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## Ethnobotanical uses of medicinal plant, *Justicia adhatoda* L. by Meitei community of Manipur, India

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## PEER REVIEW

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**Comments**

This is a valuable research work in which authors have demonstrated the detailed ethnobotanical use as well as medicinal value of *J. adhatoda*. The detailed procedure to use this medicinal plant for different ailments has also been described. In the wake of rapid urbanization and lack of belief in the million years old traditional knowledge by the present day generation, this practice seems to be degraded. Hence, the problem solving cum focused research initiative taken by the authors for better understanding and their conservation of such medicinal plants rather than superficial listing of numerous species without any detail information is commendable.

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## ABSTRACT

**Objective:** To investigate traditional uses of medicinal plant *Justicia adhatoda* L. by Meitei community in Manipur.

**Methods:** Surveys were carried out in four districts in Central Valley of Manipur viz., Imphal East, Imphal West, Bishnupur and Thoubal between 2008–2013 to collect information on the ethnobotanical uses of the species. Local people and *Maiba/maibis* (men/women healers) in the study areas were interviewed and preparation techniques of medicine and cuisines from the plant parts were demonstrated and photographed.

**Results:** It was found that Meitei community in the study area extensively used *Justicia adhatoda* L. as ethno-medicine as well as food. Young and mature green leaves were used as traditional medicine in different ways to cure many ailments like cough, fever, asthma and dysentery. The ethnic community used inflorescences and leaves of the plant to prepare different cuisines for good digestion and health.

**Conclusions:** Documentation of detailed ethnobotanical uses of individual plant species is need of the hour and it will help in understanding the in-depth knowledge about the role of species in the society.

## KEYWORDS

*Justicia adhatoda* L., *Adhatoda vasica* Nees, Meitei, Uses, Manipur

**1. Introduction**

*Meitei*, a mongoloid community, is one of the indigenous communities of the sub-Himalayan state of Manipur in Northeast India. The community is spread over three countries, i.e., India, Bangladesh and Myanmar and they have a long

history of preserving their rich culture and traditions. In Manipur, the community is confined mainly in four valley districts located at the central part of the state. Due to its great advancement in arts and culture, and traditions, *Meiteis* had attained much developed immense knowledge on the utility of natural resources around its civilization. The community had

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well developed traditional knowledge on the practice of using plants for medicinal purposes and had preserved the practice through medicine men/women or *Maiba/Maibi*. Recently, Singh *et al.* enlisted 375 species of medicinal plants of Manipur and almost all of them were used by *Meitei* community<sup>[1]</sup>. Though ethnobotanical knowledge of plants and animals were practiced for centuries, its documentation started very recently. Most of these documentations were mainly based on the enumeration or listing of species with its uses and plant parts used<sup>[1,2]</sup>. Species-wise detailed information of its uses is required to explore its outspread uses, not only its medicinal values but also other uses like food, spices, dyes, religious and cultural importance, economic importance and horticultural or floricultural significance. In the present study, detailed ethnobotanical uses of *Justicia adhatoda* (*J. adhatoda*) by *Meitei* community are given. The plant part of the species is used as traditional medicine to cure many ailments and as food. *Meitei-Pangal* community used boiled leaves with fruits of *Emblica officinalis* Gaertn, and mixed with honey to cure asthma<sup>[3]</sup>. The species is widely used as medicine in different countries of South Asia and Indo–China region<sup>[4–11]</sup>. Active compounds like vasicine and vasicinone were isolated from the plant parts and had shown effective pharmacological actions. Leaves and roots extracts of the species had shown antimicrobial activity<sup>[12–14]</sup>.

*J. adhatoda* is a tall dense evergreen shrub with thick branches. Leaves oppositely arranged, 9–17 cm long and 3–10 cm wide, 8–10 pairs of lateral vein bearing few hairs, petiolate. Inflorescence 3–7 cm long with 4–9 cm long peduncle. Spikes terminal or axillary and ovoid to broadly ovoid in shape. Corolla white in colour with purplish or pinkish stripes outside, tube cylindrical and bent upward; upper lip ovate–oblong and bi-lobed; lower lip oblong–circular and tri-lobed, lateral lobes ovate. Stamens exserted; anther thecae ellipsoid. Ovary pubescent; style recurved, basal part pubescent; stigma simple. Capsule obovoid. The species is distributed in the South Asia and Indo–China region.

The species belongs to the family Acanthaceae and the genus *Justicia*. The species is widely known by its synonym *Adhatoda vasica* Nees and often create confusion.

## 2. Materials and methods

The study was carried out in 4 valley districts of Manipur *viz.*, Imphal East, Imphal West, Bishnupur and Thoubal. Several fieldworks between 2008–2013 were carried out to collect information on the traditional uses of *J. adhatoda* by the *Meitei* community. First hand information was collected by interviewing the local people and *Maiba/maibis* in the study areas and the information was documented. Preparation procedures of the traditional medicine and cuisines were photographed. Local people residing near the sacred groves (Khoriphaba and Chaning Lairembi in Bishnupur District; Konthoujam and Langol Lairembi in Imphal West) especially old populace were also interviewed to gather information on its

association with traditional and cultural practices.

## 3. Results

Extensive field survey and interviews revealed that *J. adhatoda* is one of the most important medicinal plants used by *Meitei* community due to its easy use as well as its abundant availability. They are usually cultivated and grown naturally in wet areas. *J. adhatoda* is known as *Nongmangkha–Angouba* in *Meiteilon*, the language of *Meitei* community. Different plant parts were used as traditional medicine as well as food, and different techniques were followed to prepare them.

### 3.1. Use as traditional medicine

Green mature leaves were used to prepare traditional medicines that are used to cure cough, fever, asthma and dysentery (Figure 1).



**Figure 1.** Preparation of leaf decoction of *J. adhatoda* for curing cough, fever and asthma.

Procedure: leaves were plucked and properly cleaned by rinsing several times in running water or in a container. It was then air dried on a clean banana leaf. The leaves were either cut into halves or as a whole and then boiled in an earthen pot for 20 min. The earthen pot was wrapped with banana leaf to avoid escape of vapour from the pot. Then, the banana leaf was removed and the warm vapour was inhaled 2–3 times by the patient for 5 min. This practice can be repeated several times until the ailments is relieved. Patients having sore throat during cold and cough drink the leaf decoction for instant relieve. The boiled leaves were crushed with the help of mortar and pestle and the paste was used to cure dysentery.

### 3.2. Use as food

Mature leaves as well as inflorescence were used as food (Figure 2).



**Figure 2.** Different cuisines made from leaves of *J. adhatoda*.

*Nongmangkha–mana Kanghou:* whole mature leaves were fried in mustard oil and eaten along with other cuisine and rice. These fried leaves help in digestion and also are given to those having cold and cough (Figure 2 a).

*Nongmangkha Bora:* this cuisine is made by mixing mature green leaves with gram flour and fried in mustard oil. This is the most common use of the species as food by *Meitei* community (Figure 2 b).

*Shuktani:* young and mature leaves were cut into pieces and fried in mustard oil along with few pieces of pumpkin. Later on sugar was added to become the dark sweet *Shuktani* which is generally served during social or religious feasts. It helps in digestion (Figure 2 c).

*Nongmangkha–mapan Kanghou:* young inflorescence were fried in mustard oil and served along with other cuisines and rice.

### 3.3. Traditional or cultural significance

Though *J. adhatoda* is an important medicinal plant among *Meitei* community, it is taboo to go near the plant, collect its leaves or flowers on Sundays.

## 4. Discussion

Through hit and trial methods, human beings have developed medicines from plants growing around them. The traditional knowledge of making medicines from herbs was transferred from one generation to another through oral tradition. Ayurveda, Siddha and Unani are ancient

medicinal practices that use traditional biomedicines extracts of herbs to cure ailments and diseases<sup>[15,16]</sup>. Many modern medicines arise from better understanding of medicinal properties of herbs. Traditional biomedicines were identified and active ingredients were extracted to develop drugs.

With the advent of modern medicines, traditional medicine practice is now degrading at very fast rate across the globe due to urbanization and lack of belief and interest among younger generations. Mien communities in Thailand are losing medicinal plant knowledge as these communities are undergoing inter–generational erosion because of acculturation and interrupted knowledge transmission<sup>[17]</sup>. Due to death of many languages in tropics and sub–tropics, oral tradition does disorder and threaten the loss of valuable knowledge on the utility of many plant species. Research Institutes, universities and non–governmental organizations should take up various possible measures to document the indigenous knowledge and empower individuals or communities with immense knowledge of traditional uses of plants and animals. The authors believed that detailed ethnobotanical study on individual plant species is required to have in–depth knowledge about the role of the species in the society rather than superficial listing of numerous species without any detail information. Such study on individual species will also help in identifying threats and conservation status of many endangered and rare species.

### Conflict of interest statement

We declare that we have no conflict of interest.

### Acknowledgements

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### Comments

#### Background

From time immemorial, every ethnic group has been

practicing the most safe, eco–friendly and organic way of permanent cure of different ailments through locally available medicinal plants. However, with the rapid urbanization and lack of belief in the million years old traditional knowledge by the present day generation, this practice seems to be degraded. Hence the a focused research for better understanding and conservation of such medicinal plants is needed.

### Research frontiers

The present study clearly reveals the important medicinal values of *J. adhatoda* used by the *Meitei* community. Besides documentation of the detailed ethnobotanical uses of this medicinal plant, this study also aims to focus on biocultural diversity, which is important in applied conservation projects that take in account both social and environmental aspects.

### Related reports

Though *J. adhatoda* is an important medicinal plant among *Meitei* community, it has been a taboo to go near the plant and collect its leaves/flowers on Sundays as well as night time.

### Innovations and breakthroughs

In the present study, authors have described the detailed ethnobotanical use as well as medicinal value of *J. adhatoda*. The detailed procedure to use this medicinal plant for different ailments has also been described.

### Applications

Besides its medicinal value, *J. adhatoda* occupies a big space in the socio–cultural and religious point of view in the *Meitei* community. To get the benefit of various medicinal values, different parts of this shrub plant had been introduced to prepare different cuisine by this ethnic group. This folklore medicine has evidence of effectiveness in treating various ailments like cough, fever, asthma and dysentery.

### Peer review

This is a valuable research work in which authors have demonstrated the detailed ethnobotanical use as well as medicinal value of *J. adhatoda*. The detailed procedure to use this medicinal plant for different ailments has also been described. In the wake of rapid urbanization and lack of belief in the million years old traditional knowledge by the present day generation, this practice seems to be degraded. Hence, the problem solving cum focused research initiative taken by the authors for better understanding and their conservation of such medicinal plants rather than superficial listing of numerous species without any detail information is commendable.

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