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## Ethnobotanical and Medicinal Practices of *Hoya wightii* Hook.F. Used by Ulladan Tribes in Alappuzha District, Kerala



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HUMAN

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### ABSTRACT

The ancient people had a thorough knowledge of herbs and climbers useful to their day to day life. *Hoya wightii* Hook.f. is a medicinal plant commonly seen the evergreen forests used by ulladan tribes for the fast relief of muscular injuries. Moreover the plant has its own importance because its vulnerability and endemism. Alappuzha is the smallest district in Kerala without any reserve forest and mountain range. Ulladan tribes directly collect the plant from sacred groves and prepare *Ellodiyam* lehya, kanji and other medicinal porridge at their own home.



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## INTRODUCTION

The most recent definition of Ethnobotany specifically examine how people of a particular culture and religion make use of indigenous plants. The tribal people primarily depends forest flora to meet their daily needs and to treat various diseases and disorders. Ethnobotany develops in the field of the dynamic relationships between indigenous people and local flora. Kerala has a Well-known history in *Ayurvedic* treatment using plants to treat various diseases. The traditional knowledge of different plants is safe and secure with the indigenous people associated with forest. *Ulladans* (Fig C) are the group of pure tribal religionists. *Ulladans* are also known as *Nayadi* and colloquially as *Nadi and their* main economic resource is land and forest. Traditionally, the Ulladan are foragers, Wood cutting, canoe making, bee-keeping, basket making, mat weaving etc., are also practiced by them. Till recently, it was common sights in the rural parts of Kerala to see Ulladan, both men and women, with a pole in hand wander in and around the fences and kavu in search of rats, tortoises and other animals. During their wandering, they collect honey, medicinal plants, canes, pandanus leaves, bamboo etc. (*Kerala institute for Research Training & Development studies of Scheduled Caste and Scheduled Tribes*).

## Materials and Methods

The study was conducted at different regions of Alappuzha District. The settlements of Ulladan tribes were visited during the study for collecting plant specimen. Personal interviews are conducted the guidelines provided by the promoters of District Tribal Extension Office Alappuzha. Semi structured questionnaires, documentation, field collections are conducted during the course of the study. Photographs are taken by the time of field work to obtain taxonomic data for the identification of the plant species.

## Results

Systematic position of *Hoya Wightii* Hook.f.: Kingdom : Plantae, Division: Tracheophyta, Class: Magnoliopsida, Order: Gentianales, Family: Asclepiadaceae, Genus: *Hoya*, Species : *Wightii*

Vernacular name: *Ellodiyan* , *nannaripacha* (Malayalam)

Life form of the species: Climber.

Habitat: Evergreen forest

Endemism: Endemic to Southern Western Ghats.

Distribution in Kerala: Kannur, Wayanadu, Palakadu, Idukki, Alappuzha, Thiruvananthapuram and Pathanamthitta.

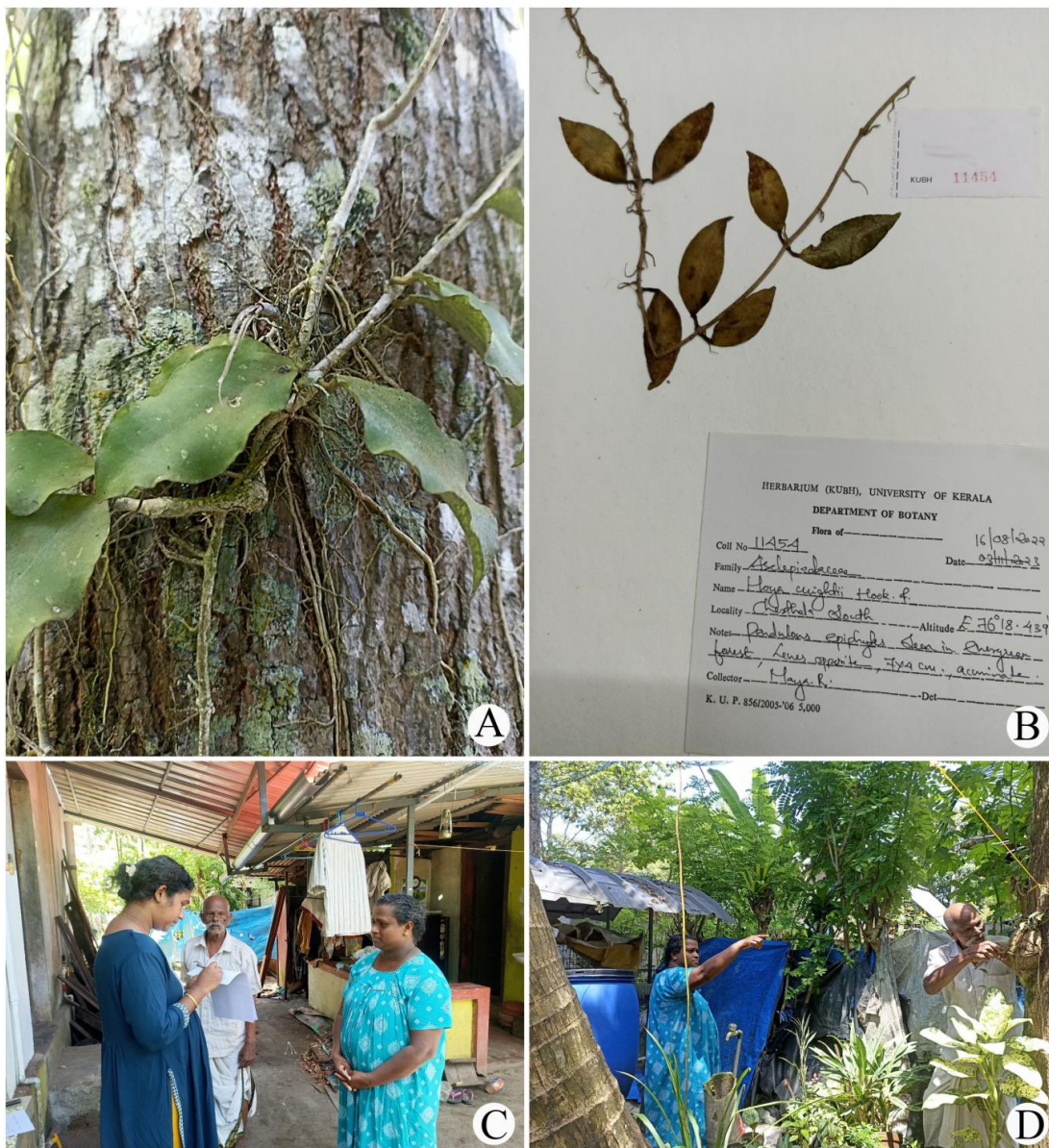
*Hoya wightii* Hook.f, is climbing member of family Asclepidaceae (Fig A). The plant is a pendulous epiphyte mostly seen in the evergreen forest and endemic to the south Western Ghats with altitude of 1000-1600. Leaves simple, glabrous, opposite about 7X4 cm. Stem thick, petiole 2cm, flowers yellowish white, pedicellate, lobed. Corolla 5, about 2cm of fleshy lobes, deep purple, seeds 4. The flowers of genus *Hoya* was much importance due to the presence of stamina corona with proximal part of the lobe and presence of anther skirt in the basal part. Flowering and fruiting: April-August.

*Hoya wightii* Hook.f. is a woody trailing herb and highly vulnerable species in Western Ghats of Tamilnadu, India (Mathew 1999). *Hoya* plants are widely exploited for both medicinal and for ornamental purposes. The genus *Hoya* was discovered by Robert Brown in 1810 and placed in *Apocynaceae*, one of the largest family containing 367 genera with 539 species (Varsha, Sneha et, al 2022). Robert Brown and his fellow botanist Thomas Hoy together named the genus in accordance with the special features of the plant and their relatives. According to the life form of the plant the genus *Hoya* broadly classified into three, namely the lianas, epiphytes and scandent shrubs. And due to the presence waxy coating of the leaves and flowers are collectively called wax pant or wax flower. Most of the species of the genus *Hoya* occur in the tropical and subtropical regions of Asia extended to west Pacific belts (Revathi Lakshmi, Franklin Benjamin et. al, April 2010).

The species of the genus *Hoya* R.Br. are twining or climbing epiphytic shrubs or herbaceous climbers belonging to the family *Apocyanaceae* and encompasses numerous species. Most species are growing as epiphytes in the rainforests. The plants are basally woody, and with twining or pendulous stem developing adventitious roots from the internodes. The genus *Hoya* is characterized by persistent inflorescences with flowers having rotate corollas, staminal coronas with revolute margins, pollinia with pellucid margins, and narrow, spindle-shaped seeds without conspicuous wings. The leaves are fleshy and glabrous. Flowers two to numerous in sessile clusters or in peduncled umbel like cymes (Wanntorp et al., 2006a; Wanntorp et al., 2006 b; Bhat, 2014).

The specimen collected from Cherthala taluk of Alappuzha district at 16/08/2022(E76<sup>0</sup>18.439') and kept in the herbarium of Department of Botany (KUBH), University of Kerala, Kariavattom. Voucher/Accession number: KUBH11330 (Fig B)

The available literature reveals that the plant *Hoya wightii* Hook.f. has tremendous ethnobotanical significance among Ulladan tribes in Alappuzha. The traditional knowledge of *Hoya wightii* is helpful for the ulladan tribe for their lively hood diversification. Because each leaves of the ellodiyan plant gives ten rupees in the market.



**Fig A:** A climbing twig of *Hoya wightii* Hook.f. (Ellodiyan) **Fig B:** Herbarium specimen of *Hoya wightii* Hook.f. **Fig C:** Data collection from ulladan tribes **Fig D:** Image showing Ellodiyan plant management during Covid-19.



The people collect the plant from nearest sacred groves and directly hand over the ayurvedic shop and also sell it to the local people for their direct usage. Commonly 5-7 fresh leaves used for preparing the leaf paste for the fast relief of joint pain. Ulladan said that *ellodiyana* plant was so difficult to collect during the *Covid-19* season (Fig D). So that they have planted it at their own premises for better management and also set the plant as an indoor plant to create fresh air to home because of its filtration gives more positive atmosphere. On the other hand it is the better way of in-situ conservation of the plant from habitat destruction.

### ***Medicinal uses of ellodiyana plant***

**Ellodiyana leaf paste :** Collect 7-12 fresh ellodiyana leaf and soak it for 10 minutes. Grind the leaves into a paste. Use the leaf paste by applying the injured skin area for 20 minutes or until it has nearly dried. This pack is good for reducing the muscular pain and swelling.

### ***Ellodiyana lehya***

**Preparation:** Boil 1 glass of water with 100 grams of red rice to it and continue boiling by adding bark of *cocos nucifera* (L.), *Lannea coromandelica* L., *Thespesia populnea* (L.) and leaves of *Hoya wightii* in 1:1:1:1 ratio. Stir the mixture very well and add adequate water for cook the rice and boiled till it becomes  $\frac{1}{4}$  th of its original volume. Ghee and jaggery is used for better taste to eat. Finally it is removed from heat and allows cooling for a semi-solid-jam like consistency. Approximately 250 grams of fresh leaves are used for preparing this *lehya* and it is rich in energy rich carbohydrates and best for muscular pain as well as borne cancer.

***Hoya-special kanji (Ellodiyana- kanji-)*** A medicinal porridge: This one is a special medicinal porridge traditionally popular among ulladan tribes in the month of *karkidakam*. During monsoon season it gives a positive effect to our body. Recommended consumption of this kanji is for at least 7 days for good result.

**Preparation:** Boil two glass of water with 200 grams of red rice and continue boiling. Add 150 grams of *Hoya wightii* Hook.f. to it and stir well. Once the rice gets cooked add one cup of coconut milk and cumin seeds, then allow it to cool. Serve when it cools to get good result in a week during the rainy season. The plant is also an antioxidant, good for allergies, heals wounds and good for joint pain and borne cancer. Moreover the phytochemical studies shows the presence of alkaloids, phenolics, steroids, flavonoids and triterpenoids and

xanthoproteins. And also the leaves have saponins decrease blood lipids, lower cancer risks and lower blood glucose response (*Monica, Pavithra et.al. 2015*).

## Discussion

Ethnobotany is an extremely old scientific field describes the traditional uses of plant resources and how they can apply for mankind. These investigation also also high light on the previously unknown useful plants as well as new applications of variety of known plants. The ethnobotanical studies provide information about of conservation of conservation status of plant species including rare, vulnerable, and susceptible, endangered and open a door to progress of the tribal people also. The present study reveals that *Hoya wightii* Hook.f. have ethnic, medicinal and ecological significance among Ulladan tribes. The plant *Hoya wightii* Hook.f. is widely used to treat various bone ailments. Ulladan tribes recommended the plant for treating bone fracture and bone cancer also. Now the plant is want to conserve is an endemic species which is facing higher habitat destruction and over exploitation.

## Abbreviations

KIRTADS: (*Kerala institute for Research Training & Development studies of Scheduled Caste and Scheduled Tribes*).

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## Declarations

## Funding

The author(s) received no financial support for the research, authorship, and or publication of this article.

## Availability of data and materials

We do not wish to share our data before we have thoroughly analysed it. All data sources described in this study are directed at the corresponding author.

## Consent for publication

I /we give the consent for publication of identifiable details, which can include photographs and/or case history and/or videos and/or case history and/or details within the text (“material”) to be published in the above journal and article.

## Ethical approval

The author(s) declare that all the ethnobotanical information of this manuscript was gathered by permission of District Tribal Extension Office, Alappuzha. Personal interviews and plant collection are conducted by their own premises for this research work by their support. The declaration of informant and data sheet of questionnaires was attached in the appendix part of manuscript. And we, the authors understand that submission of false or incorrect information/undertaking would invite appropriate penal actions as per norms/rules of the journal and UGC guidelines.

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