RESEARCH ARTICLE ISSN: 2349-2678

Contents lists available at www.ijpba.in
International Journal of Pharmaceutical and Biological Science Archive
NLM (National Library of Medicine ID: 101732687)
Index Copernicus Value 2019: 71.05
Volume 9 Issue 5; September-October; 2021; Page No. 05-07

Evaluation of *Vitex Trifolia* for Anti-Anemic Activity

Shantanu Mishra*, Mayank Gangwar, Pratyush Jain, Alok Pal Jain

RKDF College of Pharmacy, Bhopal (M.P.) India

Sarvepalli Radhakrishnan University Bhopal (M.P.) India

Conflicts of Interest: Nil
Corresponding author: Shantanu Mishra
DOI: https://doi.org/10.32553/ijpba.v9i5.245

ABSTRACT

This study was designed to investigate the anti-anemic activity of various leaf extract of *Vitex trifolia* in phenyl hydrazine-induced anaemia in albino wistar rats. The extracts were tested orally at 150 mg/kg and 400 mg/kg, given for 14 days. The degree of protection was determined by measuring the levels of hematological parameters such as: WBC, RBC, PCV and HB. Results obtained showed that both doses of the extract significantly ($p < 0.05$) increased the values of all the hematological indices estimated, which included: total white blood cells, red blood cells, packed cell volume and hemoglobin. The activity of the extract was dose dependent and comparable to that of that reference drug. The results thus suggest that *Vitex trifolia* may possess anti-anemic activity. This finding supports the folkloric use of the leaves of this plant for prevention and treatment of anaemia.

Keywords: Anaemia, Prunus, WBC, PCV

Introduction

Nature has provided a complete store-house of remedies to cure all aliments of mankind. From the vast natural resources, the plants are being used for therapeutic purposes from the beginning of the civilization. Herbal medicines derived from plant extracts are being increasingly utilized to treat a wide variety of clinical diseases, though relatively little knowledge about their mode of action is available. [1] There is a growing interest in the pharmacological evaluation of various plants used in Indian traditional systems of medicine. Herbal medicines are promising choice over modern synthetic drugs. They show minimum or no side effects and are considered to be safe. Generally herbal formulations involve use of fresh or dried plant parts. Correct knowledge of such crude drugs is very important aspect in preparation, safety and efficacy of the herbal product. However, the phytochemicals responsible for the pharmacological activities remains to be investigated. [2,3] The plant *V. trifolia* is an aromatic coastal deciduous shrub grown India, Bangladesh and Srilanka which is used as a traditional folk medicine for various ailments. The present investigation was undertaken to confirm the above said folklore claims. From literature survey it has been proved that *n*-hexane, petroleum ether (40-60°C) chloroform, methanolic, ethanolic, 70% hydroethanolic and water extracts of *Vitex trifolia* leaves possess different biological activities, so it is sure that plant extracts have some bioactive constituents which are responsible for such activities. However, the natures of the pharmacologically active principles require further studies. Thus, an attempt has been made to isolate and phytochemical investigation of different extracts of *Vitex trifolia* leaves and to study the antianemic effect of leaf extracts.

Experimental work

Collection of Plant Material

The fresh leaves of *Vitex trifolia* were collected from the local area of Mandideep (M.P.). Plant specimens were identified and authenticated in Department of Pharmacognosy, RKDF Bhopal. The leaves were washed under running water to remove adhering dirt, shade dried and converted into moderately coarse powder by mechanical grinder.

Extraction of *Vitex trifolia*

The powdered plant material of *Vitex trifolia* leaves (about 120 gm) was defatted with petroleum ether (60-80 °C) and then extracted with chloroform, ethanol (95%) and water in a soxhlet apparatus. The solvent was removed under reduced pressure, which obtained a dark greenish and greenish black sticky residue with respect to dried plant material. The dried extract was stored in a desicator till further study.

Pharmacological evaluation of *Vitex trifolia* for antianemic activity

Phenyl hydrazine-induced anaemia model

Phenyl hydrazine induced iron deficiency anaemia model was used for the study of hematopoietic activity. Anaemia was induced in rats by oral administration of 40mg/kg/day of phenyl hydrazine (PHZ) for two days (Day 1 & Day 2). The treated rats with phenyl hydrazine whose hemoglobin concentration <13g/dl were considered as anemic and included for the study. About 1.5 ml of blood was collected from each rabbit into a 5 ml EDTA tubes by puncturing the prominent ear vein with syringe needles. The hematological analyses were carried out within 24 hours of blood collection. [4,5,6]

Grouping of animals

Following groups were made with six animals in each group.

Group I was kept as the control group

Group II was given PHZ control group at dose of 0.2 mg/kg (standard drug)

Group III was given pet ether extract of *Vitex trifolia* at the dose of 150 mg/kg

Group IV was given chloroform extract of *Vitex trifolia* at the dose of 150 mg/kg

Group V was given ethanol of *Vitex trifolia* at the dose of 150 mg/kg

Group VI was given water extract of *Vitex trifolia* at the dose of 150 mg/kg

Statistical Analysis

The group means SEM was calculated for each analyzes and the level of significance for the differences between means were calculated using ANOVA. The level of significance was at 0.05.

Results and Discussion

Blood samples were collected for hematological parameters such as RBCs, WBCs, PCV, Hb and Serum protein. The results of this study indicated that plant extract of both the plants increased significantly the concentration of hemoglobin, red bold cells, white blood cells count and packed cell volume as well as serum. The findings were reported in table 1

Table 1 Effect of various extracts of *Vitex trifolia* in Phenyl hydrazine-induced anaemia model

Groups	RBCs	PCV	HB	WBCs
Control Group	6.2 ± 0.4	44.2 ± 1.4	15.4± 1.2	10.4 ± 0.4
PHZ Control	5.4± 0.2	41.2±0.5	11.2± 0.4	14.4±0.8
Pet ether extract of *Vitex trifolia* 150 mg/kg	5.3± 1.5	42.3±0.8[a]	11.05±0.2	11.8±0.6
Chloroform extract of *Vitex trifolia* 150 mg/Kg	7.5±1.5	42.8±1.4	10.8±0.1	22.8±1.2
Ethnaolic extract of *Vitex trifolia* 150 mg/kg	6.2± 2.4	44.5±0.6[a]	11.8±1.5	10.5±0.2
Water extract of *Vitex trifolia* 150 mg/kg	7.9±0.56	47.3±1.7	10.8±0.4	11.2± 0.4

Conclusion

Anaemia is the result of either not having enough red cells to take oxygen around the body, or having faulty red cells that are unable to carry enough oxygen. It is measured in the blood by the level of hemoglobin. The current work was taken up with an idea to lay down values which could be useful to distinguish the authenticity of this medicinally useful plant. This analysis may serve in providing preliminary basis for exploration of the potential of plant for different pharmacological activities. The conclusion of the present study suggest that it can serve as a valuable source of information and provide appropriate standards to ascertain the quality of this plant material in future study moreover it could be a possible source of therapeutic drugs as antianemic agents.

References

1. Akita Y, Yang Y, Kawai T, Kinoshita K, Koyama K, Takahashi K, New assay Method for surveying antiemetic compounds from natural sources. Journal of Natural Products. 1998; 4:72-77.
2. Kumar MA, Niranjan U, Rao M, Padhi MM, Babu R. A review of the important chemical constituents and medicinal uses of *Vitex* genus. Asian Journal of Traditional Medicine. 2011; (6):54-60.
3. Pal SK. Complementary and alternative medicine: An overview. Current Science. 2002; 82: 518-24.
4. Chandrakanta Kushwah, Deepanshu Gupta, Ankur Joshi, Sapna Malviya, Anil Kharia. Anti-Anemic Activity of Hydro-Alcoholic Extract Seeds of Foeniculum vulgare in Phenylhydrazine Induced Anemic Rats. Pharma tutor. 2018; 6(7): 32-34.
5. Ibrahim AS. Induction of aplastic anaemia in experimental model. International Journal of Applied Biology and Pharmaceutical Technology. 2016;7 (1):182-195.
6. Idu M, Igbafe G, Erhabor J. Anti-anaemic activity of *Jatropha tanjorensis* Ellis & Sarojain Rabbits. Journal of Medicinal Plants Studies. 2014; 2(1): 64 -72.