MORPHOLOGICAL, PHARMACOGNOSTICAL AND ETHNOBOTANICAL
STUDIES ON PLUMERIA ALBA

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ABSTRACT

Plant is a biosynthetic laboratory, not only for chemical compounds, but also a multitude of compounds like glycosides, alkaloids, terpenoids, steroids etc. and possess important pharmacological activities used to alleviate different disorders. Herbs are vital source of drugs from the ancient time holding the scenario of the Indian system of medicine. Plumeria alba Linn. (Apocynaceae) is important herb and widely used in perfumery. The plant is used in different traditional systems of medicine in the treatment of various diseases. The present paper enumerates the Pharmacognostical, morphological and ethnobotanical importance of the herb, which may help the researchers to set their minds for approaching the utility, efficacy and potency of the plant.

Key-words: Plumeria alba, Pharmacognostical features, Ethnobotanical studies,
INTRODUCTION
India perhaps the largest producer of medicinal herbs and is called Botanical Garden of the World. Medicinal herbs have been in use for thousands of years, in one form or another, under the indigenous systems of medicine like Ayurveda, Sidha and Unani. In earth, around 3.6 lakh species of medicinal plants are present, among these 1.4 lakh species are in India (Mehrola, 1990). In the latest survey, it is indicate that about 70000 plants are used in traditional systems of medicines. All over the world, plants were used as main source of medicines by ancestors. The rise of modern western medicine was initially accompanied by a decline in the practice of herbalism in all cultures and it was believed that synthetic chemicals were best medicines to treat illness and cure disease (Mukherjee, 2001).

Madhya Pradesh is well known to harbour a rich wealth of floristic diversity which is used in alleviating suffering among natives. The area is inhabited by number of tribes viz., Gond. Kol, Baiga, Bhil, Panika, Kairwar, Argaria etc. (Jadhav, 2006). They are scattered in deep forests and remote villages and utilized numerous plant species in their day to day life. The workers have made valuable contributions towards the ethnobotanical knowledge of primitive men, tribes and other folk healers of the state. The natural and traditional relationship between human societies and plants has brings to light numerous little or unknown uses of plants (Dwivedi, 2008). Even today the rural and aboriginal folks are very much in harmony with nature and bio resources (Shah & Singh, 1990). During the field studies author have documented some interesting information on Plumeria alba. An obvious advantage of the present study is to create awareness towards the species and enumerate their traditional uses.

METHODOLOGY
The present work was conducted during January 2008 – July 2009. Author has collected the plant from various study sites of Jabalpur districts of Madhya Pradesh. The plant was authenticated by Dr. S. N. Dwivedi, Head, Department of Botany, Janata P.G. College, A.P.S., University, Rewa, M.P., India and the voucher specimen (No. PL-14) has been deposited in the Department for further research work.

Plant profile
Plumeria alba Linn. is a fast-growing, medium size tree, that is botanically belongs to family Apocynaceae. The plant can reach a height up to 5-8 feet with many branches on the upper part. Small trees or herbs with obanceolate leaves. Leaves are alternate, bounded at twig tips, strongly recovered margin. flowers are white, fragrant, in corymbose clusters. The vernacular names of the plant is Chameli (Hindi), Perungalli (Tamil), Kairchampa (Marathi), Frangipani, (English), Veyyivaraha (Telgu), Dalanaphula and (Benghal) (Nandkarni, 1954).
Leaves of *Plumeria alba*

**Taxonomic Classification**

<table>
<thead>
<tr>
<th>Kingdom</th>
<th>Plantae</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subkingdom</td>
<td>Viridaeplantae</td>
</tr>
<tr>
<td>Phylum</td>
<td>Magnoliophata</td>
</tr>
<tr>
<td>Subphylum</td>
<td>Eaphyllophytina</td>
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<tr>
<td>Class</td>
<td>Magnoliopsida</td>
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<tr>
<td>Subclass</td>
<td>Lamiidae</td>
</tr>
<tr>
<td>Order</td>
<td>Apocynales</td>
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<tr>
<td>Family</td>
<td>Apocynaceae</td>
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<tr>
<td>Tribe</td>
<td>Plumerieae</td>
</tr>
<tr>
<td>Genus</td>
<td><em>Plumeria</em></td>
</tr>
<tr>
<td>Species</td>
<td><em>alba</em></td>
</tr>
</tbody>
</table>

**MORPHOLOGICAL STUDIES**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Parameters</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Habit</td>
<td>Medium size tree</td>
</tr>
<tr>
<td>2.</td>
<td>Cultivar</td>
<td>Not cultivated, occur wildly</td>
</tr>
<tr>
<td>3.</td>
<td>Plant height</td>
<td>5-8 ft.</td>
</tr>
<tr>
<td>4.</td>
<td>Plant characteristics</td>
<td>Herbaceous, photosynthetic having aroma, basically in flowers</td>
</tr>
<tr>
<td>5.</td>
<td>Foliage characteristics</td>
<td>Medium leaves</td>
</tr>
<tr>
<td>6.</td>
<td>Foliage color</td>
<td>Light green</td>
</tr>
<tr>
<td>7.</td>
<td>Flower color</td>
<td>White</td>
</tr>
<tr>
<td>8.</td>
<td>Status</td>
<td>Occur wildly, not under cultivation</td>
</tr>
<tr>
<td>9.</td>
<td>Conservation</td>
<td>By ex &amp; in situ conservation</td>
</tr>
<tr>
<td>10.</td>
<td>Propagation</td>
<td>By seeds, also soft branches by planting in rainy season.</td>
</tr>
</tbody>
</table>
PHARMACOGNOSTICAL STUDIES
The dried and stored powder of leaves of *P. alba* was subjected to standard procedure for
the determination of various parameter. (The Ayurvedic Pharmacopoeia, 1999)

**Determination of ash values**
The determination of ash values is meant for detecting low-grade products, exhausted
drugs and sandy or earthy matter. It can also be utilized as a mean of detecting the chemical
constituents by making use of water-soluble ash and acid insoluble ash.

**Total ash value**
Accurately about 3 gms of air dried powder of leaves of *P. alba* was weighed in a tared
silica crucible and incinerated at a temperature not exceeding 450°C until free from carbon,
cooled and weighed and then the percentage of total ash with reference to the air dried
powdered drug was calculated.

**Acid insoluble ash**
The ash obtained in the above method was boiled for 5 minutes with 25ml of dilute HCl.
The residue was collected on ash less filter paper and washed with hot water, ignited and
weighed. The percentage of acid insoluble ash was calculated with reference to the air
dried drug.

**Water soluble ash**
The ash obtained in total ash was boiled for 5 minutes with 25 ml of water. The insoluble
matter was collected on an ash less filter paper, washed with hot water and ignited to
constant weight at a low temperature. The weight of insoluble matter was subtracted from
the weight of the ash. The difference in weights represents the water soluble ash. The
percentage of water soluble ash with reference to the air dried drug was calculated.

Determination of extractive values

**ETHNOBOTANICAL USES**
- Leaves are made into powder and taken twice a day to treat jaundice.
- Bark powder taken after night meal act as purgative
- Latex obtained from the plant is used to treat ulcer.
- Root bark paste applied in rheumatic pain
- Root powder taken twice a day used as carminative.

**RESULTS**
The plant *Plumeria alba* belonging to the family Apocynaceae was taken up for the study
to screen and give a report on the morphological, pharmacognostical and ethnobotanical
studies. It has been observed the plant is effective in the treatment of some disorders as
presented in ethnobotanical studies. The dried and stored powder of leaves of *P. alba* was
subjected to standard procedure for the determination of various parameter. The total ash,
acid insoluble ash and water soluble ash was found to be 6.1, 2.0 & 1.4 % w/w respectively.
Moreover, a very little attention has been made by the workers towards its
phytochemical and biological screening. Therefore, it requires detailed documentation and
standardization for the formulation of valuable drugs of therapeutic importance.
ACKNOWLEDGEMENTS

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REFERENCES


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