

## Traditional and Ethnobotanical uses *Premna barbata* Wall. Ex Schauer in Kumaun and Garhwal Regions of Uttarakhand, India & Other Western Himalayan Countries- A Review

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### ABSTRACT

The Himalayas are a repository of tremendous wealth of medicinal plants. Kumaun and Garhwal are characterized by a rich diversity of ethno-medicinal plants as well as a rich heritage site in traditional medicine system in the western Himalayan region. Present study deals with the status, identification and to explore the traditional knowledge of plant *Premna Barbata* Wall. Ex Schauer about its uses in local medicine by village people in Kumaun, Garhwal region in India and other western Himalayan Countries. The genus *Premna* contains 200 species under the family Verbenaceae all over the world and out of that approximately 30 species are present in India and are native mainly to the tropical and subtropical Asia, Africa, Australia and the Pacific islands. *Premna Barbata* Wall. Ex Schauer plant is belonging to family Verbenaceae. It is distributed in the forest area of the Eastern & northern parts of India, Pakistan, Nepal, and Myanmar and nearby regions. The present paper is a review on ethno-medicinal uses of *Premna Barbata* Wall. Ex Schauer, which is widely used by different tribes and medicinal practitioners for treatment of various diseases. Different parts of the plant (bark, wood and leaves) are variably used in treating wide range of diseases such as joints and back pain, dropsy, ulcer, diarrhea, wound healing, throat infection, antibacterial, fever, herpes complex disease, arthritic pain. With this review it is concluded that there is a need for conducting further investigation and studies for pharmacognostic characteristics and the isolation of individual active constituents from *Premna Barbata* Wall. Ex Schauer plant. Also the study is expected to provide basic data for further studies aimed at conservation of traditional medicine.

**Keywords:** *Premna Barbata* Wall. Ex Schauer, Verbenaceae, Survey, Ethnobotany, medicinal plants.

### INTRODUCTION

Herbs are staging a comeback and herbal 'renaissance' is happening all over the globe. Over three-quarters of the world population relies mainly on plants and plant extracts for health care. More than 30% of the entire plant species, at one time or other was used for medicinal purposes. Of the 2, 50,000 higher plant species on earth, more than 80,000 have medicinal values. India is one of the world's 12 biodiversity centers with the presence of over 45000 different plant species. Of these, about 15000-20000 plants have good medicinal value. However, only 7000-7500 species are used for their medicinal values by traditional communities<sup>1</sup>.

India enjoys the privilege of having time tested traditional systems of medicines based on the natural products. Plants based products have been in use for medicinal, therapeutic or other purposes right from the dawn of history. Medicinal plants as a group comprise approximately 8000 species and account for around 50% of all the higher flowering plant species of India. There are about 400 families in world of the flowering plants; at least 315 are represented in India<sup>2</sup>. Nearly 80% of the world's population relies on traditional medicines for primary health care, most of which involve the use of plant extracts<sup>3</sup>. The WHO has also appreciated

the importance of medicinal plants for public health care in developing countries and evolved guidelines to support the member states in their effort to formulate national policies on traditional medicine<sup>4</sup>.

#### Plant Description

*Premna Barbata* Wall. Ex Schauer plant is belonging to family Verbenaceae. It is distributed in the forest area of the Eastern & northern parts of India, Pakistan, Nepal, and Myanmar in tropical and subtropical Asia, Africa, Australia and the Pacific Island<sup>5</sup>. It is found in the Shiwalik tract and the lower Himalaya. Altitudinal range is from 800 to 1800 meters. Bark is slightly quilled in shape, 2 to 5cm long and 1 to 2cm wide. The inner surface is white where as the outer surface is grey in colour. Leaves are 10 to 12cms x 5 to 8cms in dimensions. Leaves are oblong or ovate or lanceolate in shape and the leaf is toothed above the middle. The margin is entire with acuminate apex and pinnate venation. Leaves are yellowish green in color without odour and taste is mucilaginous. Surface is soft pubescent in young stage, glabrous later on. Lateral nerves are in 6 to 8 pairs; petiole upto 4cm long. Flowers are in corymb; between 2 to 4cm in diameter. Sepals 4, rather obtuse; petals 2 to 4, upto 0.50 cm long; corolla tube

is hairy in the throat. Fruit is in the form of globose drupe<sup>6,7,8</sup>.

## MATERIALS AND METHODS

Local survey and identification of plant *Premna Barbata* Wall. Ex Schauer growing in hills of Kumaun and Garhwal region of Uttarakhand and other western Himalayan countries was done. The plants were collected, identified and preserved. Plant was taxonomically identified by botanist of Botanical Survey of India, Northern Regional Center, 192, Kaulagarh Road, Dehradun-248195. One set of the sample was deposited in the herbarium of Botanical Survey of India.

To identify and verify the efficacy of *Premna Barbata* Wall. Ex Schauer ethno-medicinal information on plants was collected through interviewing local communities. Study sites were visited several times to interact with peoples and to collect the data about the plant. For collecting the information, an interview schedule was organized randomly from selected people of study sites. Field work was done to explore medicinal plant diversity in study site. The survey was conducted among with local people, villagers, farmers, village headmen and midwives to know about the medicinal value of plant. Plant specimens were collected along with extensive field's notes including habit, habitat, life form and abundance.

## RESULTS AND DISCUSSION

Ethnobotany is the study of relationship between plants and people: From 'ethno'-study of people and '-botany'-study of plants. Ethnobotany is considered as a branch of ethnobiology. Ethnobotany studies the complex relationships between (uses of) plants and cultures<sup>9</sup>. Medicinal plants have strong acceptance in spiritual activities of north Indian inhabitant communities, who worshiped the plants in the form of god, goddesses, and minor deities. Due to the unavailability of modern health facilities, poverty, connectivity with urban centre, awareness, etc. people in rural areas are still relying on traditional medicines for their health care. Many communities use wild plant parts for the primary healthcare, due to belief in its effectiveness, easily available, lack of modern medicines<sup>10</sup>. Uttaranchal has tremendous potential for medicinal plants cultivation and it can become one of the important options for sustainable livelihood for the hilly area. About 300 medicinal plants species have been documented from Uttaranchal, indicating its potential as an herbal state and for strengthening herbal-based industry in this region<sup>11</sup>.

### Pharmacological Activities

Antibacterial activity of *Premna barbata* Wall. Ex Schauer:- Organic solvents such as ethanol, hexane, chloroform and aqueous extracts of aerial part (leaves) of *Premna barbata* and *Clerodendrum viscosum* (Verbenaceae) were explored for possible antibacterial activity against five pathogenic bacterial strains viz., *Agrobacterium tumefaciens*, *Erwinia chrysanthemi*, *Xanthomonas phaseoli*, *Bacillus subtilis* and *Escherichia coli*. Antibacterial assay was determined by agar well diffusion method. Organic extracts of both the plants

revealed noticeable antibacterial activity against the test bacteria<sup>12</sup>.

Isolation of Premnosidic acid from *Premna barbata*:- A new Iridoid glycoside, Premnosidic acid (compound 1) has been isolated from *Premna barbata* Wallich and characterized with the help of FAB-MS, <sup>1</sup>H NMR, <sup>13</sup>C NMR, HMQC, HMBC and NOE experiments<sup>13</sup>.

Leaf Oil Composition of *Premna barbata* Wall. ex. Sch. from Kumaon Region of Uttarakhand: - The hydrodistilled essential oil from leaf of *Premna barbata* Wall. ex. Sch. collected during winter and spring season from Kumaon region has been characterized by GC and GC/MS. A total of about 45 constituents comprising 87–91% of oils have been identified. 1-Octen-3-ol (37.3–21.5%) and epi- $\alpha$ -bisabolol (12.2–14.1%) were the major constituents. The high 1-octen-3-ol content makes the oil biologically active<sup>14</sup>.

### Ethno-medicinal uses

Villagers, local peoples and various tribal groups in Kumaun and Garhwal region of Uttarakhand, India and other western Himalayan countries uses *Premna Barbata* Wall. Ex Schauer for the treatment of various disease. Various ethano-medicinal uses of *Premna Barbata* Wall. Ex Schauer are mentioned below.

Survey was conducted among Tamang Tribe of Kabhrepalanchok District, Nepal explained that *Premna Barbata* Wall. Ex Schauer wood is rubbed on a stone with some water; the paste thus prepared is applied on wounds<sup>15</sup>.

Survey was performed on ethanoveterinary plants of Uttaranchal, in the survey it was mentioned that *Premna Barbata* Wall. Ex Schauer is used for the treatment of throat infection<sup>16</sup>.

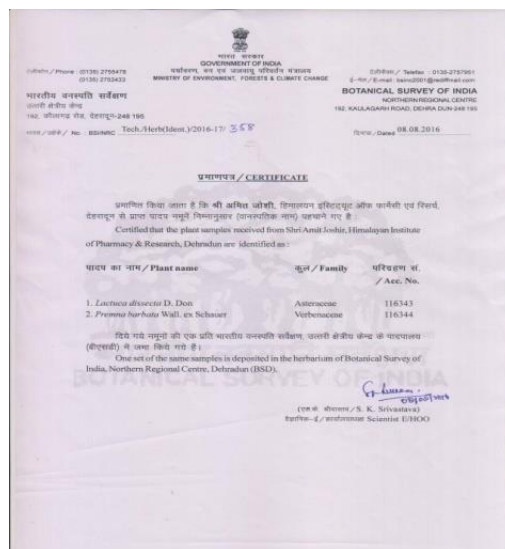
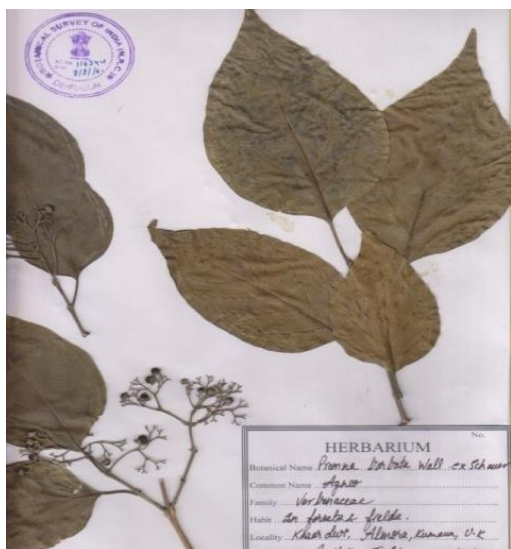
In Hippocratic journal of Unani medicine it is mentioned that *Premna Barbata* Wall. Ex Schauer commonly known as Bakhara is used as medicine in Ayurvedic system of medicine<sup>17</sup>.

Study was conducted on diversity and present status of medicinal plants in and around Srinagar hydroelectric power project in Garhwal Himalaya, India and it was demonstrated that the plant decoction is given in arthritic pain and leaves are rubbed on the body in case of dropsy<sup>18</sup>. A detail study was carried out on diversity and status of ethno-medicinal plants of Almora district in Uttarakhand, India. In the study it was signified that plant decoction is used in arthritic pain, leaves are rubbed on body in dropsy and wood part of the plant is rubbed on skin in herpes complex disease<sup>19</sup>.

A survey was conducted on ethno-botany of Chepang community from mid hills of Nepal and in the survey it was mentioned that leaf of the plant is used in the treatment of urine infection and heat sickness<sup>20</sup>.

Local peoples of Kali Gandaki Water shed, Nepal having detailed knowledge of species identity and characteristics and uses of plant resources was interviewed and according to them *Premna Barbata* Wall. Ex Schauer is utilized for fodder and bark fiber is made into coarse twigs for medicine purpose<sup>21</sup>.

A survey of plant biodiversity and ethnobotany was performed along the Seti river banks in the Tanahun



Identified Specimen and certificate of *Premna Barbata* Wall. Ex Schauer.

district of Western Nepal in the survey it was intimated that leaves juice is used against headache<sup>22</sup>.

Study was carried out on medicinal plants used as antipyretic agent In Terai region of Western Nepal. In the study reports it was mentioned that decoction of stem bark is given twice a day in fever<sup>23</sup>.

An ethnobotanical study was carried out in Darjeeling Himalayas to document plants used against skin diseases. In the survey reports it was indicated that *Premna Barbata* Wall. Ex Schauer twig is used in treatment of skin disease<sup>24</sup>.

Ethnobotanical survey was undertaken to collect information from traditional healers on the use of medicinal plants in the treatment of different skin diseases. It was found wood paste is applied to stop bleeding from cuts and wounds<sup>25</sup>.

In the review study of genus *Premna* it was mentioned that *Premna Barbata* Wall. Ex Schauer is having antibacterial activity<sup>26</sup>.

An Investigation was done on ethnomedicinal plants used by the villagers of district Udhampur, J&K, India and it was intimated that seeds of tree are fed to horse to cure anorexia and paste of seeds in *Sesamum orientale* oil is massaged on body to relieve body pains<sup>27</sup>.

Study was carried out in Bageshwar district of Uttarakhand (India), which is situated in the eastern Kumaun Himalaya of Uttarakhand. In the study it was found that leaf paste of the plant is used in joints and back pain, bark powder is used in dropsy, ulcer and diarrhea<sup>28</sup>.

### CONCLUSION

The peoples of Kumaun and Garhwal, Uttarakhand, India and other western Himalayan countries have a close relationship with nature. They are fully dependent upon forest for food, fruits, fodder, and medicinal plants for their healthcare. Local people in this region, especially older age people, tribal people and women heavily use these traditionally available medicinal plants for health and believe that these are easily available, less expensive and have no side effects as compare to modern medicine. The

present study states that *Premna barbata* Wall. Ex Schauer is rich in phytochemicals and is a multipotential medicinal plant and has been in use since ancient times to treat a wide range of diseases in traditional system medicine and is used by different tribes and communities in different parts of India as well as in other regions in the world. The wood, leaves and bark are variably used in treating different diseases such as urine infection, arthritic pain, dropsy, herpes complex, ulcer, diarrhea, throat infection, skin disease & wound healing. Thus it can be concluded that *Premna barbata* Wall. Ex Schauer is a promising target to generate newer and novel drugs. The information thus obtained can be further utilized for the Pharmacological and therapeutical evaluation along with the standardization of the plant material.

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