

Phytochemical Study flower of Palash (*Butea monosperma* Lamk.Taub)

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Abstract

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. The abundantly available *Rakta* variety is used commonly in medicines and is called as flame of the forest. 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 essential to have a proper documentation of such useful medicinal plants. In this article an attempt to compile and document Phytochemical Study of flowers of Palash (*Butea monosperma* Lamk .Taub).

Keywords: Dengue, Acute Kidney Injury, Proteinuria, Hyponatremia.

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*Article History:

Received: 21/12/2020
Revised: 27/03/2021
Accepted: 30/04/2021
DOI: <https://doi.org/10.7439/ijbr.v12i4.5499>

QR Code



How to cite: Daf P. and Daf S. Phytochemical Study flower of Palash (*Butea monosperma* Lamk.Taub). *International Journal of Biomedical Research* 2021; 12(04): e5499. DOI: 10.7439/ijbr.v12i4.5499 Available from: <https://ssjournals.com/index.php/ijbr/article/view/5499>

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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]. The plant is a bio-synthetic laboratory, not only for chemical compounds such as carbohydrates, proteins and lipids that are utilized as food by man, but also for a multitude of compounds like glycosides, alkaloids, volatile oils, tannins etc, that exert a physiological and therapeutic effect. The compounds that are responsible for the medicinal property of the drug are usually secondary metabolites derived as a result of plant metabolism [4]. Though there is an evidence of the uses of *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 of Palash flowers phytochemically.

1.1 Aim and Objectives

Aim: Phytochemical study of flowers of *Palash*. (*Butea monosperma* Lamk. Taub.)

Objectives: To study phytochemically flowers of *Palash*. (*Butea monosperma* Lamk. Taub.)

2. Materials and methods:

2.1 Materials

Powder of flowers of *Palash*, methanol, distilled water, chloroform, ethyl acetate, reagents, conical flasks with cork, water bath, filter paper, crucibles.

2.2 Method of extraction

5g of the powder of flowers of *Palash* was weighed and transferred to a 100ml methanol, 100ml distilled water, 100ml chloroform and 100ml ethyl acetate

graduated different conical flasks and the flask was corked and set aside for 24hrs with frequent shaking (Maceration). After 24 hrs it was filtered using a filter paper, 25ml of the total filtrate collected was kept aside for the determination of extractive values.

a. Procedure for organic compounds: [5]

1) Test for carbohydrates:

Molish's test (general test):

2 ml. aqueous extract taken in test tube and few drops of alpha-naphthol solution (in alcohol) was added, it was shaken and Conc. H₂SO₄ was added from the sides of the test tube. The test is considered to be positive with the appearance of violet ring formed at the junction of two liquids.

Test for reducing sugars: a) Fehling's test:

1ml. Fehling's A and Fehling's B solutions was mixed and then boiled for one minute. Equal volume of test solution was added in it. It was heated in boiling water bath for 5-10 min. The test is considered to be positive with the appearance of first yellow and then brick red precipitate is observed.

b) Benedict's test:

Equal volume of Benedict's reagent and test solution was mixed in test tube. It was heated in boiling water bath for 5 min. The test is considered to be positive with the appearance of greenish red solution depending on amount of reducing sugar present in test solution.

2) Test for Proteins -Biuret test (general test):

To 3ml.test solution was taken in test tube. 4% NaOH and a few drops of 1% CuSO₄ solution was added in it. The test is considered to be positive with the appearance of violet colour.

3) Test for steroids: Salkowski reaction:

2ml. of extract was taken, 2ml chloroform and 2 ml Conc H₂SO₄ was added in it and shaken well. The test is considered to be positive with the appearance of red colour for Chloroform layer and greenish yellow fluorescence for acid layer.

4) Test for Flavanoids:

a) Shinoda test:

5ml extract was taken in test tube, 95% ethanol was added and then few drops conc HCl and 0.5g magnesium turnings were added in it. The test is considered to be positive with the appearance of Crimson red colour.

b) Alkaline reagent test:

In extract, few drops of sodium hydroxide solution were added. The test is considered to be positive with the appearance of intense yellow colour which turns to colourless on addition of few drops of dilute acid.

5) Test for alkaloids:

a) Dragendorff's reagent:

2ml filtrate was mixed with few drops Dragendorff's reagent. The test is considered to be positive with the appearance of reddish brown precipitation.

b) Mayer's test:

2ml filtrate was mixed with few drops Mayer's reagent. The test is considered to be positive with the appearance precipitation.

c) Hager's test:

2ml filtrate was mixed with Hager's reagent. The test is considered to be positive with the appearance of yellow precipitation.

d) Wagner's test:

2ml filtrate was mixed with few drops Wagner's reagent. The test is considered to be positive with the appearance of reddish brown precipitation.

6) Test for Tannins and phenolic compounds;

In 2ml extract, few drops of following reagents were added.

- 5% FeCl₃: deep blue black colour.
- Lead acetate solution: white ppt.
- Dilute iodine solution: transient red colour.

Dilute HNO₃: reddish to yellow colour

7) Test for Glycosides -:

I) Killar-Killiani test (K.T) (Cardiac glycosides) -:

5ml extract of each sample was mixed with 0.4ml glacial acetic acid containing a trace of FeCl₃. Conc.H₂SO₄ was added from sides of test tube. The test is considered to be positive with the appearance of blue or violet or green colour in upper acid layer and a brown ring at the interface.

II) Guignard test (G.T) (Cyanogenetic glycosides)

Extract was added with 1% of picric acid and 10% Na₂CO₃. The test is considered to be positive with the appearance of red colour of solution.

8) Test for Saponins -Foam test

A drop of sodium bicarbonate was added in 5ml of extract of flowers. Then little water was added in the mixture, was vigorously shaken and left for about 3 min. The test is considered to be positive with the appearance of honey –comb like froth.

9) Test for Terpenoids -:

Salkowski test

3ml of conc.H₂SO₄ was added from sides of the tube to 5ml extract and 2 ml of chloroform. The test is considered to be positive with the development of reddish brown colouration at interface of the solution. [Table:1]

b. Procedure for inorganic compounds:

The ash of drug material was prepared. 50% HCl v/v or 50% HNO₃ v/v was added to ash. It was kept for 1 hr. Then it was filtered and with filtrate the following tests were performed.

- 1) Tests for calcium:** To 10ml filtrate, 1 drop NH₄OH & saturated ammonium oxalate was added. . The test is considered to be positive with the appearance of white ppt. of calcium oxalate.
- 2) Tests for Magnesium:** The calcium precipitate obtained in test for calcium was filtered and separated. The filtrate was heated and cooled; in this solution of

sodium phosphate in dilute ammonia was added. The test is considered to be positive with the appearance of white crystalline precipitate.

- 3) **Test for Sodium:** To 2 ml test solution, little uranyl magnesium acetate reagent was added; it was shaken well and kept for few minutes. The test is considered to be positive with the appearance of yellow crystalline ppt. of sodium magnesium uranyl acetate.
- 4) **Test for Potassium:** To 3 ml of Test solution, few drops of sodium cobalt nitrate solution were added. The test is considered to be positive with the appearance of yellow ppt for potassium cobalt nitrate.

- 5) **Test for Iron:** In 5 ml test solution, few drops of 2% Ferrocyanide were added. The test is considered to be positive with the appearance of dark blue colouration.
- 6) **Test for Sulphate:** In 5ml filtrate, few drops of 5% BaCl₂ solution were added. The test is considered to be positive with the appearance of white crystalline BaSO₄ ppt. appears that is insoluble in HCl.
- 7) **Test for Phosphate:** In 5ml test solution was prepared in HNO₃, to which few drops of 10% AgNO₃ solution was added. The test is considered to be positive with the appearance of white ppt. of AgCl₂. [Table:2]

3. Observation and Result

3.1 Preliminary phytochemical screening: Organic compound

Table 1: Results of chemical analysis Palash Flower: Organic compounds.

Sr. N.	Organic compound	Test	Extract of Palash Flower			
			Water	Methyl alcohol	Ethyl acetate	Chloroform
1	Carbohydrate	Molisch's	+ve	+ve	+ve	-ve
		Fehling's	+ve	-ve	-ve	+ve
		Benedicts	-ve	+ve	+ve	+ve
2	Proteins	Biuret test	+ve	+ve	+ve	+ve
3	Amino-acids	Ninhydrin test	-ve	-ve	-ve	-ve
4	Steroids	Salkowski reaction	-ve	+ve	+ve	+ve
5	Flavanoids	Shinoda test	+ve	+ve	+ve	+ve
		Alkaline reagent test	+ve	+ve	+ve	+ve
5	Glycosides	Keller killiani test	+ve	+ve	+ve	+ve
7	Saponins	Foam test	+ve	+ve	+ve	+ve
8	Alkaloids	Mayers	+ve	+ve	+ve	+ve
		Hagers	+ve	+ve	+ve	+ve
		Wagners	+ve	+ve	+ve	+ve
		Drgendroff's	+ve	+ve	+ve	+ve
9	Tannins and Phenolics	5% FeCl ₃	+ve	+ve	+ve	+ve
		Lead acetate	+ve	-ve	+ve	-ve
		Dilute iodine	+ve	+ve	+ve	-ve
		Dilute HNO ₃	-ve	+ve	-ve	-ve

3.2 Chemical analysis: Inorganic compounds in Palash flowers.

Table 2: Results of Chemical analysis: Inorganic compounds in Palash flowers.

Inorganic constituents	Palash flowers
Calcium	+
Magnesium	+
Sodium	+
Potassium	+
Iron	+
Sulphates	+
Phosphates	+

4. Discussion

Phytochemical analysis, Qualitative chemical evaluation was done with four extracts i.e. aqueous, methanol, ethyl acetate and chloroform for organic and inorganic compound flowers contain Organic compounds i.e. Carbohydrates, Flavanoids, steroids, Alkaloids and

Tannins[Table no.1]. And the inorganic compounds present are Calcium, Magnesium, sodium, sulphates and chlorides in Palash flowers [Table no.2].

5. Conclusion

It means flowers of Palash have the chemical constituents like alkaloids, glycosides flavonoids etc. Therefore due to these chemical constituents they may show varied biological activity.

References

- [1]. Sharma P.C., Yelne M.B., Dennis T.J, Database on Medicinal plants used in Ayurveda, Vol I, edi-1st, Central Council for Research in Ayurveda and Siddha, New Delhi, 2002, p.336.
- [2]. Naraharikrut, Raj Nighantu, Hindi commentary by Indradeo Tripathi, edited with Dravyaguna prakasika,

- 3rd edn.-, Chaukhamba Krishnadas Academy, Varanasi, 2003, p.304.
- [3]. Sharma P.C., Yelne M.B, Dennis T.J, Database on Medicinal plants used in Ayurveda, Vol-I, Edi-1 st, Central Council for Research in Ayurveda and Siddha, New Delhi, 2002, p.337,2016.
- [4]. Kokatte C.K., Purohit A.P., Gokhale S.B., Pharmacognosy, Vol I & II, Nirali Prakashan, Mumbai, 46th edn, Dec 2010, Chapter 6, p-6.24.
- [5]. Kokatte C. K., Purohit A.P., Gokhale S.B., Pharmacognosy, Vol I & II, Nirali Prakashan, Mumbai, 40th edn, March 2008, pp. 607-611.