SJIF Impact Factor: 5.464

WORLD JOURNAL OF ADVANCE HEALTHCARE RESEARCH

ISSN: 2457-0400
Volume: 6.
Issue: 7.
Page N. 116-119
Year: 2022

Research Article www.wjahr.com

PRELIMINARY PHYTOCHEMICAL INVESTIGATION AND IN-VITRO ANTHELMINTIC ACTIVITY OF *LAWSONIA INERMIS* LEAVES

Dr. Praveen Kumar Dasari*, Bondili Sadhana, Tatina Anju and Guduru Sai Krishna

Mother Teresa Pharmacy College, Sathupally, Telangana-507303, India.

Received date: 30 April 2022 **Revised date:** 21 May 2022 **Accepted date:** 10 June 2022

***Corresponding Author: Dr. Praveen Kumar Dasari**

Mother Teresa Pharmacy College, Sathupally, Telangana-507303, India.

ABSTACT

The present research work deals with phytochemical investigation and in-vitro anthelmintic activity of *lawsonia inermis* leaves on Indian earthworms, Pheretima posthuma having physiological and anatomical similarity with intestinal helminthes. Standardization of crude drugs isolated from plant plays a vital role in identification of the quality and purity of drugs. Now a day parasitic (helminthes) infections are growing rapidly worldwide and numerous synthetic antihelmintic drugs are in use for the treatment of helminthiasis but they posses some allergic manifestations as well as adverse effects, in order to overcome that effects natural anthelmintic agents are required in present scenario. This research observed and highlights that ethanolic extracts of *lawsonia inermis* leaves had the highest number of phytochemicals compared to other solvent extracts. Hence, ethanolic extracts of *lawsonia inermis* leaves holds the greatest potential to treat various human diseases and has profoundmedical applicability. The adult worms are collected and cleaned in normal saline solution before they were placed in to respective formulation. To observe anthelmintic activity, all the investigations were carried out by ethanol, acetone and aqueous extract with different concentrations of 10, 25, 50mg/ml. A significant activity was observed at highest concentrations of 50mg/ml of ethanolic extract and compared with albendazole (10, 25, 50mg/ml) as standard.

KEYWORDS: *lawsonia inermis* leaves, Pheretima posthuma, Albendazole.

INTRODUCTION

Standardization of crude drugs isolated from plant plays a vital role in identification of the quality and purity of drugs. Plants are very important in medicinal field; they have similar properties as conventional pharmaceutical drugs. Plant medicines are safer due to their lower chances of side effects and also better compatibility to humans. Medicinal plants are used a wide range for the pharmaceutical products to herbal medicine preparations. Now a day, medicinal plants are considered as potential sources for the preparation of new drugs. The use of medicinal plant is growing worldwide because of the increasing toxicity and allergic manifestations of synthetic drug.[1-8] Globally around 24% population is suffering with parasitic infections and they are intended to use synthetic drugs for the treatment but adverse effects of synthetic drugs along with increasing toxicity there is a need to develop natural drugs for treatment of helminthiasis. Thus we can save our future generations from such major problems without any adverse effects. This helminthiasis is caused due to maintenance of poor hygienic conditions, improper waste disposal, eating uncooked meat or infected animals and touching infected surfaces.[9-18] Infection is most common in urban places and severity is high in children so not only use of drugs can cure helminthiasis but there is a need to follow precautions and preventive measures. Observe anthelmintic activity on adult Indian earthworms, Pheretima posthuma having physiological and anatomical similarity with intestinal helminthes of human beings.[19-21] Pheretima posthuma were used for estimation of anthelmintic activity on *lawsonia inermis* leaves because of their easy availability. The present research work deals with phytochemical investigation and in-vitro anthelmintic activity of *lawsonia inermis* leaves.

MATERIALS AND METHODS

COLLECTION OF PLANT MATERIAL

Lawsonia inermis leaves were collected from Sathupally, washed with freshly prepared distilled water using simple distillation technique to remove impurities and dust present in surface of leaves and then leaves are air dried on a clean sterile paper to remove excess moisture content and then shade dried for 2 days and finely pulverised using mechanical mixer.

EXTRACTION PROCEDURE

Lawsonia inermis leaves were washed thoroughly with distilled water and chopped in into minute piece and air dried at room temperature for 48 hours. The dried leaves were crushed using mixer into fine powder and stored at room temperature. 20 grams of leaf powder is obtained from 100grams of leaves and macerate the leaves using desirable solvents ethanol, acetone and aqueous in specified ratio, with frequent agitation so that entire constituents are solubilised into solvents and filter the contents using standard methods and the extracted extracts are stored in air tight containers.

PREPARATION OF WORMS

Adult india earth worms, Pheretima posthuma are collected from the water logged areas of soil at the ground of Mother Teresa pharmacy college, Sathupally. They are placed into a clean sterilised beaker and worms are washed thoroughly with distilled water and placed in sterilised petriplates for further activity determination. Pheretima posthuma are very important and play crucial role as soil invertebrate that promotes soil fertility. Earthworm feeding and burrowing activities improves breakdown of organic matter, improve aeration, release nutrients, aggregation of soil and improve aeration. The average sizes of Pheretima posthuma were 8-12 cm with weight 0.8-2.30g were used for all experimental work.

RESULTS AND DISCUSION

Phytochemical investigation of plant products were essential to detect bioactive principles which are new source of industrially and therapeutically valuable compounds that may lead to the discovery of new drugs. In pharmaceutical companies, crude plant extracts and medicines are manufactured based on the principles of natural compounds, may lead to large scale exposure of humans on natural products. Presence or absence of essential bioactive compounds in plant extracts were identified by color reactions with specific chemicals, this procedure is simple for preliminary pre-requisite before going to phytochemical investigation. In the present research work, phytochemicals were screened with the ethanol, acetone and aqueous extracts of the *lawsonia inermis* leaves and the results are shown in Table 1.

Table 1: Preliminary phytochemical investigation of *lawsonia inermis* leaves.

Test	Ethanol	Acetone	Aqueous
Alkaloids	+	-	+
Steroids	+	+	+
Tannin	+	+	+
Phlobatanins	+	+	-
Saponins	+	+	+
Phenols	+	+	+
Flavonoids	+	+	+
Aminoacids	+	-	+
Glycosides	+	+	+
Reducing sugars	+	-	+

+indicates present,**-indicates absent.**

The present research work recorded and highlighted that ethanolic extracts of *lawsonia inermis* leaves had the highest number of phytochemicals compared with other solvent extracts. Hence, ethanolic extracts of *lawsonia inermis* leaves holds the great potential to treat various human diseases and has profound medical applicability. Due to presence of secondary metabolites, the plant leave extract exhibits anthelmintic activity to bind free proteins in the gastrointestinal tract of host animal and glycoprotein on the cuticle of the parasite. The results of anthelmintic activity on earthworms pheretima posthuma was shown in Table-2. Different concentrations (10, 25 and 50mg/ml) prepared for evaluation of paralysis and death of earthworms and it was compared with the same concentration for standard drug.

Table 2: Anthelmintic activity of Plant Extracts.

Groups	Dose in concentration (mg/ml)	Time of paralysis (min)	Time of death (min)
Acetone extract	10	19.45±0.14	33.5 ± 0.41
	25	15.20± 0.52	25.18±0.14
	50	12.38 ± 0.27	17.38 ± 0.26
Ethanolic extract	10	17.17 ± 0.32	31.27 ± 0.43
	25	13.31±0.41	20.63 ± 0.42
	50	10.63 ± 0.33	12.43 ± 0.36
Aqueous extract	10	18.28±0.33	36.63 ± 0.42
	25	14.82± 0.31	27.09± 0.15
	50	11.51 ± 0.27	14.38 ± 0.42

Standard Drug	10	8.44 ± 0.41	12.26 ± 0.52
	25	6.12± 0.54	9.36 ± 0.43
	50	2.39 ± 0.19	4.43 ± 0.34

CONCLUSION

The present research work concluded that *lawsonia inermis* leaves contain potentially health-protective phytochemical compounds with a potent source of natural antioxidants and antibacterial activities that may be clinically promising. The plant *lawsonia inermis* leaves have been used in the treatment of different ailments, the medicinal roles of this plant could be related to identify bioactive compounds. The present results will form the basis for collecting of new plant species for further investigation in the potential discovery of new bioactive compounds. Further studies are required for in-vitro activity, to establish effectiveness and pharmacological rationale for the use of leave extracts as anthelmintic drug. The present research concluded that the plant *lawsonia inermis* leaves extract has significant anthelmintic activity on ethanolic extract.

ACKNOWLEDEMENT

The authors express their sincere thanks to the management, Mother Teresa Pharmacy College, Sathupally, Telangana for providing the necessary facilities to carry out the research work.

REFERENCES

1. Anderson, K. L. and Strowd, L. C. 'Epidemiology, Diagnosis, and Treatment of Scabies in a Dermatology Office,' The Journal of the American Board of Family Medicine, 2017; 30(1): 78–84.
2. Adejumo, I. 'Colocasia esculenta (L.) Schott as an Alternative Energy Source in Animal Nutrition', British Journal of Applied Science & Technology, 2013; 3(4): 1276–1285.
3. Cushnie, T. P. T., Cushnie, B. and Lamb, A. J. 'Alkaloids: An overview of their antibacterial, antibiotic-enhancing and antivirulence activities,' International Journal of Antimicrobial Agents. Elsevier B.V., 2014; 44(5): 377–386.
4. Dhanraj, N. et al. 'Phytochemical screening and Antibacterial Activity of Western Region wild leaf Colocasia esculenta,' International Research Journal of Biological Sciences Int. Res. J. Biological Sci, 2013; 2(10): 2278–3202.
5. Hay, R. J. et al. 'Scabies in the developing worldits prevalence, complications, and management,' Clinical Microbiology and Infection. European Society of Clinical Microbiology and Infectious Diseases, 2012; 18(4): 313–323.
6. Prajapati R, Kalariya M, Umbarkar R, Parmar S, Sheth N. Colocasia esculenta: A potent indigenous plant. International Journal of Nutrition, Pharmacology, Biologicl Diseases, 2011; 1(2): 90-96.
7. Rashmi DR, Raghu N, Gopenath T, Palanisamy P, Bakthavatchalam P, Karthikeyan M et al. Taro (Colocasia esculenta): An overview. Journal of Medicinal Plants Studies, 2018; 6(4): 156-161.
8. Colacasia esculenta-IT IS Standard Report Page. https//www.itis.gov.
9. Keshav A, Sharma A, Mazumdar B. Phytochemical Analysis and Antioxidant Activity of Colacasia esculenta(L)Leaves. International Journal of Chemical and Molecular Engineering, 2019; 13(1): 20-23.
10. Pawar HA, Choudhary PD, Kamat SR. An Overview of Traditionally Used Herb, Colocasia esculenta, as a Phytomedicine. Medicinal Aromat Plants, 2018; 7(4): 1-7.
11. Krishnapriya TV, Suganthi A. Biochemical and phytochemical analysis of colocasia esculenta (L.) Schott tubers. International Journal of Research in Pharmacy and Pharmaceutical Sciences, 2017; 2(3): 21-25.
12. Singh B, Namrata, Kumar L, Dwivedi SC. Antibacterial and antifungal activity of Colocasia esculenta aqueous extract: An edible plant. Journal of Pharmacy Research, 2011; 4(5): 1459-1460.
13. Mengane S. Antifungal activity of the crude extracts of Colacasia Esculenta leaves in vitro on plant pathogenic fungai. International research journal of pharmacy, 2015; 6(10): 713-714.
14. Kumawat NS, Chaudhari SP, Wani NS, Deshmukh TA, Patil VR. Antidiabetic activity of ethanol extract of Colocasia esculenta leaves in alloxan induced diabetic rats. International Journal of Pharm Tech, 2010; 2(2): 1246-1249.
15. Patil BR, Ageely HM. Antihepatotoxic activity of Colocasia esculenta leaf Juice. International Journal of Advanced Biotechnology and Research. 2011; 2(2): 296- 304.
16. Kubde MS, Khadabadi SS, Farooqui LA, Deore SL. Invitro anthelmintic activity of Colocasia esculenta. Scholars Research Library. 2010; 2(2): 82-85.
17. Kim KH, Moon E, Kim SY, Lee KR. Anti-melanogenic Fatty Acid Derivatives from the Tuber-barks of Colocasia antiquorum var. esculenta. Bulletin of the Korean Chemical Society, 2010; 31(7): 2051-2053.
18. Shah BN, Nayak BS, Bhatt SP, Jalalpure SS, Seth AK. The anti-inflammatory activity of the leaves of Colocasia esculenta. Saudi pharmaceutical journal, 2007; 15(3): 228-232.
19. Yadav M, Kushawaha DK, Chatterji S, Watal G. Assessment of antioxidant activity and phytochemical screening of Colocasia esculenta corm. International journal of pharmaceutical sciences and research, 2017; 8(4): 1758-1764.
20. Patil BR, Ageely HM. Anti-Lipid Peroxidative Activity of Colocasia esculenta leaf Juice against

CCl4 and Acetaminophen Mediated Cell Damage. International Journal of Pharmaceutical Applications, 2011; 2(3): 141-149.