

Phytochemical Property of Barleria Acanthophora Nissleaves (Acanthaceae)

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ABSTRACT-

Barleria acanthophora niss is a plant species that belongs to the Acanthaceae family, which is the third largest genus. A few of the most important species of Barleria are Barleria priorities, Barleria cristata, Barleria grandiflora, Barleria lupulina, and Barleria acanthophora Barleria noctiflora. The various parts of Barleriaacanthophora, such as the flower, leaf, roots, stems, and seeds, are used for medicinal purposes. Numerous research provide evidence of antidiabetic, antimicrobial, antifungal, anticancer, anti-inflammatory, anti-arthritis, antiviral, antihypertensive, anthelmintic, and hepatoprotective properties. The study found that bioactive compounds, including flavanoids, quinones, iridoid, phenylethanoid, glycosides, and immunostimulant proteins, 'sankaranin', are responsible for the above activity. The current study aims to investigate the phytochemical composition of Barleria acanthophora leaf extracts.

I. INTRODUCTION-

It has been known for centuries that diabetes mellitus, or simply diabetes is a chronic metabolic disease [1]. In ancient Egypt, it was initially described around 1550 B.C. with symptoms similar to those of diabetes. With more than 463 million cases as of 2019 [2] diabetes is currently one of the most common non-communicable diseases worldwide. It is anticipated that by 2045, this figure will rise to 700 million. The illness is typified by chronic hyperglycemia, which can be brought on by insulin resistance (Type 2 diabetes) or the body's incapacity to create insulin (Type 1 diabetes) [3]. Due to its substantial contribution to morbidity, such as cardiovascular illnesses, renal failure, and neuropathy, diabetes has a huge worldwide health burden [4]. Novel therapeutic treatments that can prevent or manage diabetes are therefore constantly needed [5]. The Acanthaceae family includes the lesser-known medicinal herb Barleria acanthophora

[6]. In addition to its many medicinal uses in traditional medicine, B. acanthophora is becoming more well-known for its possible antidiabetic, antimicrobial, anti-inflammatory, antibacterial, and analgesic effects [7]. This plant, which is indigenous to tropical and subtropical areas, has long been used to treat a number of conditions, including pain, inflammation, and wound formation [8]. Its phytochemical composition and the precise bioactive chemicals that are thought to have therapeutic effects have not, however, been well studied scientifically, especially when it comes to the treatment of diabetes [9]. Using cutting-edge methods such as High-Resolution Liquid Chromatography Mass Spectrometry (HR-LCMS) in phytochemical research in particular [10] enable thorough bioactive compound identification and characterisation in plant extracts [11]. When profiling complicated mixtures in natural goods, HR-LCMS is a crucial technology that helps researchers identify and measure secondary metabolites that may have medicinal qualities. In order to find chemicals with possible antidiabetic properties, the phytochemical components of Barleria acanthophora leaves will be examined using HR-LCMS analysis [12]. The current study intends to investigate the phytochemical constituents from Barleria acanthophora leaves.

Characters	Name
Kingdom	Plantae
Sub- Kingdom	Tracheobionta
Division	Magnoliophyta
Class	Magnoliosida
Sub- class	Asteridae
Order	Scrophulariales
Family	Acanthaceae
Genus	Barleria
Species	Acanthophora niss.Barleria



Fig- taxonomic classification of barleria acanthophora



Fig- distribution map of species of Barleria in India
(www.researchgate.net)

Plant profile

Barleria acanthophora [9]

scientific name : acanthophoraBarleria

Family: Acanthaceae

CommonNames : Not well-known by common names; regional variations may occur based on the local tongue.

Originanddistribution : Barleriaacanthophora is indigenous to tropical and subtropical areas, mainly in South-east Asia, India, and parts of Africa. Common locations for it are grasslands, open woodlands, and the sides of roadways.

Morphology: A tiny, upright shrub, Barleriaacanthophora usually reaches a height of 0.5 to 1 m. It has elliptic to ovate leaves on opposed woody stems. Depending on the species, the tiny, funnel-shaped flowers produced by the plant are frequently white, yellow, or purple. Many members in the Acanthaceae family have sharp thorns or spines on their stems to identify them.

Cultivation : Barleria grow un warm tropical regions with well-drained soil are ideal for the plant's growth. It needs little maintenance and can survive in moderate shade, though it prefers full sunlight. Usually, stem cuttings or seeds are used for propagation. Once planted, it can withstand drought conditions and thrives in untamed, wild places.

Traditionalmedicinaluses : [17] Because of its therapeutic qualities, Barleriaacanthophora has been utilised traditionally in many cultures. Skin infections, inflammation, discomfort, and fever are among the conditions it has been used to treat. The leaves are frequently used to make pastes or decoctions that are applied topically to wounds and skin conditions. It has also been utilised to treat respiratory and digestive disorders. It is believed that the plant has antibacterial, analgesic, and anti-inflammatory qualities.

CurrentResearch : [18] Recently, research has begun to concentrate on Barleriaacanthophora's pharmaceutical potential. Research has focused specifically on assessing its anti-inflammatory, antibacterial, and antidiabetic properties. Its potential to manage diabetes is indicated by a few in-vitro studies that showed it might inhibit important enzymes like α -amylase and α -glucosidase, which are essential for glucose metabolism. Its function as an antioxidant and in wound healing have been investigated in more detail.

PotentialTherapeuticApplications : [15] [17] Due to its enzyme-inhibiting qualities that are important for glucose regulation, Barleriaacanthophora has the potential to be used therapeutically in the treatment of diabetes, according to both traditional use and new scientific research. Its use as an analgesic for pain relief, an antibacterial for infection treatment, and an anti-inflammatory for skin disorders are other possible medicinal uses. The pharmacodynamics and effectiveness of these applications require more investigation.

Phytochemical constituents : [14][16] Preliminary phytochemical studies on Barleria acanthophora suggest the presence of bioactive compounds such as flavonoids, alkaloids, glycosides, saponins, tannins, and phenolic compounds. These phytochemicals are known for their potential antioxidant, anti-inflammatory, and antidiabetic properties, which are important in the therapeutic use of the plant.

(a) **Iridoids** - [14][16] Chemicals called iridoids are monoterpenes that are produced by biosynthesis from isoprene and are also known to be

precursors in the biosynthesis of alkaloids. Iridoids are typically found in a variety of medicinal plants and are most frequently attached to glucose, just like glycosides. Purified and isolated iridoids have a wide range of bioactivities, such as analgesic, cardiovascular, anti-inflammatory, antimutagenic, anticancer, antiviral, and antihepatotoxic, choleric, and hypoglycemic effects. Ipolamide, acetylbarlerin, phloringoside, barlerin, and shanzhuside methyl ester are a few significant iridoid medicinal chemicals that can be discovered in Barleria.

(2) Phenolic Compounds - [14][16] Phenolic Compounds ((Glycosides, Acids, Lycans, and Neolignan) Naturally occurring substances called phenolic acids are found in all kingdoms of plants. Numerous biological actions, including antibacterial, anti-inflammatory, antioxidant, antidiabetic, hepatoprotective, and anticancer characteristics, are engaged in them. Phenolic acids are classified as either cinnamic acids or hydroxybenzoic acids. Among the significant phenolic acids identified in Barleria are p-hydroxy cinnamic acid, p-coumaric acid, tocopherol, melilotic acid, syringic acid, vanillic acid, and p-hydroxybenzoic acid.

(C) Flavonoids -[14][16] Flavonoids are a class of polyphenolic compounds found in the leaves, flowers, and pollen of various plants. || The main classes of flavonoids that have been shown to present a wide range of biological and therapeutic activities are flavones, flavanones, flavonols, isoflavones, and anthocyanins. Research has shown that flavonoids, or extracts rich in flavonoids, have anti-inflammatory, antioxidant, and antimicrobial properties. From several plant parts of Barleria, a total of 14 flavonoids have been extracted. These include luteolin, 7-8-methyl luteolin, apigenin, gossypetin, quercetin, tamarixetin, and 6-hydroxyflavone, scutellarin etc.

(d)- Terpenes - [14][16] Terpenes Derived from five-carbon isoprene units, terpenoids are the most abundant and structurally varied organic molecules. Terpenoids are divided into groups according to the numbers of isoprene units. Many terpenoids are derived from plants, and they are found in a variety of higher plants. The aerial parts of the entire plant were also used to isolate four terpenoid compounds: oleanolic, balarenone, pipataline, and lupeol. Terpenoids that have been extracted from plant extracts have been shown to have antiviral, antifungal, antibacterial, anti-inflammatory, and antihyperglycemic qualities.

(e) terpenoids -[14][16] Because of their nutritional and therapeutic benefits, terpenoids a significant class of lipids that are primarily found in plants and fungi are vital to humans. Beta sitosterol found in Barleria.

Pharmacological Various properties of Barleria acanthophoranees . -

According to the studies done earlier Barleria acanthophora nees is a plant which shows various activities like anti inflammatory, analgesic, antimicrobial, antiviral, antioxidant, and anti diabetic activity due to presence of phyto constituents Alkaloids, terpenes, flavonoids, lignines, and phenolic compounds without any harmful effect.

II. CONCLUSION-

A number of bioactive compounds that have been isolated from Barleriaacanthophora nees include iridoids, terpenoids, phenolics, flavonoids, and phytosterols. These compounds have a variety of biological activities, including antibacterial, antifungal, anticancer, anti-inflammatory, antioxidant, antidiabetic, hepatoprotective, and antiviral properties. The review goes into detail about the phytochemical constituents and biological activities of the plant Barleriaacanthophoranees.

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