

Phyto-Chemical Investigation and Methanolic Extract of *Thespesia Populnea* Leaves

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ABSTRACT

Thespesia populnea, commonly known as the Portia tree is species of [flowering plant](#) in the [mallow](#) family, [Malvaceae](#). *Thespesia populnea* is medicinally important plant species used to treat different diseases. The present work is aimed to screen the leaves of this medicinal plant for phyto-chemical studies. Leaf powder of these plant was dissolved in methanolic solvents and screened for secondary metabolites. Leaves of *Thespesia populnea* revealed that the presence of Steroid, Coumarin, Diterpenes, Alkaloid, Amino- Acids, Phyto-Sterol, Cardial Glycosides etc. *Thespesia populnea* plant leaves shows variation in synthesis of secondary metabolites. *Thespesia* accumulates more number of secondary metabolites. Aqueous and methanol extracts are suitable for extraction of secondary metabolites for *Thespesia* species. The findings of the present study will be helpful to the phyto-chemists and pharmacologists.

Keyword – *Thespesia populnea* , Screening, Extract, Methanol, Phyto-chemical properties etc.

INTRODUCTION:-

Thespesia populnea, commonly known as the Portia tree is species of [flowering plant](#) in the [mallow](#) family, [Malvaceae](#). It is a small [tree](#) or arborescent [shrub](#) that has a [pantropical](#) distribution. The milo tree is a small to medium-sized tree growing to less than 40 feet high. The trunk can be 2 feet in diameter at full maturity.

In India, the ground up bark is used to treat skin diseases and in Mauritius dysentery and haemorrhoids. Leaves are applied to inflamed and swollen joints in South India. Also, when cut, the young fruit secretes a yellow sticky sap used to treat ringworm and other skin diseases. Roots are used as a tonic. There is some modern investigation of the plant's effects on high blood pressure. It having economic as well as social value.

The plant selected for the present study is *Thespesia populnea*. Now a days it is necessary to identify and detect the phyto-chemical properties of plant material. The main focus of researcher on its leaf. The objective of the study is to investigate the study of preliminary phyto-chemical properties of Leaves of *Thespesia populnea*.

MATERIAL AND METHOD:-

Plant Material –

The fully matured leaves of *Thespesia populnea* was collected from tribal region of Akole Tehsil of Ahmednagar district (M S) , India during August 2016. The leaves were washed thoroughly and dried in the shade. The dried leaf powder was used for experiments.

Preparation of Extract –

The air dried fine powder of *Thespesia populnea* leaves was soaked in one liter of 80% aqueous Methanol at room temperature for 48 hrs and concentration of filtrate made up to 1/10 level. The remaining extract was used for the test of phyto-chemical analysis.

PHYTO-CHEMICAL SCREENING:-

1) Steroid :-

1ml of extract was dissolved in 10 ml of chloroform & equal volume of concentrated H_2SO_4 acid was added from the edge of test tube. The upper layer was not turns to red and H_2SO_4 layer showed yellow color with green fluorescence. This indicates the presence of steroid.

2) Tannin :-

a) 2ml of extract was added to 1% lead acetate solution. No yellowish precipitate indicates the absence of tannin.

b) 4 ml of extract was treated with 4 ml of $FeCl_3$. There is no formation of green color indicates that absence of condensed tannin.

3) Saponin :-

5ml of extract was mixed with 20ml of distilled water. Then it is agitated in graduated cylinder for 15 minutes. No formation of foam indicates the absence of Saponin.

4) Anthocyanin :-

2ml of aqueous extract is added to 2 ml of 2N HCl & NH_3 . The pink - red color doesn't change to blue violet color, indicates absence of Anthocyanin.

5) Coumarin :-

3ml of 10% NaOH was added to 2 ml of aqueous extract. The formation of yellow color indicates presence of Coumarins.

6) Emodins :-

2ml of NH_4OH and 3ml of benzene was added to extract. There is no appearance of red color which indicates the absence of Emodins.

7) Alkaloids :-

A quantity (3ml) of concentrated extract was taken into a test tube and 1 ml HCl was added. The mixture was heated gently for 20 minutes and then cooled. After filtration the filtrate was used for following test.

Wagner Test: Filtrate was treated with Wagner's reagent. The formation of brown reddish precipitate indicates the presence of Alkaloids.

8) Proteins :-

Xanthoproteic test: Extract was treated with few drops of concentrated HNO_3 . There no formation of yellow color indicates the absence of Proteins.

9) Amino Acids :-

Ninhydrin test: To the 2ml of extract, the ninhydrin was added. Then boiled for few minutes. The formation of blue color indicates the presence of Amino Acids.

10) Carbohydrates :-

Extract was dissolved in 5ml of distilled water and filtered. The filtrate was used for the following test.

Molisch's test: Filtrate was treated with 2 drops of alcoholic α -naphthol solution in the test tube. There is no formation of violet ring at the junction which indicates the absence of Carbohydrate.

11) Flavonoid :-

a) **Alkaline reagent test:** Extract was treated with 10 % NaOH solution. There is no formation of intense yellow color indicates the absence of Flavonoid.

b) **NH_4OH test:** 3ml of extract was added to 10% NH_4OH solution. There is no development of yellow fluorescence which indicates that the test is negative.

c) **Mg turning test:** Extract was treated with Mgturning and added conc. HCl to this solution and then added 5 ml of 95 % ethanol. There is no crimson red color. It indicates the absence of Flavonoids.

12) Diterpenes :-

Copper acetate test: Extract was dissolved in distilled water and treated with 10 drops of copper acetate solution. The formation of emerald green color indicates the presence of Diterpenes.

13) Phytosterol :-

Salkowski's test: Extract was treated with chloroform and filtered. The filtrate was treated with few drops of concentrated H_2SO_4 and shakes well then allowed for standing, the appearances of golden red precipitation indicates the positive test.

14) Phenol :-

Ferric Chloride test: The extract was treated with 4 drops of alcoholic $FeCl_3$ solution. There is no formation of bluish black color, indicates the absence of Phenol.

15) Phlobatannins :-

The aqueous extract of sample was boiled with 1% aqueous HCl. No deposition of red precipitation evidences the absence of Phlobatannins.

16) Leuconthocyanin :-

5ml of iso-amyl added to 5ml of aqueous extract. The upper red color became colorless, indicates the absence of Leuconthocyanin.

17) Cardial Glycosides :-

Keller-Killani Test Extract was added with 2ml of glacial acetic acid along with a drop of $FeCl_3$. A brown color ring indicates the positive test.

Sr.No.	Secondary metabolites	Result
1	Steroid	+
2	Tannin	-
3	Saponin	-
4	Anthocyanin	-
5	Coumarin	+
6	Emodins	-
7	Alkaloids	++
8	Proteins	-
9	Amino acid	+++
10	Carbohydrates	-
11	Flavonoids	-
12	Diterpenes	+
13	Phytosterol	++
14	Phenol	-
15	Phlobatannins	-
16	Leuconthocyanin	-
17	Cardial Glycosides	+

Table- 1: Phyto-chemical Analysis methanolic extract of the leaves of the plant *Thespesia populnea*

RESULT AND DISCUSSION:-

Preliminary phyto-chemical investigation of the methanolic extract of the leaves of the plant *Thespesia populnea* shows the presence of Steroid, Coumarin, Alkaloids, Amino acid, Diterpenes, Phyto-sterol, and Cardial Glycosides .There is slight variation in contents. It might be due to plant source variation and change of method of extraction. On the basis of these data, researcher can easily isolate the particular leaves extract for qualitative analysis.

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