

Review Article

A Review about *Barleria prionitis* L.: A rarely known herb with potential Medicinal Properties

✚ ABSTARCT:

Barleria Prionitis Linn. a small perpetual, prickly shrub, belongs to the family *Acanthaceae*, normally called as “Vajradanti”. It is an indigenous herb of Southern Asia and some regions of Africa. 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. An exhaustive bibliographic research of this plant has been carried out by means of scientific engines and databases like Google Scholar, PubMed, and Science direct; as a result, it has been found that this herb possesses a rich phytochemical content and a wide range of pharmacological activities 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 toxic effects. The plant has been reported to have tannin, saponin, flavonoid, glycoside, alkaloid and phenolic compounds present 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:

From the time immortal plants always has been used as food and medicines. 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 diversified landscaping. During the last decade, use of traditional medicine has expanded globally and gained popularity. Because of awareness of deleterious effects of modern synthetic drugs the plant based drugs are getting much attention for use in herbal medicines, antioxidants and cosmetics. Natural products have a significant role in pharmaceutical industry as potential drug sources and bio active compounds [1]. Broadly found in India, it is distributed widely throughout Asia, including Sri Lanka, Malaysia, Philippines, Bangladesh, Pakistan, along with tropical Africa [2, 3]. 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 [4].



Fig 1: Varieties of *Barleria Prionitis*

✚ **SYNONYMS:** [2,5]

Table no. 01 Synonyms

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

The entire 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 [7,8].

✚ 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

✚ TAXANOMICAL CLASSIFICTION:[6]

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

Table no.3: Taxonomical classification

✚ 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 [9]. 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 viz.

(The references No. 10 to 14 were not written in the introduction)

✚ Test for the detection of phytochemical:

- Alkaloids by Hager's reagent test, Mayer's reagent test, Wagner's reagent test, and Dragendorff's reagent test
- Flavonoids by testing with alkaline reagent and Shinoda test.
- Saponins by Frothing test.
- Terpenoids by di-nitro phenylhydrazine 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.

ACTIVITIES OF SOME SELECTED PHYTOCONSTITUENTS ISOLATED FROM *BARLERIA PRIONITIS*:

Plant Part	Phytoconstituent	Class	Possible Activity	Ref.
Aerial part	Barlerinoside	Phenylethanoid Glycoside	GST inhibitory activity	[15]
	Lupuloside	Iridoid Diglucoside	Antioxidant activity	
	7-methoxydideroside	Secoiridoids	Antioxidant activity, antiviral activity	
	Balarenone	Terpenoid	Glutathione S-transferase and acetylcholinesterase inhibitory activity, antibacterial activity	[16]
	Lupeol	Triterpene	Anti-inflammatory and anti-cancer, glutathione s-transferase and acetylcholinesterase inhibitory activity, antibacterial activity	
	Apigenin 7-O-β-D-glucoside	Glycosyloxy Flavone	Antibacterial activity, anti-inflammatory activity, ant-ioxidant activity	[16]

	Luteolin-7-O-glucoside	Flavone	Antibacterial activity, antioxidative activity, antimicrobial activity, hepatoprotective activity, anti-inflammatory activity	[15]
	Pipataline	Terpenoid	Enzyme inhibitory activity, antioxidant activity	[16]
	Barlerin	Iridoid Glycosides	Antioxidant activity, antiviral activity, anti-cancer activity, enzyme inhibitory activity, anti-inflammatory activity	[15]
	Acetyl Barlerin		Antioxidant activity, antiviral activity, anticancer activity, enzyme inhibitory activity, anti-inflammatory activity	[17]
	Shanzhiside methyl ester		GST, acheinhibitory activity, antioxidant activity	

MEDICINAL USES:

Flower has numerous 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 [17]. Parts of plant are bitter in test and are regarded in Myanmar as highly beneficial for skin diseases [18].

CHEMICAL CONSTITUENT:

The *Barleria Prionitis* leaves and flowering tops are rich source of potassium salt [19]. Preliminary phytochemical analysis of hydro methanolic extract of *B. prionotis* whole plant indicated presence of flavonoids, glycosides, saponins, tannin and steroids [20]. Phytochemicals isolated from *Barleria prionitis* such as barlarenone, pipataline, lupeol, prioniside A and prioniside B. Chromatographic study of alcoholic extract of *baeleria prionitis* revealed the presence of iridinoid glycosides such as acetyl barlerin [18].

TRADITIONAL USES:[21]

Several traditional uses of this plant are as follows:

- **Disorders of respiratory system:**

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

- **Pain fever and inflammation:**

Paste of the seeds is used to treat edema, entire plant is used to treat tonsillitis, joice of the leaves is used to treat fever. (**Reference ?**)

PHARMACOLOGICAL ACTIVITIES OF *BARLERIA PRINITIS* LINN.:

1. Anti- inflammatory and anti-nociceptive activity:[21]

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:[22]

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

3. Anti-bacterial Activity:[23]

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:[24]

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:[25]

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:[26]

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:[27]

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

8. Antioxidant Activity:[28]

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

9. Central Nervous System Activity:[29]

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

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