In Vitro Anthelmintic Activity on Leaves Extract of Blue poterweed (StachyterphetaJamaicensis)

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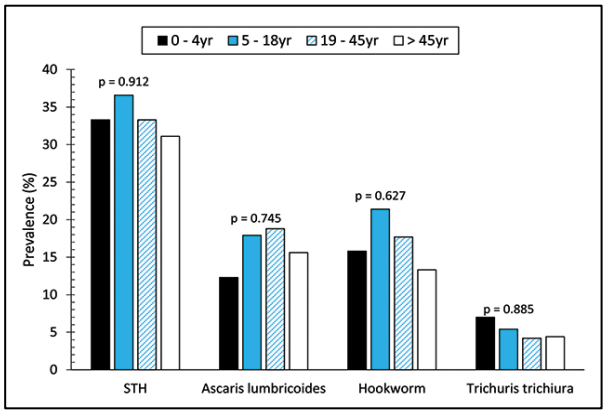
Abstract: The present study was conducted to evaluate the anthelmintic efficacy of ethanol and aqueous extract of leaves of plant blue poterweed (*Stachytarphetajamaicensis*) using adult earthworm Pheretimaposthuma .The time of paralysis and time of death were studied and the activity was compared with the albendazolas reference standard drug .In present study of anthelmintic activity there were Two Ethanolic extract of dried powdered leaves of blue poterweed (*Stachyterpheta Jamaicensi*) plant in concentration of 80mg/ml and 100mg/ml and anothersolution is of Aqueous extract of concentration of 80mg/ml and 100mg/ml of same plant i.e. blue poterweed (*Stachyterpheta Jamaicensis*).The ethanolicand aqueous extract of leaves of blue poterweed plant exhibited significant anthelmintic activity as evidenced by decreased paralyzing time and death time. The results thus support the use of blue poterweed as an anthelmintic agent.

Keywords: Epidemiology, Nematode, Anthelmintics, Blue poterweed, Stachyterphetajamaicenis, Albendazole

INTRODUCTION

Helminthiasis is a disease in which a part of the body is infested with worms such as pinworm, roundworm or tape worm. Typically, the worms reside in the gastrointestinal tract but may also burrow into the liver and other organs. They produce harmful effect on host by depriving him of Chronic illness, Malnutrition, Anemia, And it also cause some serious immune changes. Anthelmintic are drugs that either kill or expel infesting helminths and the gastrointestinal tract is the abode of many helminths, although some also live in tissues, or their larvae migrate into tissues [1]globally; over 3.5 billion people are infected with intestinal worms, of which children between 5–15 years account for the highest infection rate of about 400...million cases of worm burdenthat are mainly attributed to poor sanitation and hygiene. In India, infections with these parasites are regarded as amongst the most common public health problems, particularly in rural areas and urban slums. More than 1.5 billion people, or 24% of the world's population, are infected with soil transmitted helminth infections.[2]

Try to shown the Prevalence % of helminths infected person :-



PLANT :-(Blue poterweed)

Stachytarphetajamaicensis belongs to the family of Verbenaceae and is commonly known as Gervao, Brazilian tea, verbena cimarrona, rooter comb, or blue porter weed. It is one of the important plants with high medicinal and nutraceutical benefits. [3] S. jamaicensis contains various medicinal properties in traditional and folk medicinal systems, with cures for several diseases.The high medicinal properties of this plant, for instance, antimicrobial and antifungal effect as the main activities, but verbascoside as the main active chemical component, make it a valuable source of the medicinal compound.[4] S. jamaicensis is a weedy herbaceous plant that grows 60–120 cm tall. This plant has a smooth, dark green colour stem, which turns woody towards the base of the stem S. jamaicensis normally reproduces flowers in mix of bluish and pinkish colours or could bear flowers with a purple to deep blue colour. The leaves are opposite, greyish green in colour, have a smooth surface.[5]The plant mostly grows in the tropical regions of America and other subtropical forests such as in Nigeria, Europe, and Russia[6]

PHYTOCHEMICAL CONSTITUENTS of used plant:

S. jamaicensis is rich in secondary metabolites, commonly known as bioactive compounds. Nowadays, these bioactive compounds are discovered to be responsible in exhibiting their therapeutic activities. There are several major groups of secondary metabolites that are present in the plant, including alkaloids, flavonoids, phenols, steroids, and terpenoids.[7] These bioactive compounds can be found abundantly in all parts of the plant. In particular, the phytochemicals in phenolic compounds of S. jamaicensis, which include coumarins, flavonoids, tanninsare the most studied among researchers due to their therapeutic properties.[8,9]

Blue porterweed is reported to have a wide range of medicinal uses, from treating fungal infections to high blood pressure, colds, constipation, diarrhea, boils, burns, earache, headache, allergies, worms, and "nervous pains ETC [10]and that kind of studies on that plant gave me an idea to work on Anthelmintic activity which is not done before but there are further more studies present on internet nowadays which shows there negative part of plant like there toxicity and all and even some studies don't recommend the use of plant . [3,4,7,8,9]

MATERIAL AND METHODOLOGY

Collection and identification of Plant:

Leaves of S. jamaicensis were collected and picked up from a nearby plant nursery located at Ratlam, Madhya Pradesh, INDIA in the month of OCT 2022. Leaves were collected and handled properly after that leaves were properly washed with thr help of tape water so, that the foreign substances or dust particle remove totally from the leaves then it will dried at room temperature for least 2 days then it is crushed with the help of motor and pistol.

Extraction process:

Now, pick up the dried and powdered leaves and weigh it. Then for aqueous leaves extract the weighted leaves were transfer to a beaker and pour the beaker with distilled water in a ratio of 1:3 and start shaking the beaker slowly for just 1-2 mins of time interval and allow stand for some time.

Now, again weigh the same quantity of dried and powdered leave for ethanolic leaves extract transfer the leaves powder into a beaker and pour the beaker with 90% ethanol in a ratio of 1:3 then again start shaking the beaker for about 1-2 mins and allow stand for some time . Then transfer both the solution ethanol and aqueous solution a in a macerating flask for the process of extraction through maceration (A cold extraction process) . Then start the process of extraction through Maceration for 24hours then after 24 hours of extraction process filter out the crude drug and a residue with the help of Whatman filter paper. The extract solution of both aqueous and ethanolic medium was get concentrated with the help of electric water bath for pure form of crude drug.

worm collection:

Anindian adult earthworm were used in an anthelmintic activity which is generally known as Pheretimaposthuma which is almost 3to6 cm long in length and about 0.2 to o.3 in width. The earthworm were collected from the moist soil from the nearest farm at Ujjain, Madhya Pradesh, INDIA in the month of oct2022 . After the collection of earthworm it will separate out firstly and washed out carefully in a normal tape water for the cleaning of earthworm and separate out from fecal materials present in soil.

Anthelmintic Investigation b/w standard and test drug:

Test drug: The leaves of plant of blue poterweed were firstly dried at room temperature and powdered coarsely . The raw powdered leaves were treated with different solvent such as aqueous and ethanol solution to get the extract of powdered leaves ….

After extraction prepared the solution of different concentration (80mg/ml and 100mg/ml) in an aqueous as well as ethanol extract by using normal saline solution.

Reference or standard drug: For current study ALBEDAZOLE400 (By Cadila Pharmaceutics Ltd.) is used as a standard or reference drug. The solution of Albendazole was prepared in a concentration of 50mg/ml solution by dissolving the tablet in a normal saline.

EXPERIMENTAL WORK

Pre-testing preparation:

- For the very first clean and arrange the petri dish in a proper sequence in a number of 5 (1 for standard drug, 2 for ethanol preparation and further 2 for aqueous preparation).
- Then make the pair of earthworms in a number of 4 in each separate pair, the number of paired earthworm in a 5 groups.
- After pairing start putting the paired earthworm in each and every petri dish.

Investigation preparation:

- After that pour the petri dish with the standard, as well as test solution (Aqueous and ethanol) in a concentration of 50mg/ml solution for standard and concentration of 80mg/ml and 100mg/ml solution for test drug.
- Then observe the movement of earthworm simultaneously.
- Finally record the paralysis condition and death condition of earthworms in both medium.
- Compare the standard and test drug result and form the observation table.

RESULT AND DECLARATION

The result of above studies demonstrated that the both aqueous and ethanolic extract of leaves of plant Blue Poterweed (StachyterphetaJamaicensis) show potent or we say tremendous result with varying magnitude at different conc. or due to different solvent used in extraction process. which is almost effective than the standard drug called Albendazol400 .

RESULT

(For test drug)

The ethanol extract of plant (blue poterweed) at concentration of 80mg/ml solution makes earthworm in paralysis condition within 13.45min and it takes around 26.12min to achieve the dead condition of earthworm, similarly at 100mg/ml solution it takes around 11.22min for the paralysis condition and it takes around 25min to get the earthworm in dead condition

The aqueous extract of plant (blue poterweed) at concentration of 80mg/ml solution makes earthworm in paralysis condition in around 18.19min and it takes around 32.40min to achieve the dead condition of earthworm, similarly at 100mg/ml solution takes around 17.68min to get the paralysis condition of earthworm and it takes around 29.2min to get the earthworm in dead condition.

(For Standard drug)

And, finally the standard drug Albendazole 400 of conc. Of 50mg/ml solution takes around 28.40min to get the earthworm in paralysis condition and it ultimately takes around 47.10minto achieve the dead condition of earthworm.

"Observation of Anthelmintic Activity of bluepoterweed and albendazole are mention below in a form of table''

Table No. 01 :-Observation and reading of Anthelmintic Activity of standard and test drug

S.NO.	Treatment of d/f extracts (STD, Test)	Concentration in (mg/ml)	Time taken for	
			Paralysis (In Min)	Death (In Min)
1.	Albendazole	50mg/ml	28.40Min	47.10Min
2.	Ethanol Extract	80mg/ml	13.45Min	26.12Min
		100mg/ml	11.22Min	25.00Min
3.	Aqueous Extract	80mg/ml	18.19Min	32.40Min
		100mg/ml	17.38Min	29.28Min

CONCLUSION

On the basis of above result, it is concluded that the ethanolic extract and aqueous extract of Blue poterweed (stachyterphetaJamaicensis) show potent Anthlmintic activity to standard Anthelmintic drug (Albendazole). Some of the phytoconstituents may be responsible to show a potent Anthelmintic activity by triggering natural immune system to fight against various parasits and helminthes.

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