Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol. 14, Issue 32s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

Phytochemical And Pharmacological Evaluation Of Aqueous Polyherbal Extract Against Pheretima Posthuma

Kakunuri Lakshmi*[1,2], D.Joicy Grace [4] , Kollabathula Anusha Jasmine [1], Ganjarapalli Yamini [3], Addanki Devi Naga Sunanda [1], Munnangi Sushma [5], Yemineni Lakshmi Durga [5], Uddagiri Mahitha [4], Boyina Mythri Sahithi [4], Shaik Shereen[4]

[1]Associate Professor in Sri Siddhartha Pharmacy College, Nuzvid, Eluru District-521201

[2]Research Scholar (Pharmacology) in Chebrolu Hanumaiah Institute of Pharmaceutical Sciences, Chowdavaram, Guntur - 522019

[3]Assistant Professor in Malineni Perumallu Pharmacy College, Pulladigunta, Guntur District-522017

[4]Student in Sri Siddhartha Pharmacy College, Nuzvid, Eluru District-521201

[5]Student in Malineni Perumallu Pharmacy College, Pulladigunta, Guntur District-522017

***Corresponding author:**

Kakunuri. Lakshmi

Email ID: lakshmikakunuri95@gmail.com

Cite this paper as: Kakunuri Lakshmi, D.Joicy Grace, Kollabathula Anusha Jasmine, Ganjarapalli Yamini, Addanki Devi Naga Sunanda, Munnangi Sushma, Yemineni Lakshmi Durga, Uddagiri Mahitha, Boyina Mythri Sahithi, Shaik Shereen, (2025) Phytochemical And Pharmacological Evaluation Of Aqueous Polyherbal Extract Against Pheretima Posthuma. *Journal of Neonatal Surgery*, 14 (32s), 4400-4404.

ABSTRACT

The present study was to evaluate the phytochemical screening and antihelmintic activity of aqueous polyherbal extract (APHE) against Pheretima posthuma. The raw materials of *Asparagus racemosus, Foeniculum vulgare, Cymbopogon citratus, Curcuma longa, Moringa oleifera* were identified and purchased from local market of Nuzvid. APHE was prepared from the dried materials of five different plants using the solvent water. Initially, APHE was screened for phytochemical constituents by standard methods. Further, antihelmintic study was conducted against Pheretima posthuma, collected from local Vermicomposting Farm, Nuzvid. In the phytochemical screening, APHE showed presence of glycosides, alkaloids, flavonoids, phenols, phytosterols and tannins. In the antihelmintic study, mortality was produced in earth worm populations by APHE. The use of APHE as an antihelmintic was confirmed by using standard method against Pheretima posthuma. The results indicated that the test drug has significant antihelmintic properties. The data were found statistically significant by using one way ANOVA ($P< 0.0001$). Hence, it can be concluded that the APHE can be used as a novel drug for the treatment of worm infestations.

Keywords: *Aqueous polyherbal extract (APHE), phytochemical screening, Pheretima posthuma, Anthelmintic activity, Albendazole,*

1. INTRODUCTION

Helminth infections are among the commonest infections in man, affecting a large proportion of the world's population. In developing countries they pose a major threat to public health and contribute to the prevalence of malnutrition, anemia, eosinophilia, and pneumonia. Anthelmintics 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. They harm the host by depriving him of food, causing blood loss, injury to organs, intestinal or lymphatic obstruction and by secreting toxins. Helminthiasis is rarely fatal, but is a major cause of Morbidity [1].

Asparagus racemosus (AR) wild (Family: Liliaceae), commonly known as shatavari, satawar or satmuli, is found in all over India, and is commonly known in Thailand as sam-sib or rak-sam-sib [2].

Foeniculum vulgare is a biennial medicinal and aromatic plant belonging to the family Apiaceae (Umbelliferaceae) [3].

Lemongrass (*Cymbopogo citratus*) Stapf is a plant known for its popular name citronella and its uses. It is a member of Gramineae family and its name meaning is 'kyme-pogon' or boat-beard in the Greek language [4].

Curcuma longa commonly known as Turmeric, is a rhizomatous herbaceous perennial plant belonging to the Zingiberaceae family [5].

Moringa oleifera (M. oleifera) also known as a miracle tree, is a tree belonging to the family *Moringaceae* [6].

2. MATERIALS AND METHODS

Collection

The Shatavari root, Fennel seeds, Lemon grass, Turmeric root, Moringa leaves (polyherbals) were identified and purchased from local market of Nuzvid.

Preparation of extract:

The polyherbal materials was collected, dried and powdered to get a coarse powder. The powder of 500 gm was taken in beaker and add 1000 ml of distilled water. Then it was kept for maceration for 7 days. The extract was double filtered by using muslin cloth and Whatman no.1 filter paper and concentrated by evaporation on water bath. The extract was dried and used [7].

Preliminary phytochemical screening:

The preliminary phytochemical investigation was carried out with aqueous polyherbal extract for identification of phytochemical constituents. Phytochemical tests were carried out by standard methods [8].

Test organism:

Indian adult earth worms (*Pheretima posthuma)* were used during the experiment. The earthworms were collected from a local supplier. Worms were washed with normal saline to remove all fecal matter .The earthworms of 8-10 centimeter (cm) in length and 0.2 -0.5 cm width were used for all the experiment protocol. Ready availability, anatomical and physiological resemblance of (*Pheretima posthuma)* made it to be used initially for *in-vitro* evaluation ofantihelminticactivity.Timeforparalysiswasnotedeitherwhenanymovementcouldnot be Observed except when the worms where shaken vigorously. Death was included when the worms lost their motility followed by white secretions and fading away of their body color [9].

Evaluation of Antihelmintic activity:

The antihelmintic activity was evaluated on adult Indian earthworm. The earthworms were randomly chosen and divided into three group shaving five earthworms in each as follows:

Group I: Control Group

Group II: Standard Group– Albendazole [10]- 50,100, 200,300, 400mg/ml

Group III: Test-I- aqueous polyherbal extract (APHE) -50,100,200,300,400mg/ml

Observations were made for the time taken by worms to paralyze and death was observed. Time for paralysis was noted when no movement could be observed with a slight pin prick method. Death was ascertained by applying external stimuli which stimulate and induce movements in worms as well as fade of the body color was noted.

Statistical analysis:

The values are expressed as mean± SEM. The statistical analysis was performed using one-way analysis of variance (ANOVA) followed by Dennett's multiple comparison test. Comparisons were made between haloperidol group and test/standard groups. P-values <0.05 was considered statistically significant. The statistical analysis was done by using Graph pad prism version no: 7.0.

Results and discussion:

In this study, we found that aqueous polyherbal extract possess the following chemical constituents (Table 1).

Table1: Phytochemical screening of APHE

Phytochemical constituents	**Aqueous Polyherbal Extract [APHE]**
Alkaloids	+
Carbohydrates	+

Flavonoids	+
Phenols	+
Saponins	+
Terpenoids	+
Steroids	+
Tannins	+
Aminoacids	–
Glycosides	+
Fixed oils and fattyacids	+

+ indicate the Compulsory Present and – Indicate the absent

Antihelmintic activity:

The aqueous polyherbal extract produced a significant antihelmintic activity in dose dependent manner as shown in below table.

Table 2: Antihelmintic activity of aqueous polyherbal extract (APHE) & Standard drug on Indian earth worm

Groups	**Concentration**	**Time Taken in minutes**	
		Paralysis(P)	**Death(D)**
Control		-	-
Standard (Albendazole)	**50mg/ml**	29.4±0.40	51.2±0.37
	100mg/ml	26 ± 0.44	47.6 ±0.24
	200mg/ml	25.4±0.24	37.6±0.24
	300mg/ml	23.8±0.20	29.6±0.24
	400mg/ml	17.6±0.24	9.8±0.20
Test [APHE]	**50mg/ml**	31.6±0.24	52.6±0.24
	100mg/ml	26.8±0.20	48.8±0.20
	200mg/ml	25.6±0.24	38.2±0.37
	300mg/ml	23.2±0.73	28.6 ±0.24
	400mg/ml	20.4±0.24	11.4 ±0.50

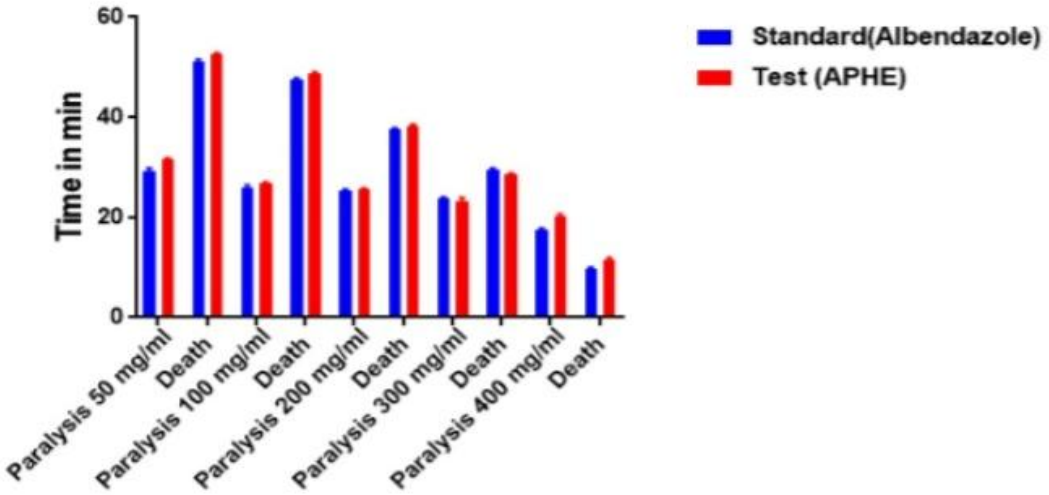

Figure 1: Anthelmintic activities of standard, APHE, Values are expressed as Mean ± SEM, P<0.0001

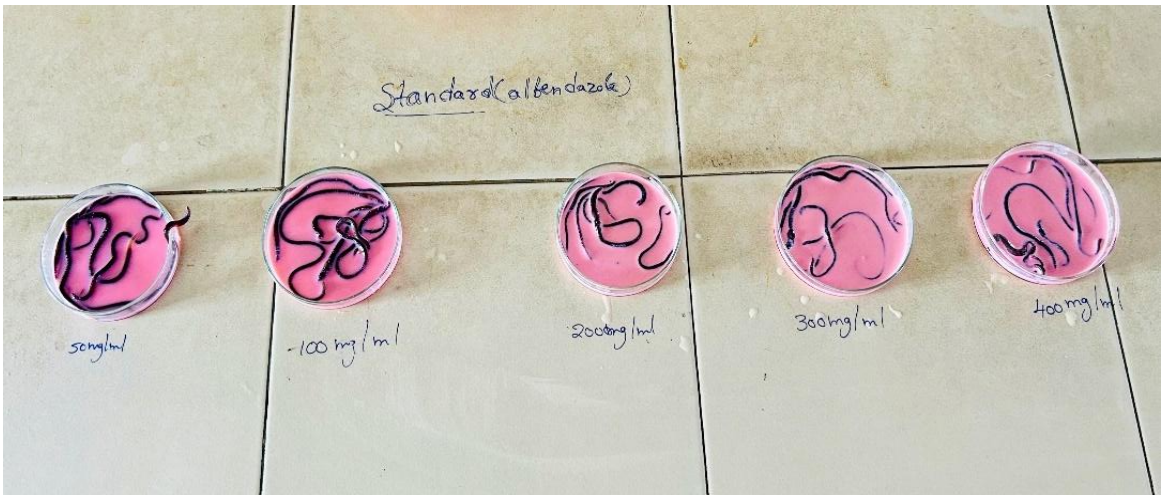

Figure 2: Standard (Albendazole)-50,100,200,300,400mg/ml-Paralysis and death

Figure 3: Test (APHE) -50,100,200,300,400mg/ml-Paralysis and death

3. SUMMARY AND CONCLUSION

In the present investigation, aqueous polyherbal extract posses the presence of alkaloids, carbohydrates, saponins, tannins, flavonoids, phenols, terpenoids, steroids, glycosides and fixed oils & fats. Tannins are chemically polyphenolic compound and where shown to produce anthelmintic activities and reported the effect of tannin can bind to free proteins in gastro intestinal tract of host animal or glycoproteins on the cuticle of parasite and may cause death. These facts suggest that tannins present in the aqueous polyherbal extract showed the antihelmintic effect by above mentioned mechanisms. From the result shown in table-2 aqueous polyherbal extract showed antihelmintic activity in dose dependent manner giving shortest time of paralysis and death. From the antihelmintic activity study, the aqueous polyherbal extract at a dose of 400 mg/ml has significant anthelmintic activity where as 50mg/ml has showed moderate activity. The aqueous polyherbal extract at normal concentration i.e. 50 mg/ml to higher concentration i.e. 400mg/ml showed good anthelmintic activity and this is compared with effect produced by reference standard drug Albendazole. The aqueous polyherbal extract demonstrated paralysis as well as death of worms in a less time as compared to Albendazole especially at higher concentration of 400 mg/ml. The study finally concluded aqueous polyherbal extract showed marked and potent anthelmintic activity than the standard drug Albendazole.

REFERENCES

[1] Das, *et al.*, Determination of Anthelmintic Activity of the Leaf and Bark Extract of *Tamarindus Indica Linn*, Indian Journal of Pharmaceutical Sciences, 73 (1), 2011, 104-107.

[2] Taepongsorat and Rattana, Antioxidant Activities of Ethanolic and Aqueous Extracts of *Asparagus racemosus* Roots, Pharmacognosy Journal, 10(6), 2018, 1129-32.

[3] Hakim Md. Osman Gani, Dr. Md. Obydul Hoq and Tahmina Tamanna, Pharmacological and phytochemical analysis of *Foeniculum vulgare* Mill: A review, International Journal of Unani and Integrative Medicine 2019; 3(2): 13-18.

[4] *A. Tazi, A. Zinedine, J.M. Rocha et al.* Review on the pharmacological properties of lemongrass (*Cymbopogon citratus*) as a promising source of bioactive compounds, Pharmacological Research - Natural Products 3 (2024) 100046.

[5] E.J. Iweala, M.E. Uche, E.D. Dike et al., *Curcuma longa* (Turmeric): Ethnomedicinal uses, phytochemistry, pharmacological activities and toxicity profiles —A review, Pharmacological Research - Modern Chinese Medicine 6 (2023) 100222.

[6] Ariani L.N., Estiasih T., Sunarharum W.B., Khatib A. (2023): Potential of Moringa (*Moringa oleifera*) leaf powder for functional food ingredients: A review. Czech Journal of Food Science.1-13.

[7] Manohar et.al, Phytochemical Analysis of Ethanolic Extract of Fruits of Terminalia chebula (EEFTC), Drug Invention Today, 4(10), 2012, 491-492.

[8] Aishwarya, K. Apte., Khot, V. S., Biradar, N.S., and Patil, S. B. (2014). Anthelmintic activity of Trachyspermum Ammi extract. International Journal of Pharmacy and Pharmaceutical Sciences, 6(1), 464-466.

[9] Trupti, P. Durgawale., Chitra, C. Khanwelkar., Pratik, P. Durgawale and Satish V. Kakade. (2017). Comparative Anthelmintic Activity of Different Extracts of Portulaca oleraceae L. Whole Plant. Biomedical & Pharmacology Journal, 10(4), 2013-2016.

[10] Jinu John Archana Mehta Shruti Shukla and Pradeep Mehta. A report on anthelmintic activity of Cassia tora leaves, Songklanakarin Journal of Science and Technology, 31(3), 2009, 269-271.