); 53-56.

[3] KM Nadkarni. In: Indian Materia Medica. Bombay Popular Prakashan Publishers, Bombay.1982: 1;430-431.

[4] Kokatae CK, Purohit AP and Gokhale SB. In: Pharmacognosy (Ayurvedic Pharmacy). Nirali Prakashan Publications. Chennai. 2010:7.11.

[5] Khandelwal KR. In:Practical Pharmacognosy technique and experiments. 2nd edn. Pune. Nirali Prakashan Publications. Chennai. 2000:149-156.

[6] Harborne JB. In:Phytochrmical methods. A guide to modern techniques of plant analysis, Chapman and Hall Publishers. London. 1973:182-189.

[7] Peach and Tracey MV. In: Modern methods of plant analysis. Spingler and Veriag Publishers. Berlin.1955:3; 321-322.

[8] Fransworth NR. Phytochemical Investigation on *Cassia tora*. *Journal of Pharmaceutical Sciences*. 1966:55(3); 225-269.

[9] Anes Ahemad Siddiqui and Mohamed Ali. In: Practical Pharmaceutical Chemistry, CBS Publishers.New Delhi. 1997:127-137.

[10] Tyler VE, Brady LR and Robert JE. In:Pharmacognosy. Lea and Febiger Publications. Philadelphia. 9th edn. 1988:77-79.

[11] Kokatae CK. In: Practical Pharmacognosy. Vallabha Prakashan Publications, New Delhi. 3rd edn. 1991:107-111.

[12] Vidyarthi. RD. A Textbook of Zoology. 14th edn. S.Chand and Co Press.New Delhi.1967:329-331.

[13] Chatterjee.KD. Parasitology (Protozology and Helminthology) in Relation to Clinical Medisine. 6th edn. Calcutta:Sree Saraswathy Press.1967:168-169.

[14] Dash GK *et al*. Evaluation of *Avoluvulus alsinoides* Linn for Anthelmintic and Antimicrobial activities. Journal of Natural Remedies. 2002: 2(2);182-185.

[15] Karale. SS *et al*. Evaluation of *in vitro* anthelmintic activity of *Ceratophyllum demersum* Linn. Indian Drugs. 2010: 47(8); 63-65.

[16] Padma S Vankar *et al*. Antioxidant properties of some exclusive species of Zingeberaceae family of Manipur. Electronic Journal of Environmental agricultural and Food Chemistry.1318-1322.