IJSRM
INTERNATIONAL JOURNAL OF SCIENCE AND RESEARCH METHODOLOGY
An Official Publication of Human Journals

Human Journals
Research Article
December 2017 Vol.:8, Issue:2

In Vitro Anthelmintic Activity of *Senna occidentalis*

IJSRM
INTERNATIONAL JOURNAL OF SCIENCE AND RESEARCH METHODOLOGY
An Official Publication of Human Journals

***K. Purushotham, I. Srikanth, P. Nandeeshwar, Dr. K. Ramanjaneyulu, J. Himabindhu**

**Department of Pharmacognosy, Vishnu Institute of Pharmaceutical Education and Research, Narsapur, Medak, Telangana.*

Submission: 27 November 2017
Accepted: 5 December 2017
Published: 30 December 2017

Keywords: Anthelmintic activity, *Senna occidentalis*, Albendazole, Ethanolic extract, *Pheretima posthuma*

ABSTRACT

The present study was aimed at the evaluation of in vitro anthelmintic activity of ethanolic leaf extract of *Senna occidentalis* against Indian earthworm *Pheretima posthuma*. Four concentrations (25 mg/ml, 50 mg/ml, 75 mg/ml, 100 mg/ml) were tested and results were expressed in terms of time for paralysis and time of death of worms. In this study, Albendazole was used as a standard drug. Ethanolic leaf extract of *Senna occidentalis* for anthelmintic activity has been demonstrated. *Senna occidentalis* showed significant activity at higher concentrations when compared to standard group (Albendazole).

INTRODUCTION:

Helminthic infections repeatedly entitled as helminthiasis. Parasitic diseases cause ruthless morbidity affecting population in endemic areas[1]. It is prevalent in tropical regions helminthic parasites mainly subsists in human intestine but also found in tissue and also mostly found in children. Gastrointestinal tract (GIT) helmenthics become resistant to currently available anthelmintic drugs, therefore, there is a foremost problem in the treatment of helmenthic diseases[2]. Anthelmintic drugs are used to expel or to kill the intestinal warms[3]. These worms contribute to anemia, eosinophilia, economic depression and malnutrition conditions[4]. The effects of these warms include stomach pain, headache, nausea, vomiting, leads to blood loss and deprives him for food, body pains, injury to organs, intestinal or lymphatic obstruction by secreting toxins[5].It is estimated that by the year 2025 about 57% of population in developing countries will be influenced by this infection[6]. The WHO (World Health Organization) estimated that 80% of population in developed countries rely on traditional medicine mostly plant drugs for their Primary Health Care needs[7].

Senna occidentalis is an erect foetid annual herb. It belongs to the family Fabaceae and commonly called as coffee Senna and in English, it is called as septic weed[8]. It grows up to 60 to 150 cm in height and it is found throughout India up to an altitude of 1500 cm. *Senna occidentalis* has many traditional to treat typhoid, malaria, dog bites. It has pharmacological activities like antifungal, antimutagenic, antipyretic and antifeedant.

MATERIALS AND METHODS

Collection of Plant material

Senna occidentalis leaves were collected in the month of August 2017 from Kagazmaddur village, Narsapurmandal, Medak Dist of Telangana, India. The plant was authenticated by D. Venkateshwara Rao, Deputy Director, Telangana. Forest Academy, Dullapally, Hyderabad, Rangareddy District. The fresh leaves were collected, removed all earthy matter, washed, shade, dried and powdered by pulverizer.

Collection of worms

Pheritima posthuma (earthworms) were collected from the manure and identified and washed with water to remove all kinds of dirty water from them.

Chemicals and Drugs used

Ethanol, Normal saline, Albendazole

Preparation of Plant extract

The leaves of plant were dried under shade and crushed in pulverizer and powdered. The powdered plant extracted with ethanol in Soxhlet apparatus for 72 hours after completion of the extraction, the extracts were cooled at room temperature and filtered and evaporated to dryness using rotary evaporator.

Preliminary phytochemical screening

The ethanolic extract was subjected to qualitative identification of phytoconstituents like carbohydrates, proteins, amino acids, glycosides, flavonoids, sterols etc. Phytochemical screening was carried according to the standard procedures [9,10].

Preparation of concentrations

The ethanolic extract of *Senna occidentalis* was made into four different concentrations such as 25 mg/ml, 50 mg/ml, 75 mg/ml, 100 mg/ml by dissolving in normal saline. The standard control group Albendazole was prepared by using 0.5% w/v Carboxy Methyl Cellulose (CMC) as a suspending agent.

Evaluation of Anthelmintic activity

The anthelmintic activity was carried according to standard method[11-13]. Adult Indian earthworm *Pheretima posthuma* has anatomical and physiological resemblance to the intestinal roundworm parasites of human beings. Indian earthworms were placed in a Petri dish containing different concentrations (25 mg/ml, 50 mg/ml, 75 mg/ml, and 100 mg/ml) of ethanolic extract of *Senna occidentalis* and standard drug Albendazole. Each Petri dish contains earthworms and observed for time of paralysis as well as time death. Time of paralysis recorded when no movement of any sort could be observed, except when the worm was shaken vigorously as well as time of death was recorded after ascertaining that worms neither moved when shaken. Finally, the test results were compared with standard reference compound Albendazole.

RESULTS AND DISCUSSION

Investigation of phytochemical screening reveals the presence of, alkaloids, tannins, glycosides, saponins, reducing sugars, flavonoids, resins, anthraquinones and phenols.

Table 1: Phytochemical screening of leaves extract of *Senna occidentalis*

Constituents	Ethanolic extract
Alkaloids	+
Tannins	+
Glycosides	+
Saponins	+
Flavonoids	+
Resins	+
Anthraquinones	+
Phenols	+
Reducing sugars	+

Preliminary phytochemical screening of *Senna occidentalis* indicates the presence of alkaloids, tannins, glycosides, saponins, flavonoids, resins, anthraquinones, phenols and reducing sugars.

Table no 2: Anthelmintic activity of Ethanol extract of *Senna occidentalis* and standard Albendazole

Extract	Concentrations (mg/ml)	*Pheretima posthuma*	
		Paralysis (min)	**Death (min)**
Ethanol extract	**25**	69±1.34	78±0.18
	50	51±0.94	60±0.62
	75	38±.09	52±0.57
	100	9±0.61	15±0.99
Albendazole	**25**	40±0.43	43±1.38
	50	36±0.60	38±0.59
	75	30±0.81	29±1.38
	100	22±1.4	23±0.92

Fig. 1: Anthelmintic activity of ethanolic extract of *Senna occidentalis*

Ethanolic extract of *Senna occidentalis* exhibited anthelmintic activity. At higher concentration, the activity is more. According to observations, the ethanolic extract produced paralytic effect earlier and death was faster. The extract shows maximum efficacy at 100 mg/ml when compared with the standard drug (Albendazole). The results were displayed in table 2. From the above results, we can conclude that *Senna occidentalis* exhibited significant anthelmintic activity. Therefore, further study must be carried out so that the general people can get actual benefit from this important medicinal plant.

CONCLUSION

It can be concluded that the ethanolic leaf extract of *Senna occidentalis* produces better anthelmintic activity against Indian earth warm *Pheretima posthuma*. At higher concentrations, the ethanolic extract showed higher activity.

ACKNOWLEDGEMENT

We are very thankful to our Principal Dr. A. Ramesh, staff members and honorable chairman Sri. K. V. Vishnu Rajugaru of Vishnu Institute of Pharmaceutical Education and Research (VIPER) for providing wonderful facilities to do the research.

REFERENCES

1. Tagbota S, Townson S, Antiparasitic properties of medicinal bulletin 2000; 56(1):193-208.
2. Sondhi SM, Shahu R, Magan Archana. Indian drugs 1994; 31(7):317-320.
3. Mohammed AAER, Ismail MAN, Mohammed AO, Moustafa FM, Cytotoxic effects of albendazole, antiparasitic drugs, Egyptian Journal of Biology: 1:16-29.

4. Bundy D.A. Immunoepidemiology of intestinal helmenthic infections I. The global burden of intestinal nematode disease. Trans Royal Soc Trop. Med. Hyg 1994;8:259-261.
5. S. L Decre: S Skhadabudi, KS Kamadi, VP Ingle; NG Kawalkar; PS Sawarkar: VA Patil: AJ Vyas; Int. J. of chem. Tech. Research, 2009,1,77-179.
6. Clewes CAN, Shaw C. Parasites. British medical bulletin 2000; 56(1): 193-208.
7. Anthelmintic potential of *Calotropis procera*, *Azadirachta indica*, *Punica granatum* against gastro thylax indicus; Rama Aggarwal; KiranJeet; Kaur; Mansi Suri; Upma Bagai; Journal of parasitic diseases; ISSN 0971-7167
8. *Senna occidentalis*. Natural resources conservation service, PLANTS Database USDA. Retrieved 10 Nov 2015.
9. Yarnalkar S, Practical Pharmacognosy, Nirali Prakashan, Pune 1991.
10. Khandelwal, K.R., Practical Pharmacognosy, Techniques and Experiments, 11th edn., Nirali Prakashan Pune, 2004.
11. T. Ghosh, TK Maity, Bose A, Dash GK. Indian Journal of Natural Product 2009, 16-19.
12. Adnaik RS, Bhagwat DA, Raut ID, Mohite SK, Magdum CS. Research Journal of Pharmacy and Technology 4 (1), 98-100.
13. Kane SR, Adnaik RS, Apte VA, Magdum CS. Research Journal of Pharmacognosy and Phyto Chemistry 1 (3), 182-184.