Review article

A review of *Barleria Prionitis* L. A rarely known plant with potential of Phytochemical and Pharmacological assets

➢ ABSTRACT:

Barleria Prionitis Linn. a small perpetual, prickly shrub, belongs to the family *Acanthaceae*, normally called as "*Vajradanti'*. It is a native herb of Southern Asia and some regions of Africa India. The therapeutic use of leaf, flower, stem, seed, shoot, root and in certain cases complete herb of *Barleria Prionitis Linn.* against numerous disorders including cough, fever, jaundice, asthma, severe pain, acne, cut wound is recognized by ayurvedic and other conventional medicinal systems. The complete bibliographical research of this plant has been carried out by scientific literature, research articles and other sources, as a result, it has been found that this herb has a rich phytochemical content and a wide range of pharmacological actions such as antimicrobial activity, anthelmintic activity, antidiarrheal activity, antioxidant activity, antifertility activity, anti-diabetic activity, anti-inflammatory activity, cytoprotective activity, antiarthritic activity, diuretic activity, hepatoprotective activity, enzyme inhibitory activity and antinociceptive activity without any poisonous effects. The plant has been reported to have tannin, saponin, flavonoid, glycoside, alkaloid and phenolic compounds existing in it. It is also a noteworthy origin of secondary metabolites such as β-sitosterol, lupeol, syringic acid, and vanillic acid. However, having potential therapeutic importance, it is still underutilized.

Keywords: *Barleria prionitis*, Acanthaceae, Antidiabetic, Anthelmintic, Antifertility, Antiviral.

➢ INTRODUCTION:

After the time plants are always used as food, medications and other use. There are thousands of species which are known for their potential medicinal properties while many of them are Still need to be discovered as a potential drug targets and their active drug molecules. India is not only known for its broad diverse culture and tradition but also known for its broad diversity of plant species because of expanded landscaping. During the last decade, use of traditional medicine has increased worldwide and gained popularity. Because of alertness of

harmful effects of modern synthetic drugs, the plant-based drugs are getting much attention for use in herbal drugs, antioxidants and cosmetics. Natural products have an important role in pharmaceutical manufacturing as potential drug sources and bio active compounds (*Portal, India Biodiversity, 2020*). generally found in India, it is distributed widely through Asia, including Sri Lanka, Malaysia, Philippines, Bangladesh, Pakistan, along with tropical Africa (*Pandey, Komal et al 2018, Banerjee, D., et al. 2012*). In India, it is a habitat at Islands of Andaman and Nicobar, Andhra Pradesh, Assam, Bihar, Chhattisgarh, Delhi, Goa, Gujarat, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Uttar Pradesh, Tamil Nadu, Uttarakhand and West Bengal (*Vasoya, Usha. et,al 2012*). Aim of study was to discover the pharmacological as well as phytochemical properties of *Barleria Prionitis L*.

- **AIMS AND OBJECTIVES**

To carried out the medicinal, pharmacological, and phytochemical properties of Barleria plant much possible. To explain the traditional uses of Barleria. *prionitis* in different medicinal systems. To provide a detailed botanic description of *Barleria. prionitis*. To discover the phytochemical constituents in *Barleria. prionitis*. To give more information about literature of this plant.

Fig 1: *Barleria Prionitis*

Synonyms: (Singh, Mahesh et al.2005**)**

Table no. 01 Synonyms

Bengali	Kantajinti, Peetjhanti
English	Yellow nail, dye plant, Porcupine flower
Gujarati	Kantashila
Kannada	Karunta, Mullugorante
Malayalam	Chemmulli, Varelmutti
Marathi	Kate koranti, Kholeta, Koranta, Pivala koranta
Telugu	Mullugorintachettu

The plant is about 1.5 meters tall and its flowers are equally broad as well as tubular, packed in bunches tightly together at the top of the herb, mainly yellowish or whitish, approximately 3-4 cm in length, whereas fruits are capsular and ovoid: two fairly large, flat, enveloped by matted hair with a sharp-pointed beak, about 8 mm long and 5 mm wide. Its concise leaves contain 5-20 mm elongated pale-colored spines which are about 3-10 cm in length and 1.5-4 cm broad. Its stems are cylindrical, stiff, round, and glabrous in feature having grey or light tan colour (*Sharma, P., et al.2013, Khare, C. P. et al.2007*).

The Macroscopic Characters of *Barleria Prionitis* Cristata Linn. Leaf:

Table No.2 The Macroscopic characters of *Barleria prionitis* Linn. Leaf

Sr.No.	Macroscopic Parameter	Observation
1	Colour	Dark green on the upper surface and pale green on the lower surface
2	Odor	Characteristic
3	Taste	Tasteless
4	Habit	Erect; Perennial shrub
5	Shape	Ovate elliptical
6	Dimensions	3-14 × 1-3.5 cm
7	Apex	Acute or acuminate

8	Margin	Entire
9	Venation	Reticulate
10	Leaf base	Cuneate or Attenuate
11	Petiole	Petiolate

Taxonomical Classification: (*Bhogaonkar, P. Y et, al. 2012***)**

Table no.2: Taxonomical classification

01.	Kingdom	Plantae
02.	Subkingdom	Tracheobionta
03.	Division	Magnoliophyta
04.	Class	Magnoliopsida
05.	Subclass	Asteridae
06.	Order	Scrophulariale
07.	Family	*Acanthaceae*
08.	Genus	*Barleria Species - Prionitis.*
09.	Botanical name	*Barleria prionitis*
10.	Family	*Acanthaceae* (Acanthus family)
11.	Synonyms	Barleria appressa, Barleria coriacea, Barleria spicata

- **MATERIALS AND METHODS**

Phytochemical assessment:

It is an economical plant due to the abundance of efficacious secondary phytoconstituents. The blossoming tops and the leaves are loaded with potassium salts *(Ghatapanadi, S. R., et, al. 2011).* Researchers have isolated and distinguished phytoconstituents such as flavonoids, alkaloids, tannins, saponins, terpenoids, steroids, essential oils as well as phenolic compounds from its leaf by different qualitative tests such as.

Test for the detection of phytochemical:

- Alkaloids by Hager's reagent test, Mayer's reagent test, Wagner's reagent test, and Dragendroff's 's reagent test.
- Flavonoids by testing with alkaline reagent and Shinoda test.
- Saponins by Frothing test.

- Terpenoids by di-nitro phenyhyldrazine test.
- Phytosterol by Liebermann's test and Liebermann–Burchard test.
- Phenolic compounds and tannins by lead-acetate test, FeCl3, and bromine water test.
- Essential oil by Sudan III test.
- Amino acids and proteins by Millon's test, Biuret test, and Ninhydrin test.
- Carbohydrates by Benedict's test, Fehling's test and Molisch test.
- Glycosides by Borntrager's test and legal's test.

➢ OBSERVATION AND RESULT

Activities of Some Selected Phytoconstituents Isolated from *Barleria Prionitis:*

Plant Part	Phytoconstituent	Class	Possible Activity	Ref.
Aerial part	Barlerinoside	Phenylethanoid Glycoside	GST inhibitory activity	*(Chen, Jian Lu, et al.1998)*
	Lupulinoside	Iridoid Diglucoside	Antioxidant activity	
	7-methoxydiderroside	Secoiridoids	Antioxidant activity, antiviral activity	
	Balarenone	Terpenoid	Glutathione S-transferase and acetylcholinesterase inhibitory activity, antibacterial activity	*(Aneja, Kamal et al 2010)*
	Lupeol	Triterpene	Anti-inflammatory and anti-cancer, glutathione s-transferase and acetylcholinesterase inhibitory activity, antibacterial activity	
	Apigenin7-O-β-D-glucoside	Glycosyloxy Flavone	Antibacterial activity, anti-inflammatory activity, ant-ioxidant activity	*(Aneja, Kamal et al 2010)*

	Luteolin-7-O-glucoside	Flavone	Antibacterial activity, antioxidative activity, antimicrobial activity, hepatoprotective activity, anti-inflammatory activity	*(Chen, Jian Lu, et al.1998)*
	Pipataline	Terpenoid	Enzyme inhibitory activity, antioxidant activity	*(Aneja, Kamal et al 2010)*
	Barlerin	Iridoid Glycosides	Antioxidant activity, antiviral activity, anti-cancer activity, enzyme inhibitory activity, anti-inflammatory activity	*(Chen, Jian Lu, et al.1998)*
	Acetyl Barlerin		Antioxidant activity, antiviral activity, anticancer activity, enzyme inhibitory activity, anti-inflammatory activity	*(Ata, Athar et al. 2011)*
	Shanzhiside methyl ester		GST, ache inhibitory activity, antioxidant activity	

Medicinal uses:

Flower has many medicinal properties including treating fever, respiratory diseases, toothache, joint pains and a variety of other ailments; and it has several cosmetic uses. A mouthwash made from root tissue is used to relieve toothache and treat bleeding gums. The whole plant leaves, and roots are used for a variety of purposes in traditional Indian medicine

(*Ata, Athar et al. 2011*). Parts of plant are unpleasant in test and these are regarded in Myanmar as highly beneficial for skin diseases (*Jaiswal, S. K., et al. 2010*).

Chemical constituent:

The *Barleria Prionitis* leaves and flowering tops are rich source of potassium salt (*Maji, A. K., et al. 2011*). Preliminary phytochemical analysis of hydro methanolic extract of B. prionotis whole plant indicated presence of flavonoids, glycosides, saponins, tannin and steroids (*Sharma, P., et al. 2013*). Phytochemicals isolated from *Barleria prionitis* such as barlarenone, pipataline, lupeol, prioniside A and prioniside B. Chromatographic study of alcoholic extract of Barleria prionitis revealed the presence of iridinoid glycosides such as acetyl barlerin (*Jaiswal, S. K., et al. 2010*).

Traditional Uses:

Several traditional uses of this plant are as follows:

- **Disorders of respiratory system**: ***(****Jaiswal, Sunil k., et al. 2010,)*

Dried bark as well as roots are used as expectorant to treat whooping cough, Ash of the whole plant is used for asthma.

- **Pain fever and inflammation**: *(Aneja, Kamal et al 2010)*

Paste of the seeds is used to treat oedema, entire plant is used to treat tonsillitis, joice of the leaves is used to treat fever.

Pharmacological activities of *Barleria prionitis* Linn.:

1. **Anti- inflammatory and anti-nociceptive activity: *(****Jaiswal, Sunil k., et al. 2010)***

50% ethanolic extract of the flower of B. prionitis in experimental animals shows anti-inflammatory as well as anti-nociceptive activity.

2. **Mast Cell Stabilization and Membrane Protection Activity: *(****Maji, A. K., et al. 2011****)***

Whole plant hydro-alcoholic extract of *Barleria prionitis* L. shows mast cell stabilization and membrane protection activity.

3. **Anti-bacterial Activity: *(****Kumari, Purnima., et al. 2013****)***

The methanolic extract from fresh callus cultures of *Barleria prionitis* which was cultured on MS medium fortified with IAA (2.0 mg/l) and BAP (1.5 mg/l) for 2 - 12 weeks was observed and examined for the potency of their phytochemicals against dental caries pathogens. It kills dental caries producing pathogens and shows anti-bacterial activity.

4. **Anticataract Activity: *(****Atif, Mohammed., et al. 2015****)***

Oral administration of *Barleria prionitis* significantly delayed the onset and progression of cataract in selenite as well as galactose induced cataract in pups.

5. **Antifertility Studies: *(R.S. Gupta, et, al. 2000)***

Oral administration of root extract of *Barleria prionitis* L. to male rats (100 mg/rat per day) for the period of 60 days did not cause body weight loss. The root extract brought about an interference with spermatogenesis. The round spermatids were decreased by 73.6% (P50.001). No significant change was found in the population of secondary spermatocytes.

6. **Antifungal Activity: *(Pal, Anita, et al. 2018)***

Natural dye extracted from aerial parts of *Barleria prionitis* and different kinds of textile fabrics dyed with the natural dye were investigated for their antifungal activity.

7. **Antimicrobial Activity: *(Panchal, Priyanka et al. 2015)***

Whole plant of *Barleria prionitis* l. whole plant shows anti-bacterial property in ethanolic extract.

8. **Antioxidant Activity: *(Sharma, Piush, et al. 2014)***

Different extract of *Barleria prionitis* L. leaves and stem shows anti-oxidant activity.

9. **Central Nervous System Activity: *(Gangopadhyay, Amites, et al. 2012)***

The 70% ethanol extract of leaves of *Barleria prionitis* Linn (Acanthaceae) in Swiss albino mice. General behaviour was studied using actophotometer. According to the study, it was observed that the test drug has the stimulant activity.

➢ DISCUSSION

The review highlights the plant's significance in traditional medicine systems, particularly Indian medicine, for treating various ailments like toothache, wounds, and joint pain. This information serves as a foundation for further scientific exploration. The presence of glycosides, saponins, flavonoids, steroids, and tannins in the plant have a rich chemical profile, which could be responsible for its observed biological activities.

➢ CONCLUSION

The review of *Barleria prionitis* offers valuable insights into the plant's potential as a therapeutic agent. While further research is needed to fully understand its medicinal potential, the conclusions presented in the review provide a strong foundation for future investigations. A multidisciplinary approach involving ethnobotany, phytochemistry, pharmacology, and clinical research is essential to reveal the full therapeutic promise of this underutilized plant. The article is informative and resourceful. It will definitely help the practitioners and

researchers to do more works in the field. This study is important in terms of scientific research because of the side effects of modern synthetic drugs.

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