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PSILOTUM NUDUM: A NEW MEDICINAL PTERIDOPHYTE RECORD FOR THE CRYPTOGAMIC FLORA OF SIRUMALAI HILLS, DINDIGUL DISTRICT, TAMILNADU, INDIA

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Abstract

The cryptogamic Flora of Psilotum nudum, belongs to the family Psilotaceae. Psilotum nudum is recorded for the first time from Sirumalai hill, Dindigul district, Tamilnadu. Habitat of the plant, important synonyms, morphological and palynological descriptions, plant's photograph and medicinal uses are provided. Furthermore, the conservation of this species in Sirumalai is aiso suggested.

Key words*: Psilotum nudum, Pteridophyte, Sirumalai hill, Ethnobotanical usage.*

Introduction

The Sirumalai hills situated in Tamil Nadu known for its rich biodiversity. It lies in Dindigul district, between $10^0$00' -$10^0$30' N & $77^0$33' -$78^0$15' E and at altitudes ranging from 400 to 1650 m. The lower hill ranges consist of highly disturbed scrub forests while tropical dry deciduous forests occupy the major portion of middle hill ranges. Semi-evergreen forests occur in the higher elevations and along valleys. Woodland savannahs are found along slopes. Bestowed with several endemic and medicinal plants, this hill range is facing severe threats owing to the growing anthropogenic disturbances and increasing coffee estates, rubber plantations, orchards and cultivation of several vegetable crops.

The diversity of plants increased in the Devonian period with the appearance of vascular plants. A small group of vascular plants in which the vegetative and reproductive structures remained undeveloped, one living member of that group is known as Psilotum nudum (Ray et al., 1983). "Psilotum" is a Greek word while "nudum" is a Latin word; both of these words mean "naked" in the respective languages (Nazarian et al., 2010). Psilotum nudum also known as Whisk Fern (Qiu & Palmer, 1999) is a Pteridophyte belonging to family Psilotaceae of the division Psilophyta and is one of the most primitive vascular plants. It is the single living member of a populated division of the primitive times and has survived for about 400 million years (Yamazaki et al., 2001).

Medicinally it is important for wound healing. People of Hawaii use its spores as talcum powder (Foster &Gifford, 1974). The oily spores given to infants to arrest diarrhoea. (Benjamin and Manickam 2007) In India it is used for treatment of diarrhoea (Mannan et al., 2008) and the herb juice showed antibacterial activity against Miocrococcus pygenes and Psuedomonas nerugionsa and also used as purgative (Pratibha Kumari et al 2011).Whole plant decoction is mixed with turmeric and applied over the affected places to heal wound

by the Malayali tribes (Revathi et al 2013). The whole plant parts are soaked in water for an hour and the decoction thus obtained is mixed with turmeric and applied to heal wounds by the people of Kolli hills (Karthik et al 2011)

Psilotum nudum is widely distributed in tropics and sub-tropics of the Old and New Worlds, extending from northward to Japan and Korea (Zhang & Yatskievych, 2013). It grows as an epiphyte in the tropics and occupies rock crevices in the more temperate areas like south-eastern Australia (Fairley & Moore, 1989). In spite of its rich plant wealth, the Sirumalai hills have not been completely studied floristically in the recent times except 'A Pocket Flora of the Sirumalai Hills, South India' (Pallithanam 2001). It enumerates 895 species belonging to 536 genera of higher plants (excluding exotics). Subsequent to this pioneering work, for nearly half-a-century, only a few collections (Karuppusamy et al. 2001; Kottaimuthu et al. 2008 a&b) have been made in the recent past in this hills.Botanical surveys were conducted in 2005 to 2008 , by ATREE 85 taxa were reported additionally to the flora of Sirumalai hills (Vijaya Sankar et al 2009). All the above works were conducted to enumerate the diversity of angiosperms and no works carried out on cryptogamic plants especially on pteridophytes except some studies on view of medicinal plants. (Kottaimuthu 2008).

So far, Psilotum has not been recorded from any part of Sirumalai hills neither in wild nor in cultivation. There is no study published literature on the plant in Sirumalai hill. The objective of this paper is to introduce Psilotum nudum to the Cryptogamic Flora of Sirumalai hills along with its ethno botanical description. This study will also help to understand geographical range of Psilotum nudum and potential of adaptability to different sets of climatic conditions over the globe.

Materials and Methods

Plant material was collected, pressed, mounted on herbarium sheet and deposited in the herbarium of Vivekananda collage Thiruvedakam west, Madurai District. The specimens were photographed and observed under microscope for morphological features.

Ecology and Conservation Status

During plant collection for research purpose, the authors had the chance to collect Psilotum nudum from Sirumalai hill in the field owned by Mr.M. Chandrasekar (survey number 1247) and the latitude and longitude is 10.16066 and 77.98502 respectively. The MSL of the collected area is 1200 m. Although the area has been visited several times but only a single population of Psilotum nudum was identified. The plant was found on a trunk base of Ficus microcarpa L.f. tree which is locally called as Kal itchi. Single population of this species in the collection area is reflecting its rarity. Therefore, the plant needs in-situ and ex-situ conservation in Sirumalai hill.

Morphological Description

Psilotum nudum (L.) P. Beauvois, Prodr. Aethéogam. 112. 1805. Syn. Lycopodiumnudum Linnaeus., Bernhardia antillarum Müll. Hal., Bernhardia dichotoma Willd. Ex Bernh., Hoffmannia aphylla Willd., Psilotum domingense Gand., Psilotum floridanum Michx., Psilotum triquetrum Sw., Psilotum triquetrum var. gracileGrev. & Hook. Perennial small or medium size herb, rhizome prostrate, rhizoides present; stem green, herbaceous, erect, dichotomously branched, glabrous, glaucous; main stem 10-11 cm x 1 mm, secondary branches 1.5-2.5 cm x 0.8 mm, tertiary branches 9-11 x 0.6 mm; internodes 3-18 mm long, longitudinal ridges irregular, stem usually leafless. Leaves spirally arranged when present, adpressed to the stem, minute, scale like, sessile, green or brownish, c. 1 x 0.4 mm, apex acute, margins entire, veins obscure. (Figures 1 & 2).

Figures 1, 2: Psilotumnudum - Field photographs

Ethno Medicinal Usage by the Local Tribes

Psilotum nudum is locally called as “Parai masiri” The plant paste along with turmeric is applied to cure prolonged wounds. The decoction prepared from the plant is used as an antiseptic to wash the wound.

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