

Original Article

Phytochemical analysis of traditional medicinal herb- *Boerhavia diffusa*

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Abstract:

This study aimed to identify and understand phytochemicals presents in the wild edible *Boerhavia diffusa* and their medicinal as well as edible uses. Phytochemicals are plant based bioactive compounds produced by plants for their protection. In this study, we have collected the leaves of *Boerhavia diffusa* and tested for different phytochemical tests. It is essential to protect and conserve the wild medicinal plant and the traditional knowledge of the tribal people about the human health.

Keywords: Phytochemicals, wild, medicinal herb, *Boerhavia diffusa*.

Introduction:

Boerhavia diffusa Linn. also known as Spreading Hogweed is a perennial plant. Its habitat is dry wastelands where other vegetation is usually scarce [1] *Boerhavia diffusa* L. is also known as Punarnava is very popular wild edible as well as medicinal plant from Maharashtra. Phytochemicals are plant based bioactive compounds produced by plants for their protection. They can be derived from various sources such as whole grains, fruits, vegetables, nuts and herbs and more than a thousand phytomolecules have been discovered to date [2]. Dense forest containing number of medicinal plants. The tribal people generally used various parts of plants for different diseases. The nutritional studies on *B. diffusa* reveals that Punarnava (*B. Diffusa*) is acting as supplementary foods for many tribal people. *Boerhavia diffusa* L., belonging to the family Nyctaginaceae. The roots are reputed to be diuretic and laxative and are given for the treatment of anasarca, ascites and jaundice.[3] It is a species of flowering plant in the four o'clock family which is commonly known as Punarnava, red spiderling, spreading hogweed or tarvine. It is taken in herbal medicine for pain relief and other uses. The medicinal plants and herbal plants has assumed greater importance in recent days, due to tremendous potential they offer in formulating new drugs, against many disease and illness that affect the human kind [4]. The introduction of better tapping techniques is one way of avoiding damage, but the use of cultivated sources can also reduce the pressure on the natural forest, and by improving the accessibility of the trees to the collector can increase the efficiency of collection [5]. The plants protect from disease and damage of phytochemicals which contributes to the plants flavour, aroma and colour. Generally, the plant chemicals that defend plant cells from environmental hazards (stress, pollination, drought, UV exposure and pathogenic attack) are called phytochemicals[6] Shingade *et al* (1995) analyzed unconventional leafy vegetables found in the forest of Konkan region of Maharashtra. They are found to be a rich source of crude protein.



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Materials and methods:

Study Area

Study area is situated between the latitude 20°40' - 20°45' N latitudes and between 79°9' - 79°29' E longitudes and is spread over the area of 61485.92 hectares of land which falls in villages.

(Data Source: Village and boundaries provided by Land Records Department. GoM)

Collection of Sample:

The selected wild edible *Boerhavia diffusa* in the present study were shade dried, powdered and subjected to various qualitative tests as per the procedures mentioned in the standard reference books, for the identification of phytochemical such as, Alkaloids Flavonoids Glycosides Saponins Proteins Carbohydrates etc[7]

Preparation of Sample:

The dried samples were grind into the fine powder which passed through 0.4 mm mesh screen.

Storage:

The prepared samples were kept in tight borosilicate glass container and store at room temperature for further subsequent analysis.

Table 1: List of the other wild edible plants from the study area

Sr.no.	Botnical Name	Family	Vernacular Name	Parts Used
1	Hibiscus sabdariffa L	Malvaceae	Ambadi bhaji	Leaves
2	<i>Colocasia esculenta</i>	Araceae	Dhopa	Leaves
3	Boerahavia Erecta	Nyetaginaceae	Punarnava	Leaves
4	<i>Cassia tora L</i>	Caesalpineace	Tarota	Leaves
5	<i>Amaranthus tricolor L</i>	Amaranthaceae	Lal Bhaji	Leaves

Table 2: List of some vernacular names of *Boerhavia diffusa*

Sr.No.	Language	Common name
1	English	Boerhavia diffusa
2	Hindi	Snathikari
3	Bengali	Punarnava
4	Marathi	Punarnava
5	Tamil	Mukaratte
6	Gujrathi	Dholia saturdo
7	Kannada	Kommegidi

Priliminary Phytochemical Analysis of *Boerhaavia diffusa* L.[8]

Phytoconstituents	Test	Observations	Inference
Alkaloids	Dragendroff's	Orange coloured PPT produced	+
Proteins	Biuret test	Violet or purple colour produced	+
Carbohydrates	Molisch's test	Red or dull Violet colour produced	+
Carbohydrates	Fehling's test	Yellow or red coloured PPT produced	+
Phenols	hloride test	Deep blue or black colour produced	+
Glycosides	Killiani test	Two layer reddish brown produced,in upper layer+ turns bluish green colour produced.	+
Saponins	Foam test	Persistant foam produced	+

In the present investigation the qualitative analysis of the leaves samples of *Boerhaavia diffusa* showed the presence of phytochemical constituents such as alkaloids, phenolic compounds, saponins, tannins and steroids. In leaves most of the constituents were found to be better extracted in water than methanol.

From the results it has been observed that leaves of the sample contain the required phytoconstituents and hence can be used for therapeutic purposes.

Results and Discussion :

The present investigation and updated reviews on phytochemical study of *Boerhavia diffusa* revealed the presence of phytochemicals in leaves are alkaloids, Phenols, saponins. Some studies identified that phytochemical screening using water methanol and petroleum ether from the extracts of the leaves samples revealed the presence of major bioactive compounds including carbohydrate, protein alkaloids, flavonoids, polyphenols, saponins and glycosides which may retain a wide range of pharmacological action. The information based upon the folk knowledge of the tribal and rural people of the study area.



Conclusion:

From the above study and some updated review it is concluded that the *Boerhavia diffusa* which is locally known as punarnava is rich in phytochemical constituents which is helpful in medicinal as well as edible uses. Due to unavailability of proper storage facilities in the town, the harvest is bound to sell their edible products in fresh conditions. The effort should therefore be made to improve the collection and post-harvest handling of leaves.

References:

1. Gaur P.K. et al, (2022)- Correlation between phytochemicals and pharmacological activities of
2. *Boerhavia diffusa* Linn with traditional-ethnopharmacological insights; Phtomedicine plus 2 (2022)
3. 100260
4. 2.Ashwin K and et al-Major Phytochemicals: Recent Advances in Health Benefits and Extraction Method; molecules.2023 June 6;28(2):807 Pg No. 1
5. Mahesh A.R.et al; Detail Study on Boerhaavia Diffusa Plant for its Medicinal Importance- A Review;
6. (2012) Research Journal of Pharmaceutical Science; Vol 1 (1); pp 28
7. 4. Der Marderosine A H, Liberti L E *et al* 1998.-Natural product medicine
8. 5. Rewatkar S.B. et al (2016) Traditional study of selected gum sample of Gadchiroli district of
9. Maharashtra; Gurukul International Multidisciplinary Research Journal ;ISSN No 2394-9426; 172-175
10. 6. Mathai, K. (2000) nutrition in the adult years in Krause's food, nutrition and diet therapy, 10thed.,
11. ed.L.K. Mahan and S.Escott – Stump, *American cancer society*, 271:274-275.
12. 7. Pankaj Oudhia., Traditional medicinal knowledge about useful herb Punarnava (*Boerhaavia diffusa*, family Nyctaginaceae) in Chhattisgarh Plains, India, Available at: http://botanical.com/site/column_poudhia/138_punarnava html (2011)
13. 8. Laddha C.S. et al ,Nutritional and phytochemical analysis of wild edible plants used by tribes of Bhiwapur tahsil Nagpur District, India.