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PHYLLODIUM PULCHELLUM: A POTENTIAL MEDICINAL PLANT- A REVIEW

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ABSTRACT

Phyllodium pulchellum is an important medicinal plant belongs to Fabaceae family. The plant is widely used to treat various diseases such as anti-inflammatory, analgesic, antioxidant, haemorrhage, diarrohoea, poisoning and eye diseases. This review gives a brief compilation of its phytochemical and pharmacological properties.

Key words: *Phyllodium pulchellum*, Fabaceae, Folklore, Medicinal Plant, Anti-diabetes

INTRODUCTION

India is enriched with vast resources of medicinal plants, which have been extensively used in various traditional Indian systems of medicine. The report also showed that India is one of major suppliers of medicinal plants with an annual turnover of herbal products worth Rs.23 billion which includes condiments and food additives, herbal extracts, essential oils, gums, resins, crude drugs, etc [1]. Because of more adverse effect of synthetic products in therapy, the interest and usage of medicinal plants have increased tremendously in Asian and Western countries. According to WHO, approximately 80 % of the population in developing countries depends on traditional medicine, mostly plant drugs for their primary health care needs. The All India Ethnobiological Survey (AIES) carried out by the Ministry of Environment and Forests revealed that 7,500 plant species belonging to 386 families are used by 4,635 ethnic communities for health care across the country [2]. Many of the plants used today were known to the people of ancient cultures throughout the world and were highly considered their preservative and medicinal powers. Scientific experiments on the antimicrobial properties of plants and their components have been documented in the late 19th century [3].

Phyllodium is a widespread legume genus of more than 350 species occurring throughout tropical and subtropical regions in open woodland and forest clearings [4]. Its centre of origin and most important centre of diversity is South-east Asia [5]. The genus includes mostly pernennial herbaceous plants or subshrubs. A number of species are successful or have shown potential as pasture and forage plants and cover crops.

***Phylldoium pulchellum* (L.) Benth.,**

The plant is distributed in the tropical areas and widely distributed in Bangladesh, India, Srilanka, and Southern China [6].

Taxonomic classification

Kindom – Plantae; **Division** – Phanerogamae; **Class** – Magnoliopsida; **Sub Class** – Polypetalae; **Series** – Calyciflorae; **Order** – Rosales; **Family** – Leguminosae; **Sub family** – Fabaceae (Papilionaceae)

Synonyms

Desmodium pulchellum (L.) Benth., *Dicerma pulchellum* (L.) DC., *Hedysarum pulchellum* L., *Meibomia pulchella* (L.) Kuntze & *Zornia pulchella* (L.) Pers.

Vernacular names

Assamese - Ursi, **Hindi** –Jatsalpan, **Kannada** - Kadunhuralite, Jenukaddi, Kadumuduru, **Malayalam** - Katumudura, Kattumutira, **Oriya** –Salaparni, **Sanskrit** - Lodhrah, Lodram, **Tamil** –Vellalothi, **Telugu** - Kondontinta, Karrantinta, **Others** -Showy Desmodium,

Description of the plant

Phyllodium pulchellum is a stoutish shrub (1.2 – 1.5m high), characterized by its finely grey-downy branches, leaves 3-folioate, ovate to oblong leaflets,

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narrowly triangular stipules, orbicular persistent bracts which conceals the flowers and fruits, white corolla, and short incurved style covered with appressed hairs. Flowers yellow, in axillary or terminal racemes 7.5-25 cm long. Pods 3-6 mm long, indented on both sutures (Figure 1, 2a & 2b).

Figure 1. Illustration of *Phylldoium pulchellum*

1. Flowering and fruiting twig (*Phylldoium pulchellum* (L.) Benth.,)
2. Floral bracts;
3. Flower;
4. Details of corolla;
5. Stamina column with pistil &
6. Pod.

Figure 2 (a). Natural Habitat

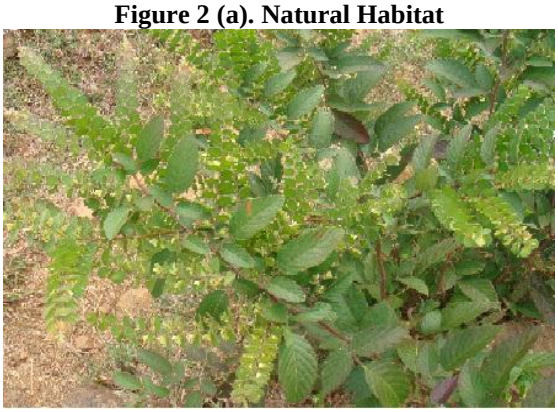
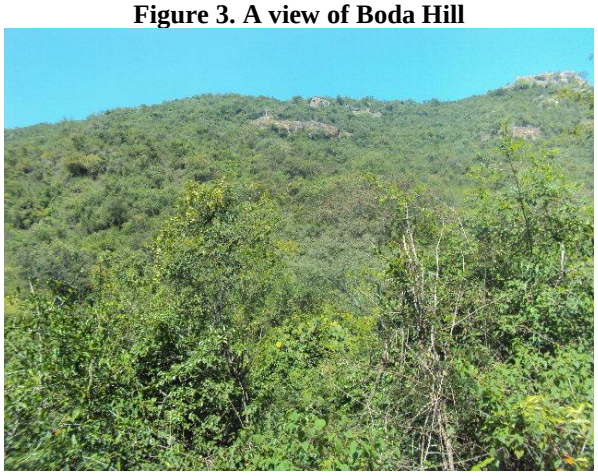


Figure 2 (b). Closer View

Study area

Boda hill is situated in Southern Eastern Ghats comes under Rasipuram Taluk, Namakkal district. Boda hill is a 1,200 meters (3,937.0 ft) mountain in the Eastern Ghats of South India. It lies between 11º14'46" - 12º53'30" North latitude and between 77º32'52" - 78º53'05" East longitude and it has an elevation of 881 meters above sea level. Boda hill is in an area with a humid subtropical climate (Figure 3).

Figure 3. A view of Boda Hill



In this plant were collect from the Jambhuthu malai (Village), Boda hill of Namakkal District, Tamil Nadu. The plant specimens were identified with the Botanical Survey of India (BSI) Coimbatore, Tamil Nadu, India. Jambhuthu malai is a small village, and it is located 30 KM towards east from Namakkal district.

Pharmacological properties

Anthelmintic: Study on effects of *D. pulchellum's* root extract showed the herb may have an antihelmintic effect on the fluke *Opisthorchis viverrini* in hamsters [7].

Behavioral Effects: Study of extract of *D. pulchellum* in mice showed an activity mediated via the serotonergic system and suggested a potential for the extract as a useful antidepressant [8].

Anti-Hepatofibrotic: Study showed *D.pulchellum* extract has anti-hepatic fibrotic effects on rats with hepatic fibrosis induced by CCl4. The mechanism may be through increasing the liver cell immunity against injury and indirectly reducing the formation of liver collagen protein [9].

Anti-Diarrheal / Leaf Extract: Study evaluated a methanol and petroleum ether extract for activity against castor oil-induced diarrhea and enteropooling and intestinal motility in rats. Results showed significant reduction of diarrheal severity and significant reduction of intestinal volume. Both fractions showed active ingredients, but the ethanol fraction showed better potential [10].

Anti-inflammatory activity: The investigations was carried out in Albino (Wistar) rats at different dosage of

100, 200 and 400 mg/kg of ethanolic extract of *D. pulchellum* barks by using carrageenan induced paw edema and cotton pellete granuloma technique. The results of the study suggested significant dose dependent activity of extracts as compared to control group for both acute and chronic inflammation [11].

Anti-diabetic activity: The ethanolic extract of *D.pulchellum* barks on alloxan-induced diabetic rats was investigated using animal models. The results suggested that the ethanolic extract of barks contribute to the reduction of blood glucose levels.

Furthermore, the decoction of the bark is used in haemorrhage, diarrhoea, poisoning and eye diseases. Flowers are used in biliousness. Ethanol 50%) extract of the plant is hypotensive and spasmogenic [12]. Its roots are used for burning sensations in the abdomen, flowers are used for dental caries and stem bark is given for head-ache [13].

Folkloric uses

In India, paste of root mixed with sugar candy used for abdominal and chest burning discomforts. The peoples in Bangladesh, bark decoction used in hemorrhage diarrhea, poisoning and eye diseases. Flowers used in biliousness. In Andhra Pradesh, India, leaves used for wounds.

Chemical constituents

The plant contains alkaloids, bufotenin and its methyl ether, N, N-dimethyltryptamine and its oxide, two tryptamine derivatives, gramine, 15 indole-3-alkylamine bases of tryptophan, β-carbolines and several quaternary derivatives. Seeds contain galactomannan and *l*-glucosyl rhamnoside of physcion. Roots contain betulin, α-amyrin and β-sitosterol (Ghani, 2003). Study yielded fifteen simple indolic bases (I-XV) with three broad structural types, viz., indole-3-alkylamine, ß-carboline, and tetrahydro-ß-carboline. Fruits showed the major accumulation of Nb-oxides while the roots localized the quarternary bases [14]. As seen throughout this review, we have listening carefully on botanical description, ethnomedicinal uses, phytochemistry and pharmacological activities of *Phyllodium pulchellum*. It is believed that detailed information presented in this paper would help the researchers and scientist to get aware of this plant and extensive research should be undertaken on *Phyllodium pulchellum* for establishing new therapeutic drugs for ailments.

CONCLUSION

In recent years, the ethnobotanical and traditional uses of natural compounds, especially those of plant origin, have received much attention since these compounds are often very effective and generally believed to be safe for human use. *Phyllodium pulchellum* has been used successfully in traditional Ayurvedic medicine for centuries, more clinical trials should be conducted to support its therapeutic use. *P. pulchellum* is investigated for many pharmacological activities but still there is paucity for the mechanism and bioactive principles that are responsible for the activities. Further researches in view of fulfilling the need of standardization for the various constituents and extracts are desired.

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