

**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, steriods etc. and posses 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, Khairwar, 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<sup>1-6</sup>. 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 white flowers bearing five petals and have fragrance. The vernacular names of the plant is Chameli (Hindi), Perungalli (Tamil), Khairchampa (Marathi), Frangipani, (English), Veyyivarahal (Telgu), Dalanaphula and (Benghal) (Nandkarni, 1954).



Leaves of *Plumeria alba*

### Taxonomic Classification

Kingdom	Plantae
Subkingdom	Viridaeplantae
Phylum	Magnoliophata
Subphylum	Eaphyllophytina
Class	Magnoliopsida
Subclass	Lamiidae
Order	Apocynales
Family	Apocynaceae
Tribe	Plumerieae
Genus	<i>Plumeria</i>
Species	<i>alba</i>

### MORPHOLOGICAL STUDIES

S. No.	Parameters	Features
1.	Habit	Medium size tree
2.	Cultivar	Not cultivated, occur wildly
3.	Plant height	5-8 ft.
4.	Plant characteristics	Herbaceous, photosynthetic having aroma, basically in flowers
5.	Foliage characteristics	Medium leaves
6.	Foliage color	Light green
7.	Flower color	White
8.	Status	Occur wildly, not under cultivation
9.	Conservation	By ex & in situ conservation
10	Propagation	By seeds, also soft branches by planting in rainy season.

## 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

The author is thankful to the natives of Jabalpur district of Madhya Pradesh for introducing the material and providing valuable information pertaining to the species.

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