

## Pharmacognostical study of flowers of Palash (*Butea monosperma* Lamk. Taub)

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### Abstract

The Palash (*Butea monosperma* Lamk. Taub.) belonging to family Fabaceae is used for therapeutic uses since ancient time. Most of the regions of India, it is used for worship of god as well as in many festivals. Palash is pungent (katu), bitter (tikta) and astringent (kashay) in taste (Rasa), and its vipaka is katu and veerya is ushna. It alleviates kapha and vata doshas, but aggravates the pitta doshas. The flowers of Palash are bitter (tikta), pungent (katu) and astringent (kashay) in test (Rasa), madhur vipaka and sheeta veerya. So it alleviates pitta and kapha dosha and vata doshas. *Palash* (*Butea monosperma* (Lamk.) Taub) is commonly available all over India. Palash (*Butea monosperma* (Lamk.) Taub) has been widely used in the traditional Indian medical system of 'Ayurveda' for the treatment of a variety of ailments. It is very essentials to have a proper documentation of such useful medicinal plants. In this article an attempt to compile and document on Pharmacognostical Study of flowers of Palash (*Butea monosperma* Lamk. Taub).

**Keywords:** Palash, *Butea monosperma*, Pharmacognostical study.

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#### \*Article History:

**Received:** 20/02/2020  
**Revised:** 27/03/2020  
**Accepted:** 13/04/2020  
**DOI:** <https://doi.org/10.7439/ijbr.v11i4.5349>

#### QR Code



**How to cite:** Daf P. and Daf S. Pharmacognostical study of flowers of Palash (*Butea monosperma* Lamk. Taub). *International Journal of Biomedical Research* 2020; 11(04): e5349. DOI: 10.7439/ijbr.v11i4.5349 Available from: <https://ssjournals.com/index.php/ijbr/article/view/5349>

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### 1. Introduction

Palash (*Butea monosperma* Lamk. Taub) [1], is medium-sized deciduous tree, 10-15 meters high belonging to the family Fabaceae, is found throughout India. There are four type of Palash viz. Rakta (red), Pita (yellow), Shweta (white) and Nila (blue) as mentioned by Narahari in Raj Nighantu [2]. Out of above varieties, Shweta and Nila are seldom available and Pita is rare. As Pita variety becomes endangered the abundantly available Rakta variety is used commonly in medicines and it is called as flame of the forest [3]. It is the most important plant for Yajna (ritual) according to Vedic literature. In India, in most of the regions it used in worship of god. In many festivals it is used in different way. According to an ancient science of life i.e. Ayurveda, there is always scientific theory behind celebrating any festivals and Aacharyas have scientific view for using any drug as medicine. The use of Rakta Palash flowers used for 'Holi', i.e. festival of colour in India. The thought behind it was that, the colour prepared from flowers is natural, good for skin and has no any

adverse effect. Though there is an evidence of the uses of *Rakta* and *Pita Palash* flowers in *Ayurveda*, there is need to prove its efficacy as per modern research methodology so as to make knowledge and properties of *Palash* flowers global. Standardization is the first step essential before starting clinical and preclinical study. Therefore, in the present study, an attempt was made to study *Palash* flowers pharmacognostically.

#### 1.1 Aim and Objectives

##### Aim:

Pharmacognostical study of flowers of *Palash* (*Butea monosperma* Lamk. Taub).

##### Objectives:

To study the pharmacognostically flowers of *Palash*. (*Butea monosperma* Lamk. Taub).

### 2. Material and methods

#### 2.1 Collection of flowers of *Palash*:-

Flowers of *Rakta Palash* were collected in the month of February to April-2016.

## 2.2 Storage of flowers:

The flowers were allowed to shade dry, avoiding damaged by insects, flies and other contaminants [figure no.1]. Later they were grinded into coarse and fine powder and stored in an airtight container for further study [figure no 2]. Fresh flowers were used for macroscopical and microscopical study.



**Figure 1: Flowers of Rakta Palash without calyx**



**Figure 2: Powder of Rakta Palash flower**

## 2.3 Pharmacognostical evaluation

### 2.3.1 Macroscopic evaluation:

Colour, external features, texture etc. were examined for both flowers. [Table no.1]

### 2.3.2 Microscopic evaluation:

Microscopic study of test drug, either in entire or powdered form, is one of the important aspects of its histological evaluation. The arrangement of tissues in transverse and longitudinal sections and type of cells and cell contents are revealed by suitable histological study of a crude drug with an aid of a microscope. Microscopic characteristics are important for anatomical characteristics of organized drugs.

### Materials:

Flowers of *Palash*, 50% glycerine, water, sharp razor blade, watch glass, thin painting brush, needles, forceps, glass slides, cover slips, blotting paper, dropper, compound microscope, microscope attach with Motic software installed in computer.

### Procedure:

Fresh flowers of *Palash* were used for taking sections. Thin sections were taken of different parts of flowers by sharp razor blade and put into watch glass containing water. A thin uniform and entire section was selected and transferred on to a clean glass slide with the help of a brush. Section was mounted with 1-2 drops of 50% glycerine and covered with a clean cover glass. Excess glycerine was removed by blotting paper. The sections were treated with reagents like phloroglucinol, concentrated hydrochloric acid were before examining. Slide was observed under microscope attached to Motic camera and images were taken in Motic software installed in computer [Table 2].

### 2.3.3 Powder microscopy:

#### Procedure:

Studies were done on unstained powder to identify different structures present in powder such as trichomes; epidermal cells etc. and powders were stained with phloroglucinol (1% W/V in 90% alcohol) and conc. HCl to identify lignified tissues. The dimensions of different cellular characters were determined using Motic software installed in computer which is attached with microscope. Various features were traced with the Motic camera. Motic plus 2.0 images were taken. [Table No.2]

#### Macroscopic study



**Figure 3: Flower of Palash**



**Figure 4: Flowers, leaves and pods of Palash**

### 3. Results

#### 3.1 Pharmacognostical study

##### 3.1.1 Macroscopical Study

**Table 1: Results of macroscopic Study *Palash* flowers**

Sr. No.	Characteristics of <i>Palash</i> flowers	<i>Palash</i> flowers
1	Inflorescence with buds and open flowers	3-4.5cm long, rigid racemes of orange (flame) colour
2	Bracts and bracteoles	Small
3	Pedicels	1.6-2.4 , Densely brown-velvety
4	Calyx	0.8to1.2cm long , dark brown colour
5	Cepals	5 campanulate, densely velvety outside, clothed with silky hairs within.
6	Corolla	2 to 7cm
7	Petals	5, polypetals, unequal keel clothed outside with silky silvery hairs, orange coloured, keel semicircular, beaked, veined.
8	Stamens	Stamens -10, diadelphous
9	Anther	2 celled
10	Carpel	Superior unilocular
11	Style	One
12	Stigma	One

##### 3.1.2 Microscopical study

- **T. S. of petal** shows single layered, thin walled, epidermal cells, covered with numerous, unicellular, pointed trichomes and a few glandular hairs, thin walled, capitate or cone shaped papillae present on both surface, mesophyll consisting of thin walled, loosely arranged, parenchymatous cells, a large number of larger and smaller vein found scattered in this region, some of the cells contain oilglobules.
- **L.S. of petal** show rosette cells, oil globules cell, trichome bearing cells.
- **T.S. of Ovary-** Ovary is monocarpellary with marginal placentation. The ovary all consists of an outer thick layer of rectangular or squarish epidermal cells. Inner to the epidermis, occurs thick darkly stained tannin –

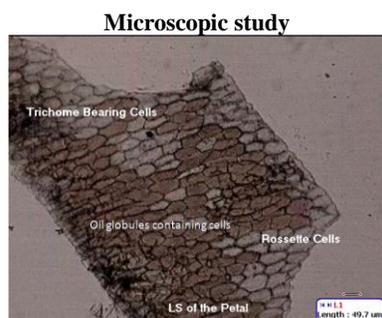
containing layer of cells. The remaining portion of the ovary wall consist of thin –walled, rectangular compact parenchyma cells. The ovules are anatropus and bitegmic

##### 3.1.3 Powder microscopy

Powder consist of fragments of petals in surface view with long and short unicellular trichomes, numerous entire and fragments of trichomes scattered as such in the powder. The petals bear dense epidermal trichomes. The trichomes were long, thin either straight or coiled the basal part was wide and the terminal part was tapering. Powder shows fragments of parenchyma, epidermis with stomatal cells, numerous, pointed, multicellular trichomes and oil globules and calcium oxalate crystals.



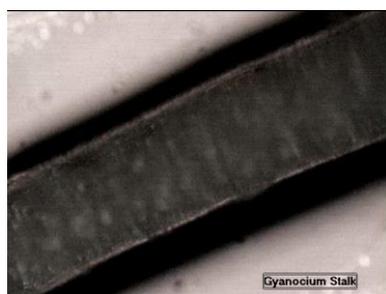
**Figure 5: T.S. of Petal of *Rakta Palash* Flower**



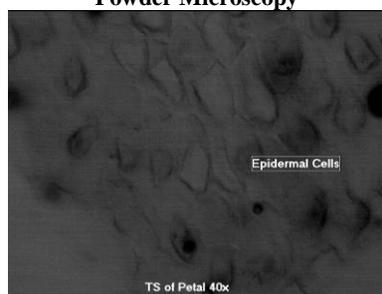
**Figure 6: L.S. of Petal of *Rakta Palash* Flower**



**Figure 7: T.S. of Ovary of *Rakta Palash* Flower**



**Figure 8: T.S. of Pollen Tube of *Rakta Palash* Flower**



**Figure 9: T.S. of epidermal cell(40x) of *Rakta Palash* Flower**



**Figure 10: *Rakta Palash* Flower showing trichomes**



Figure 11: Rakta Palash Flower showing trichomes

Table 2: Results of microscopic study

Sr. No.	Study	Structures	Palash flowers
1	T.S of Petal [Figure No. 5]	Epidermal cells	+
		Trichomes	+
		Parenchymal cells	+
		Vascular strands	+
2	L. S. of Petal [Figure No.6]	Epidermal cells	+
		Roset cells	+
		Trichomes bearing cells	+
3	T.S. of Ovary [Figure No. 7]	Oil globules cell	+
		Endosperma	+
		Ovules	+
		Tannin containing cells	+
	Powder microscopy [Figure No. 9, 11]	Tichomes	+
		Calcium oxalate crystals	+

#### 4. Discussion

In Pharmacognostical study, epidermal cells, Parenchymal cells are observed in T.S. of Petal of section of flowers. Oil globules cell are seen in L.S. of petals of flowers and tannin containing cells were observed in T.S. of ovary of flowers. T.S. of ovary shows ovules, endoderm and ovary wall in flowers. Trichomes are more in number in T.S. of petals of red flowers that means it is softer [Table no. 2].

#### 5. Conclusion

The microscopic study of the flowers revealed the presence of trichomes, Tannin containing cells, oil globules containing cell. Internal structure shows changes in T.S. of petals. *Palash* flower petals shows specific pattern in structure.

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