International Journal of Research in Engineering and Science (IJRES)
ISSN (Online): 2320-9364, ISSN (Print): 2320-9356
www.ijres.org Volume 10 Issue 10 ǁ October 2022 ǁ PP. 269-273

Invitro Anthelmintic Activity of Plant Hypochaeris Radicata L.

Vaibhav B Thombare,[1] Monika G Shinde,[2] Vishal U Thodsare,[3] Swati T Mane,[4]
Department of Pharmaceutical Chemistry
Sahyadri College of Pharmacy, Methwade, Sangola, Solapur, Maharashtra, India
Corresponding Outhor E-Mail :vthombare749@gmail.com

ABSTRACT:
Parasitic earthworms also infect livestock and plants, affecting food production with a resultant economic impact. In spite of this prevalence of parasitic attacks, the research on anthelmintic medication is poor. According to WHO, only few drugs are often used in the treatment of Helminthes in humans. Anthelmintics from the natural sources may play a key role in the treatment of these parasite infections. Considering this, an attempt has been made to analyze the anthelmintic activity of aerial parts of Hypochaeris Radicata L. The activity was performed on adult Indian earthworms Hypochaeris Radicata L. In this kind of study, 25 mg/ml, 50 mg/ml, 100 mg/ml solutions of ethanolic, acetone, chloroform, diethyl ether, aqueous extracts had been used and the drug albendazole was used for standard. Noticed time for paralysis and loss of life of earthworms. Almost all the extracts were found not only to paralyze (Vermifuge) but also to kill the worms (Vermicidal). The ethanolic extract was found to be more effective when compared with albendazole standard to execute the earthworm than other extracts. The Infrared spectroscopy was done, various functional groups can be found in the sample of Hypochaeris Radicata L.
KEY WORDS: *Hypochaeris Radicata L. anthelmintic activity, extracts, earthworms.*

Date of Submission: 26-09-2022 Date of acceptance: 11-10-2022

I. INTRODUCTION:

Hypochaeris radicata, commonly known as cat's-ear orfat weed, belongs to the family Asteraceae. Its geographicalanti-inflammatory, anticancer, antibacterial, hepatoprotective, and Reno protective. In folkloric system it is usedto cure jaundice, dyspepsia, constipation, rheumatism, andhypoglycemia.

H. radicata L. is a rich source of pharmacologically activephytochemicals; however, it is evaluated only briefly. Variousphytochemicals such as sesquiterpenes, glycosides, germacrene, eudemon, guaianolides, and phenylbutanoic glycoside have been documented in the existing literature .Previously, some nonvolatile compounds have been isolatedfrom this plant,including(4R,4aR,7R)-7-ethyl-4-hydroxy-4a-methyl-1-methylene-octahydronaphthalen-2(1H)-one(compound1)andmethyl2-((5R,E)-3,8-dimethyl-1-oxo-1,3,4,5,6,7-hexahydroazulen-5-yl)acrylate .

Hypochaeris radicata L. of Asteraceae family a one such plant species distributed in high hills of Nilgiris, the Western Ghats, India at temperate climate is expected to have antioxidant property as it is being used by the local communities for adding freshness and activeness. Therefore, to have the scientific validation on antioxidant properties, the leaves and roots of this species were taken for the present study. The methanolic extracts of both parts of H. radicata were used to investigate the antioxidant activity in terms of free radical scavenging activity (DPPH•), reducing power activity, ABTS•+ assay and ferrous ion chelating activity.

The globe Health Organization estimates that an astounding two billion people possess parasitic worm infections. Helminthiasis is among the main animal health problems, which inflicts heavy production losses. Typically, the disease is extremely prevalent particularly in developing countries. Substance control of helminths combined with better management has recently been an important earthworm control strategy during the World. Yet, increasing problems of development of amount of resistance in helminths against anthelmintics have guided to the pitch of screening healing plants with regard to their anthelmintic activities. Many medicinal plants have been used to take care of parasitic infections in man and pets or animals. The helminths which infect the stomach system are cestodes, nematodes and trematodes. The synthetic drugs readily accessible have now been exhibited to include negative effects, moreover, resistance coming from the parasites to provide pharmaceuticals is increasing. Because of limited availability and affordability of modern – day medicines, almost all of the worlds' inhabitants depends to a greater magnitude on traditional medical remedies. Helminthic infection is generally precluded by retaining environment sanitary and treatment as well as pharmacotherapy using fabricated drugs or traditional medicine while alternative, one too is generally Hypochaeris Radicata L.

This current critique explores scientific evidence presenting updated tips on the properties from Hypochaeris Radicata L, on the list of anthelmintic plants, that may be staying investigated a result of mechanism.

II. MATERIALS AND METHODS:

2.1 Plant Materials:

The aerial parts of the plant portulaca grandiflora hook were collected from A/P Andhalgaon, Tal Mangalwedha, Dist Solapur. The plant is identified and authenticated by Dr. Tembhurne R. R. from Dept. of Botany, Sangola College, Sangola with the help of flora of Solapur District, Maharashtra, India.

2.2 Preparation of Extracts:

Figure 2: process of pre-extraction

The particular aerial parts of the plantHypochaeris Radicata L were cleaned with drinking water, dried inside shadow and powder by mechanical mill and then the aerial parts powdered approx. 100 g was extracted successively with ethanol, acetone, chloroform, diethyl ether till the colorless liquid inside siphon tube in the Soxhlet extractor. Aqueous extract was carried out by cold extraction process. The liquid extracts have been concentrated upon vacuum to produce dry extract.

2.3 Assessment of Anthelmintic Exercise:

The activity was performed on adult Indian earthworms known as Pheretima Posthuma due to its anatomical and physiological resemblance with the intestinal roundworm parasite, Ascaris lumbricoides of humans. Make the formulations (10 ml) containing different concentrations of crude components 25 mg/ml, 50 mg/ml, 100 mg/ml in distilled water and three worms of approximately equal size (6 to 8 cm) were positioned inside them. Observe the time obtained by worms for paralysis was observed until immobilized of worms could be observed except when the worms shaken vigorously. After that, time for dying has been recorded after determining that worm nor moved when tremble vigorously nor whenever dipped in warm water. Albendazole was used as reference standard whilst normal saline because control.

III. RESULT AND DISCUSSION:

The preliminary phytochemical investigation of all the extracts of Hypochaeris Radicata L. shows presence of flavonoids, alkaloids, tannins, steroids, glycosides, saponins, coumarins. Table I shows that all the extracts of aerial parts of Hypochaeris Radicata L. possess dose dependent and significant anthelmintic activity as compared with standard drug albendazole on earthworms. Among all the extracts ethanol extract on the concentration of 75 mg/ml required least time to cause paralysis in 3.090 min and death in 5.650 min of earthworms. The various concentrations of acetone extracts show moderate time to cause paralysis and death of earthworms as compared with drug albendazole standard. The chloroform extract, diethyl ether extract and aqueous extract show the more time to cause paralysis and death of earthworms as compared with drug albendazole standard.

The Invitro anthelmintic activity could be denoted by a couple of things: moments of paralysis and death. The time of paralysis is that time at which the earthworm remains immobilized. Thetime of death is that point at which the earthworm does not move or do not show any activity after pouring it into hot water.

Table 1: anthelmintic activity of various extracts of Hypochaeris Radicata L.

Sample	Concentration	Time taken for paralysis (min) Mean ± SEM	Time taken for death (min) Mean ± SEM
Control	-	-	-
Albendazole (Standard)	25 mg/ml	5.103±0.286	7.073±0.265
	50 mg/ml	3.543±0.293	6.343±0.676
	100 mg/ml	1.45±0.055	3.046±0.324
Aqueous Extract	25 mg/ml	6.66±0.260	8.153±0.294
	50 mg/ml	4.543±0.303	5.983±0.306
	100 mg/ml	2.733±0.322	4.276±0.517
Ethanol Extract	25 mg/ml	6.723±0.409	8.65±0.335
	50 mg/ml	4.723±0.336	6.68±0.260
	100 mg/ml	3.554±0.350	5.643±0.245
Ethyl Acetate Extract	25 mg/ml	8.61±0.205	9.86±0.351
	50 mg/ml	7.123±0.284	8.743±0.273
	100 mg/ml	4.906±0.366	7.386±0.561
Acetone Extract	25 mg/ml	10.433±0.600	12.42±0.983
	50 mg/ml	8.92±0.942	10.726±0.714
	100 mg/ml	6.476±1.144	8.413±0.563
Chloroform Extract	25mg/ml	13.26±1.130	16.396±1.080
	50mg/ml	9.743±1.473	13.443±1.591
	100 mg/ml	7.83±1.791	11.346±1.571
Diethyl Ether Extract	25 mg/ml	15.136±1.168	18.38±0.550
	50 mg/ml	12.34±1.713	15.666±1.024
	100 mg/ml	9.273±1.281	13.083±1.228

Values are expressed as Mean ±SEM (n=3). Data was analyzed using one-way ANOVA followed by Dunnet's multiple comparison test. Standard drug treatment Vs Treated groups (* p< 0.05, **p< 0.01, ***p< 0.01. Data Data were analyzed using GraphPad Prism 9 for Windows.

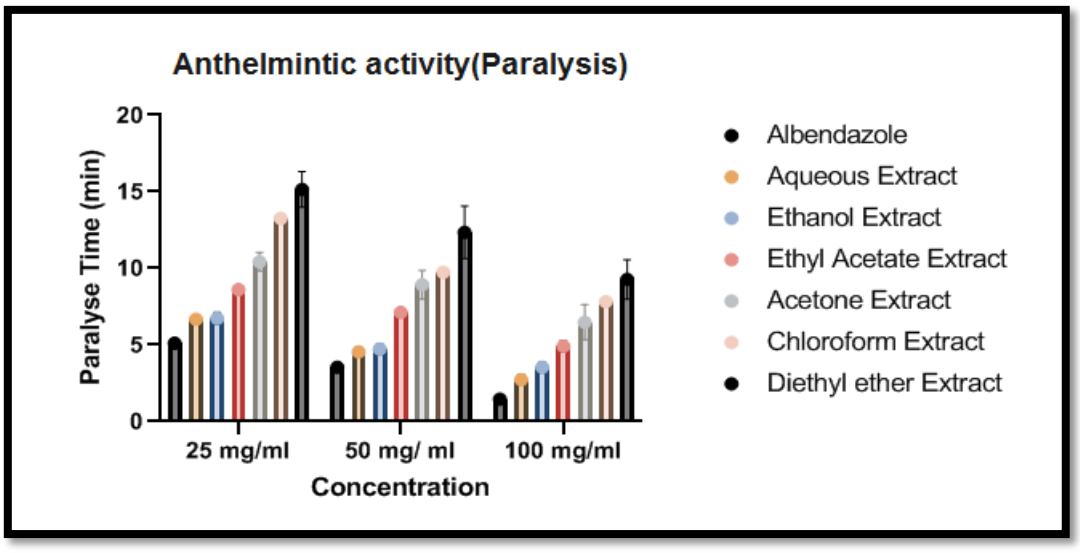

Figure 2: anthelmintic activity graph for paralysis

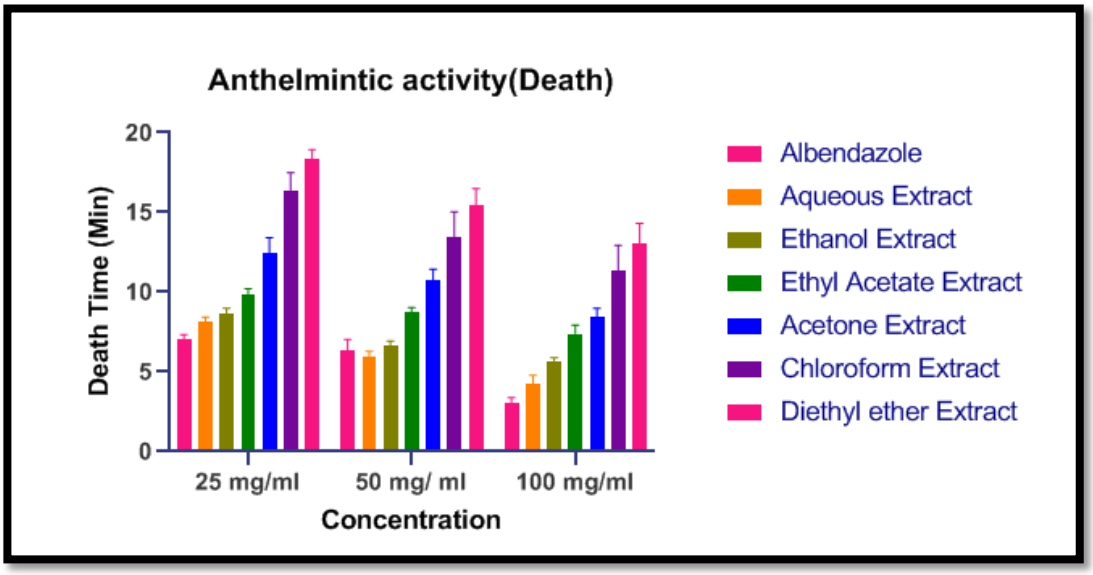

Figure 3: anthelmintic activity graph for death

IV. CONCLUSION:

Hypochaeris radicata *L.* is among the Asteraceae family. The dried fine powder plant is treated by the Soxhlet extractor with solvents like ethanol, acetone, chloroform, diethyl ethyl ether and aqueous. The crude extract of the plant was investigated to preliminary phytochemical screening, which demonstrated the existence of a variety of Phyto- chemical constituents such as alkaloids, glycosides, flavonoids and saponins. The existence of these bioactive compounds is considered to be the reason for its potency.

In the present study, the invitro anthelmintic activity is evaluated and verified utilizing the earthworms i.e., heretical posthuman. Amongst all these components, it is thought the aqueous extract of aerial areas of *Hypochaeris radicata L.* shows more powerful anthelmintic activity with when compared to drug albendazole standard. The various concentrations of ethanol extracts demonstrate modest time to cause paralysis and loss of life of earthworms when compared of albendazole medication. The acetone, chloroform, diethyl ether acquire and ethyl acetate extract show more time to cause paralysis and death of earthworms. We are able to determine that extremely matters may have charge of anthelmintic activity. Further research should be done on isolation and detection on most likely anthelmintic theory. For that reason, quality managed components of aerial parts of plant *Hypochaeris radicata L.* or even isolated bioactive chemical substances could be appealing selections to regular anthelmintics for treating stomach trichostrongylides of small ruminants. A real treatment could be utilized natural and conventional production systems in control strategies against gastrointestinal nematodes. The current data suggest that most these extracts of *Hypochaeris radicata L.* are to be a safe anthelmintic effect and could provide as a part of treatment to treat parasitic infections of humans. A considerable analysis on these marks is needed with a later particular date to strength in the extracts of as novel and natural anthelmintic agent.

From all this study, we concluded that the aerial part extract of *Hypochaeris radicata L.* has potential of anthelmintic activity.

ACKNOWLEDGEMENTS:

I want to thank Dr D. M. Ingawale sir, for providing the desired facilities for my entire work. I will also like to give thanks my respected sir Dr M. S. Patil Sir, Dr N. A. Tamboli Madam, A. M. Tamboli Sir and S. S. Kale Sir for their continuous support and encouragement.

REFERENCES:-

[1]. ¨O. D. Can and¨U. D.¨Ozkay, "Effects of Hypericum montbretia extract on the central nervous system and involvement of GABA (A)/Benzodiazepine receptors in its pharmacological activity," Phytotherapy Research, vol. 26, no. 11, pp. 1695–1700,2012.
[2]. A. Rauf, G. Uddin, B. S. Siddiqui et al., "In-vivo antinociceptive,anti-infammatory and antipyretic activity of pistagremic acid isolated from Pistacia integerrima," Phytomedicine, vol. 21, no.12, pp. 1509–1515, 2014.
[3]. Antioxidant activity of microwave-assisted extract of longan (Dimocarpus longum Lour.) peel. Food Chemistry. 2008; 106: 1264-1270.
[4]. Bhuiyan MAR., Hoque MZ., Hossain SJ. Free Radical Scavenging Activities of Zizyphus mauritiana. World J. Agr. Sci.2009; 5: 318-322.
[5]. Blois MS. Antioxidant determination by the use of a stable free radical nature. Nature.1958; 26: 1199-1200.
[6]. Bohm BA., Stuessy TF. "Flavonoids of the sun frower family (Asteraceae)". Springer. New York (2001).

[7]. Brown JE., Rice-Evans CA. Luteolin-Rich artichoke extract protect low density lipoprotein from oxidation in vitro. Free Radical Research. 1998; 29: 247-255.
[8]. C. Zidorn, "Sesquiterpenoids as chemosystematic markers in the subtribe Hypochaeridinae (Lactuceae, Asteraceae)," Biochemical Systematics and Ecology, vol. 34, no. 2, pp. 144–159,2006.
[9]. Cao G., Sofic E., Prior RL. Antioxidant and pro-oxidative behavior of flavonoids: Structure activity relationships. Free Radical.Biol. Med. 1997; 22: 749-760.
[10]. D. J. Newman and G. M. Cragg, "Natural products as sources of new drugs over the last 25 years," Journal of Natural Products, vol. 70, no. 3, pp. 461–477, 2007.
[11]. Dorman HJD., Peltoketo A., Hiltunen R., Tikkanen MJ. Characterisation of the antioxidant properties of deodourisation aqueous extracts from selected Lamiaceae Herbs. Food Chem. 2003; 83: 255-256.
[12]. Duh PD. Antioxidant activity of burdock (Arctium lappa Linne.): Its scavenging effect on free-radical and active oxygen. J. Am. Oil Chem. Soc. 1998; 75: 455-461.
[13]. Duh PD., Du PC., Yen GC. Action of methanolic extract of mung beans hulls as inhibitors of lipid peroxidation and non-lipid oxidative damage. Food Chem. Toxicol. 1999; 37: 1055-1061.
[14]. F. Odabasoglu, A. Aslan, A. Cakir et al., "Comparison of antioxidant activity and phenolic content of three lichen species,"Phytotherapy Research, vol. 18, no. 11, pp. 938–941, 2004.
[15]. G. Uddin, A. Rauf, T. U. Rehman, and M. Qaisar, "Phytochemical Screening of Pistacia chinensis var. integerrima," MiddleEast Journal of Scientific Research, vol. 7, pp. 707–711, 2011.