

Evaluation of Anti Helminthic Activity of Seed Extracts of *SALVIA HISPANICA L.*

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Abstract-*Salvia hispanica L* also called as chia, is an herbaceous plant belongs to the family of Lamiaceae. It is native to Mexico and Guatemala. The edible part in the *Salvia hispanica* is seeds. It is the store house containing contents of Macro nutrients, Micro nutrients and Anti oxidants. *Salvia hispanica* has proven for control of diabetes, dyslipidaemia, hypertension, antioxidant, anti inflammatory, anti blood clotting, anti depressant, laxative, anti anxiety, vision and immune improver. The mucilage of the *Salvia hispanica* is also used as a Pharmaceutical aid. Chia is also been used for culinary purposes, in the preparation of traditional foods and thirst quenching beverages. The seeds of *Salvia hispanica* are a store house of fats, dietary fibers, protein, vitamins and carbohydrates. Besides this, *Salvia hispanica* also contain tannins and phenolic contents like caffeic acid, quercetin, kaempferol, diadzin, Glycitin and genistin. As tannins, alkaloids, phenolic compounds were proven for anti helminthic activity and there was no previous study of *salvia hispanica* on anti helminthic activity. As the modern medicines are associated with more side effects. The natural remedy can be a best alternative way. The present study is planned to explore the anti helminthic activity of aqueous, ethanolic and methanolic extract of *Salvia hispanica* seeds. The various concentrations of different extracts of *Salvia hispanica* seeds was evaluated for anti helminthic activity on Indian earthworms *Pheretima postuma* as they are anatomically and physiologically similar to the roundworms in human beings. The results of different extracts of *Salvia hispanica* seeds were compared with standard drug Albendazole.

Key words: *Salvia hispanica*, *Pheretima Postuma*, *Albendazole*, *Pharmaceutical aid*, *Anti oxidant*

INTRODUCTION

Helminthiasis is also known as worm infection. Soil transmitted helminth infections are common world wide. Approximately 1.5 billion people are infected with soil borne helminthiasis globally⁽¹⁾. The causative

agents are *Ascaris lumbricoides*, *Trichuris trichiura*, and hookworms. The Helminthic infections which infect the intestine are cestodes eg tape worms (*Taenia solium*), hookworm (*Ancylostoma duodenale*), roundworm (*Ascaris lumbricoides*) and trematodes or flukes (*Schistosoma mansoni* and *Schistosoma hematobolium*)⁽²⁾. As the modern medicines are associated with adverse effects, treatment with natural products can be a best remedy. Adult Indian earthworm *Pheretima postuma* has anatomical and physiological similarities with the intestinal roundworm parasites of human beings⁽³⁾.

Salvia hispanica L also called as chia, is an herbaceous plant belongs to the family of lamiaceae⁽⁴⁾, *Salvia hispanica* has proven for control of diabetes, anticancer, dyslipidaemia, hypertension, antioxidant, anti inflammatory, anti blood clotting, anti depressant, laxative, anti anxiety vision and immune improver. The seeds of *Salvia hispanica* are a store house of fats, dietary fibers, protein, vitamins and carbohydrates. Besides this, *salvia hispanica* also contain phenolic contents like caffeic acid, quercetin, kaempferol, diadzin, Glycitin and genistin⁽⁵⁾. The seed is most vulnerable part for its high oil content. It is a power house of nutritional values⁽⁶⁾. It is also a good digestant. *Salvia hispanica* mucilage gels can be used as excipient in Pharmaceutical drug delivery⁽⁷⁾. No literature on different extract of *Salvia hispanica* seeds on anti helminthic activity is existed. The present study was designed to evaluate the anti helminthic activity of different extracts of *salvia hispanica seeds*. The results of different extracts of *salvia hispanica* was compared with the standard drug Albendazole.

MATERIAL COLLECTION

The seeds of *salvia hispanica* were purchased from the local store in Rajamahendravaram. The seeds were

authenticated and identified by M. Sabitha, HOD, Department of Botany, S.K.V.T. Government Degree College, Rajahmahendravaram. The seeds were cleaned and shade dried for 2-3 days in room temperature and pulverized by electric grinder.

The powdered seeds were extracted by using ethanol, methanol and distilled water by using Soxhlet apparatus and the excess of solvent was recovered by distillation process. Various phytoconstituent screening tests were performed.

Adult Indian earth worm *Pheretima postuma* which has a close resemblance of intestinal worm has been used for the activity. *Pheretima postuma* were collected from moist soil near to Aditya College campus, Surampalem and washed with normal saline to remove soil matter and kept in normal saline. Albendazole has been used as the standard drug.

METHOD

Phytochemical Screening:

The different extracts of *Salvia hispanica* was subjected to various phytochemical tests to identify chemical constituents such as osthuman, alkaloids, proteins, amino acids, carbohydrates, steroids etc⁽⁸⁾. The observations were shown in the following table I.

Table I: Phytochemical Screening of different extracts of *Salvia hispanica seeds*

Phytochemical constituent	EESH	MESH	AESH
Alkaloids	+	+	+
Amino acids	+	+	+
Carbohydrates	+	+	+
Tannins	+	+	-
Glycosides	+	-	+
Steroids	+	+	-

Table II: In vitro Anti helminthic activity of different extracts of *Salvia Hispanica Seeds*

Drug (Treatment)	Doses (mg/mL)	Time taken for paralysis (min)	Time taken for death (min)
Standard (Albendazole)	25	34.55 ± 2.50	53.13 ± 0.98
	50	27.74 ± 1.05	34.33 ± 1.01
	100	12.86 ± 1.74	22.48 ± 1.52
Ethanol extract of <i>Salvia hispanica</i> (EESH)	25	45.36 ± 1.62	57.05 ± 0.91
	50	34.24 ± 1.01	47.38 ± 0.60
	100	19.78 ± 1.40	41.94 ± 1.57
Methanolic extract of <i>Salvia hispanica</i> (MESH)	25	62.27 ± 2.12	73.48 ± 2.21
	50	59.34 ± 1.89	66.04 ± 2.28
	100	28.26 ± 1.41	53.55 ± 2.82
Aqueous extract of <i>Salvia Hispanica</i> (AESH)	25	69.70 ± 3.24	78.95 ± 2.21
	50	63.13 ± 1.08	71.06 ± 1.04
	100	39.04 ± 2.21	62.11 ± 1.31

In vitro Anti helminthic activity:

The antihelminthic assay was carried out as per the method of Nilutpal Sharma Bora et al., 2014⁽⁹⁾ with minor modifications. Anthelmintic activity of extract was detected by exposing the adult *Pheretima* osthuman to different concentrations of test extract and standard drug. 25mg/mL, 50mg/mL, 100mg/mL of test extract concentrations and standard concentration were taken in separate Petri dishes. Normal saline was taken as control. Adult earthworms were selected and each one was placed in all Petri dishes. All Petri dishes were kept at room temperature. Observations were made for time taken to cause complete paralysis and death. The results were expressed in Mean ± S.E.M. P < 0.05 was considered significant.

RESULT

The results are expressed in Mean ± SEM of six worms in each group. Comparisons have been made between standard against the test treating groups of concentrations 25mg/mL, 50mg/mL, 100mg/mL and the observations are shown in table II. The observations of the Phytochemical screening of different extracts were shown in table I.

that all the extracts has showed the dose dependant activity with improved antihelminthic action. It is observed that ethanolic extract has shown the shortest time for paralysis (19.78 sec) and death (41.94) at the concentration of 100 mg/mL. EESH has shown the remarkable action then followed by methanolic and aqueous extract. The anti helminthic activity may be due to the presence of various phytoconstituents in different extracts. Further isolation and characterization of the methanolic extract is needed to identify the active constituent responsible for the antihelminthic action and invivo studies need to be carried out in future.

CONCLUSION:

The Ethanolic extract of *Salvia Hispanica seeds* exhibited a better anti helminthic activity when compared with the other extracts with shortest time of Paralysis and death at he concentration of 100mg/mL. The EESH shown the presence of phytoconstituents like alkaloids, amino acids, tannins, carbohydrates, glycosides and steroids.This extract can be a potent novel therapeutic strategy for anti helminthic activity. Yet advanced studies need to be carried out to explore the mechanism of action of Ethanolic extract of *Salvia hispanica* seeds as an anti helminthic compound.

CONFLICT OF INTERESTS

Declare none

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