



## **A Review on Ethnomedicinal Claims and Spread of *Pothos scandens* L.**

**Niral H. Sojeetra<sup>1\*</sup> and Rabinarayan Acharya<sup>1</sup>**

<sup>1</sup>Department of Dravyaguna, IPGT and RA, Gujarat Ayurved University, Jamnagar, India.

### **Authors' contributions**

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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### **ABSTRACT**

**Aim:** Present review aims to collect all available ethno medicinal information and research updates on *Pothos scandens*, a popular drug among the local healers for its multipurpose traditional therapeutic claims.

**Materials and Methods:** Reported ethno medicinal uses of *Pothos scandens* from available books related to medicinal plants and research articles on ethno medicine, published till January 2020, were reviewed. Name of the reporting tribe using the plant and their place of reporting, vernacular names, parts used along with its therapeutic indications, with specific method of administration, if any, through either external or internal usages were noted.

**Results:** *P. scandens* is reported for its presence in 13 countries across the globe and in 13 states of India. The plant as a whole or its stem, root and leaf are used in 31 different disease conditions, either through internal administration or external applications. Among these, maximum are indicated in the treatment of asthma, small pox, wounds and bone fracture etc. Its leaves have maximum applications in 11 disease conditions, followed by whole plant in 10, stem in 3 and root in one disease condition. Its leaves are also used as fodder. Pharmacological studies report its anti-inflammatory, anticancer, antioxidant, wound healing activities.

**Conclusion:** *Pothos scandens* is having multifaceted ethno-medicinal claims and needs robust scientific evaluation through pharmacological and clinical studies to establish the ethnic claims.

\*Corresponding author: E-mail: [Sojitra.niral227@gmail.com](mailto:Sojitra.niral227@gmail.com);

**Keywords:** Ethno medicine; folklore; *Pothos scandens*; traditional practice; wound healing.

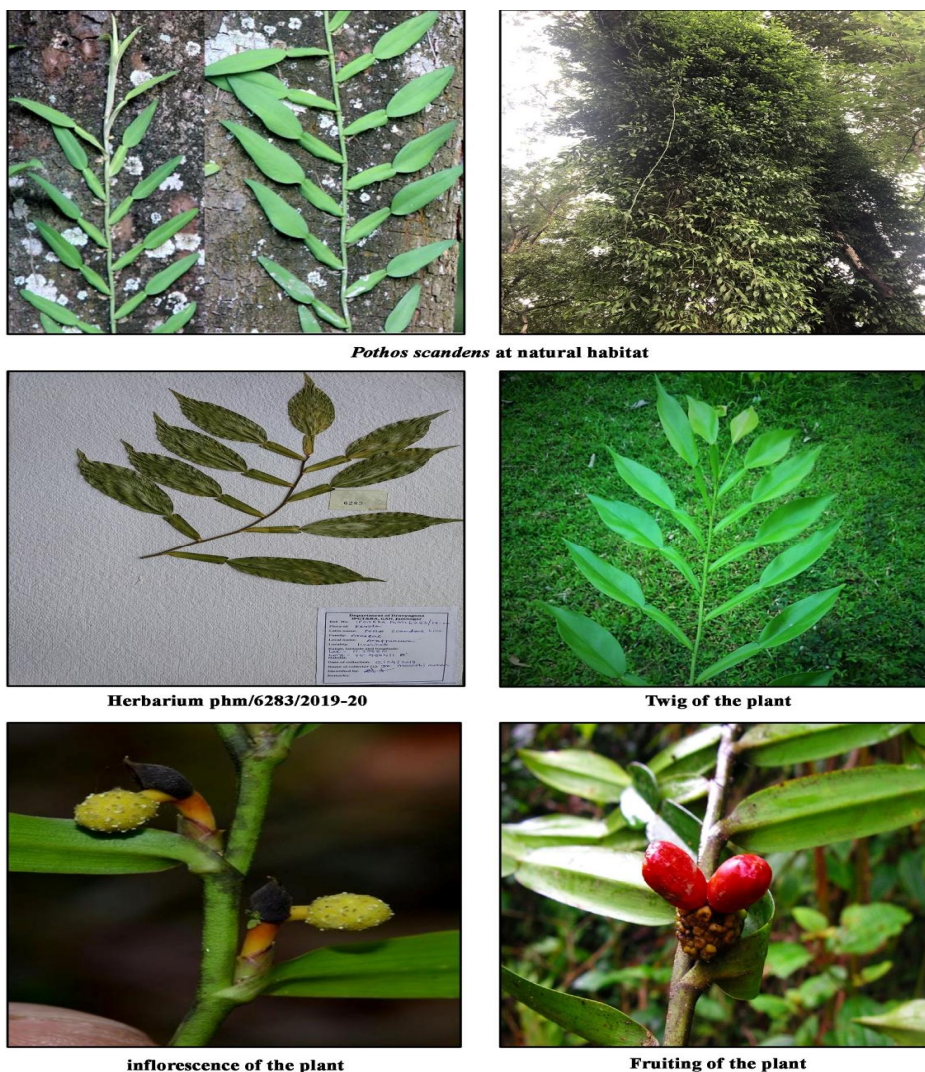
## 1. INTRODUCTION

Plants with reported ethnomedicinal claims have contributed for development of new synthetic drugs for many disease conditions. *Pothos scandens* Linn. Is a traditional medicinal plant belonging to the, family Araceae.

The plant species is native to the Himalaya as well as Indo-Burma region and Madagascar. However, it is found in all forest types of paleotropics [1], commonly found on rocks, walls and tree trunks in moist and wet forests in north-eastern, central and southern India [2]. In other parts of India, it is found in Assam, Bihar, Goa,

Karnataka, Kerala, Maharashtra, Meghalaya, Orissa, Tamilnadu, Tripura, West Bengal [3], Udupi [4] and Andaman and Nicobar Islands [5]. It is also available in Bangladesh, Brunei, Cambodia, Laos [6], China [5], Indonesia, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand and Vietnam [3].

*Pothos scandens* is an epiphytic climbing shrub having adventitious aerial roots. Leaves are obovate or lanceolate, acute or acuminate, coriaceous, bright green, petiole broadly winged. Flowers are small in globose or ovoid, peduncled yellow spadix. The fruits or berries are oblong and on ripening they become scarlet [4] (Fig. 1).



**Fig. 1. General plant morphology of *Pothos scandens***

Information about the ethnomedicinal uses of the *Pothos scandens* is scattered over multiple years (1894-2020), different platforms (i.e. journals, reports, books, and web-based sources), and in different presentation formats (i.e. surveys, glossaries, reviews, and notes, amongst other). This makes the exploitation of this species for pharmaceutical leads near impossible. Hence, in the present article, an attempt has been made to congregate the currently available data in one treatise.

## 2. MATERIALS AND METHODS

### 2.1 Data Collection

Information on all reported ethno medicinal uses of the *Pothos scandens* Linn. from available 20 books related to ethno botany and ethno medicinal research articles have been compiled from library sources as well as from Google Scholar, PubMed, Science Direct and J-Gate from January 2019 to January 2020.

### 2.2 Study Selection

#### 2.2.1 Inclusion criteria

Publications that described the use of *Pothos scandens* (alone or with any combination of other herbs) to treat any disease conditions either human or animal or used as food i.e. having any economic value were included in the review. This includes both external and internal applications with no language restrictions and date limitation.

#### 2.2.2 Exclusion criteria

Other species of *Pothos* were excluded from the present review.

## 3. RESULTS AND DISCUSSION

### 3.1 Literature Acquired

In the present study, a total of 53 abstracts were identified from electronic searches. The search identified 48 articles, with 6 from PUBMED, 22 from GOOGLE SCHOLAR, 4 from SCIENCE DIRECT and 16 from the J-Gate. After the removal of duplicates, as well as screening from relevant titles and abstracts, a total of 19 articles underwent a full text review.

### 3.2 Local Name

*P. scandens* is known by 26 names in 16 languages (Table 1).

### 3.3 Area of Reporting

*P. scandens* is available in 13 countries of the world. It is observed that *P. scandens* is being used as medicine in 4 states of India viz. Assam, Arunachal Pradesh, Kerala and Tamil Nadu and in 6 countries, such as China, Malaya, Myanmar, Madagascar, Sri Lanka and Thailand. This shows the availability and wide spread use of this plant across India and other part of the world (Table 1).

### 3.4 Therapeutic Uses

The whole plant of *P. scandens* or its stem, leaves and root are observed to be used in 31 different disease conditions. Out of the 39 reporting, 6 reports each for its use in asthma and small pox, 4 in wounds for snake bite, 2 each in abscesses, bone fracture, convulsions and epilepsy, ulcers, wounds created during delivery, one each in blood coagulant, body heat and conception, burn, cancer, constipation, cuts and sores, diarrhoea, herpes, muscle cramps, pain, pustules, skin allergy, sprains, swelling and vomit inducer (Table 1).

### 3.5 Parts Used

The whole part or its individual parts like root stem or leaves are used to combat 31 diseases. Leaves have maximum applications in 11 disease conditions. The whole plant is being used in 10, stem in 3 and root is used in one disease condition. (Table 1).

### 3.6 Dosage Form

Whole plant, root, stem and leaves of *P. scandens* are used in 7 dosage forms. Among them maximum i.e. 5 are powder, followed by paste i.e. 4, oil i.e. 3, decoction i.e. 2 and one each as infusion, juice and smoke. (Table 1).

### 3.7 Economical Uses

Leaves are used as fodder [15]. Though this plant is reported for its use as fodder.

### 3.8 Recent Researches

#### 3.8.1 Photochemistry

The phytochemistry screening of *P. scandens* was thoroughly examined by Gupta [33].

#### 3.8.2 Pharmacology study

Anti-inflammatory, peritoneal mast cell stabilization potential, anticancer, *In-vitro*

Table 1. Ethnomedicine claims of different parts of *Pothos scandens*

Local name	Tribes/ areas	Dosage form: External (E); internal (I) uses	Therapeutic claims
<b>Whole plant</b>			
Haranga	Assam	Powder (I)	Bone fracture[7,8]
Hatilota, Lomangloset	Arunachal Pradesh	Powder and decoction (I)	
Dieduanqiao	China	Decoction (I)	Diarrhoea[9]
Hatipata	Assam	Paste (E)	Cuts, wounds and Sores[10]
-	Thailand	-	Blood coagulant, wounds[11]
-	South India	-	Skin allergy, herpes, muscle catch, sprains[12]
-	Central western Ghats	Whole plant heated with water (I)	increase fertility in cattle[13]
<b>Root</b>			
Pein-gya	Myanmar	Fried in oil (E)	Abscesses[14,15]
<b>Stem</b>			
Pein-gya, Anapparuva	Myanmar Malaya, Ceylon	The stem cut up with camphor is smoked like tobacco (E)	Asthma[14, 16- 20]
<b>Leaves</b>			
Hati denkiya	Assam	Powder(I)	Pain[21]
Parattan kodi	Tamilnadu, Kerala	Paste of leaf along with the fruit of <i>Capsicum annum</i> and rhizome of <i>Allium sativum</i> mixed with coconut oil (E)	Wounds created during delivery[22,23]
Anapparuva	Malaya, Ceylon	Powder (E)	Small pox[15-19, 24]
-	Ceylon	Oil (E)	Wounds and ulcers[18, 25]
-	Kerala	Infusion (E)	Epilepsy, convulsions [17, 23]
-	Madagascar	Juice (I)	As a vomit inducer for acid stomach[26]
Appachi kaal balli, Adikebeelu balli, Agesoppu	Western ghats	Paste (E)	Burn[13]
Pein-gya	Myanmar	Powder (I/E)	Smallpox pustules & fractures[14]
-	Sri Lanka	-	Swelling due to trauma[27]
-	Tamilnadu	-	Reduce body heat and helps in conception[28]
-	Yunnan	Decoction	As tea[29]
<b>Stem and leaves</b>			
Ridik	Arunachal Pradesh	Boiled stems and leaves-vegetables (I)	Constipation[30]
Anapparuva	Malaya	Bruised stem and leaves are mixed with ox urine (E)	Wounds for snake bite[16, 18, 19, 31]
<b>Plant part unspecified</b>			
-	China	Decoction	Cancer[32]
-	Yunnan	-	Rheumatic arthralgia, traumatic injuries[29]

"-": Not reported

**Table 2. Reported pharmacological studies of different parts of *P. scandens***

Sr. no.	Activity	Part used	Extraction medium
1	Anti-inflammatory activity [34]	Whole plant	ethanol extract/ Murine RAW 264.7 cells
2	Peritoneal mast cell stabilization potential [35]	Aerial part	Ethanol, aqueous ethanol and aqueous
3	Anticancer activity [36]	Aerial part	Hydro-ethanolic Extract
4	In-vitro cytotoxic and thrombolytic potential [37]	Leaves	Methanolic extract
5	Burn wound healing activity [38]	Leaf	Ethanolic extract
6	In vitro anti-oxidant activity [39]	Root, stem and leaf	-
7	Antibacterial, anthelmintic and larvicidal efficacy [40]	-	Methanol extract
8	Anti-estrogenic activity [41]	Stem & root	-
9	Hyaluronidase inhibition activity [41]		
10	Antipyretic study [39]	Root	Methanol extract
11	Acute toxicity study [39]	Root	Methanol extract
12	Anti-diabetic activity (in vitro $\alpha$ -amylase inhibitory activity) [42]	Leaves	Methanol extract
13	Bronchodilator activity [42]	Leaves	Methanol extract

“-”: Not reported

Cytotoxic and thrombolytic Potential, burn wound healing, In-vitro anti-oxidant, antibacterial, anthelmintic and larvicidal efficacy, anti-estrogenic, hyaluronidase inhibition, Antipyretic, anti-diabetic, bronchodilator activity of different parts of *P. scandens* have been reported (Table 2).

#### 4. CONCLUSION

Present review reports the multiple ethnic uses of *Pothos scandens*. The plant is maximum reported for its use in asthma, small pox etc. The multifaceted ethno-medicinal claims needs robust scientific evaluation through pharmacological and clinical studies to establish its ethnic claims.

#### CONSENT

It is not applicable.

#### ETHICAL APPROVAL

It is not applicable.

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#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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