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## RESEARCH ARTICLE

## Phytochemical Screening of Leaf Extract of *Meizotropis pellita* (Patwa) : An Endangered Plant Species

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### Abstract

The aim of this investigation to assess the phytochemical screening of the Ethanolic and Methanolic leaf extract of locally available *Meizotropis pellita* (Patwa Plant). Different tests are performed to find the phytochemicals that are present so as to subject the plant for further medicinal uses .These chemical constituents are mainly responsible for various biological activities. From the phytochemical studies conducted it was found that there is the presence of alkaloids, carbohydrates, proteins in the plant sample. These chemical constituents are mainly responsible for various biological activities. The plant sample collected from the forest of the Institute of Biotechnology (Patwadangar), Nainital . After the collection of leaves, they were dried and crushed into a powdered form. Finally an extract was prepared using different solvents. After this the phytochemical analysis was performed to find out the above mentioned chemical constituents found in *Meizotropis pellita* from patwadangar.

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## INTRODUCTION

*Meizotropis pellita* commonly known as **Patwa** . It is basically found in **Patwadangar (Nainital Distt.)**. Patwa plant grows on flat hill tops and on valley slopes near open Pine forests. It is a rare and endangered plant. Due to human interference like deforestation and forest fires.

### Taxonomical Classifications

Kingdom - Plantae  
Sub Kingdom - Viridiaeplantae  
Phylum - Magnoliophyta  
Sub Phylum - Euphylllophytina  
Sub class - Rosidae  
Order - Fabales  
Family - Fabaceae  
Genus - Meizotropis



***Meizotropis pellita* (Patwa)**

### **Materials and methods :**

#### **Collection and processing of plant material :**

The fresh leaves of *Meizotropis pellita* were collected from the hill slopes of Patwadangar, Nainital in the month of August. The collected plant material was washed with tap water thrice and then with distilled water for 2-3 times. The plant was shade dried for few days and then kept in incubator at 37°C for 2-3days. The dried plant material was then crushed in mechanical grinder in order to make fine powder which was stored at room temperature.

#### **Preparation of Plant Extract :**

**Ethanolic extract** - The powdered material was weighed 5gm and is subjected to soxhlet extraction using Ethanol (60ml) as solvents in successive mode. The extraction was carried out till the colourless solution was noticed in the middle-chamber, understanding that the soluble component(s) were eluted with the action of the used organic solvent. The solvent was then recovered using water bath and the concentrated extract was preserved in an airtight bottle. The crude extracts thus obtained were used for further investigation of phytochemical screening.

**Methanolic extract** - The powdered material was weighed 5gm and is subjected to soxhlet extraction using Methanol (150ml) as solvents in successive mode. The extraction was carried out till the colourless solution was noticed in the middle-chamber, understanding that the soluble component(s) were eluted with the action of the used organic solvent. The solvent was then recovered using water bath and the concentrated extract was preserved in an airtight bottle. The crude extracts thus obtained were used for further investigation of phytochemical screening.



**SOXHLET APPARATUS**

### **PHYTOCHEMICAL ANALYSIS**

The extracts of *Meizotropis pellita* were analyzed for the presence of various phyto-constituents which were identified using standard phytochemicals procedures. A small portion of the dry extract was used for the phytochemical tests for compounds which include tannins, flavonoids, alkaloids, saponins, steroids etc. Exactly 50 mg of plant extract was dissolved in 50 ml of distilled water and corresponding solvent.

**Test for carbohydrate**

- **Molish Test:** To 2-3 ml aqueous extract, added few drops of  $\alpha$ -naphthol solution in alcohol, shaken and added concentrated  $H_2SO_4$  from sides of the test tube was observed for violet ring at the junction of two liquids.  
 $\alpha$ -Naphthol solution – 10gm of  $\alpha$ -naphthol in 100ml of 95% alcohol.
- **Fehling's Test-** 1ml Fehling's A and 1ml Fehling's B solutions was mixed and boiled for 1 minute. Equal volume of test solution was added. Heated in boiling water bath for 5-10 minutes. Observed for yellow, then brick red precipitate.
- **Benedict's Test-** Equal volume of Benedict's reagent and test solution in test tube were mixed. Heated in boiling water bath for 5 minute. Solution may appear green, yellow or red depending on amount of reducing sugar present in test solution.
- **Cobalt-chloride test:** 3 ml of test solution was mixed with 2ml cobalt chloride, boiled and cooled. Added  $FeCl_3$  drops on NaOH solution. Solution observed for greenish blue (glucose), purplish (Fructose) or upper layer greenish blue and lower layer purplish (Mixture of glucose and fructose).

**Tests for Proteins :**

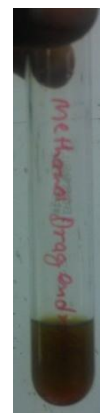
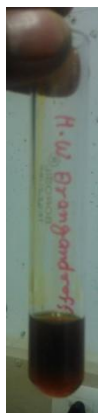
**Preparation of Test Solution :** The test solution was prepared by dissolving the extract in water.

- **Biuret test (General test):**

To 3 ml T.S added 4% NaOH and few drops of 1%  $CUSO_4$  solution observe for violet or pink colour.

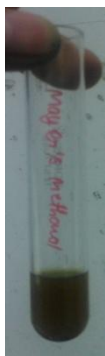
**Tests for Alkaloids :-**

a) **Dragendorff's test :** To 2-3 ml filtrate added few drops Dragendorff's reagent observed for orange brown precipitate.



b) **Mayer's test :** 2-3 ml filtrate with few drops Mayer's reagent observed for precipitate.

**Mayer's reagent-** dissolve 1.36 gm mercuric chloride in 60 ml distilled water adds it a solution of 5gm potassium iodide in 20 ml dist. Water, make volume to 100ml.



c) **Hager's test** : 2-3 ml filtrate with Hager's reagent observed for yellow precipitate.

**Hager's reagent** -Dissolve 1gm of picric acid in 100ml of water.



d) **Wagner's test** : 2-3 ml filtrate with few drops of Wagner's reagent observed reddish brown Precipitate.

**Wagner's reagent**- dissolves 1.27 gm of iodine and 2gm of potassium iodide in 5ml of water and make up the volume to 100ml with dist. water.

## Result and Discussion

### Test For Carbohydrates

	ETHANOL	METHANOL	HOT WATER
a) Molish's Test	- ve	- ve	- ve
b) Fehlings Test	- ve	+ ve	+ ve
c) Benedict's Test	+ ve	- ve	+ ve
d) Cobalt Chloride	+ ve	- ve	- ve

### Test For Proteins

	ETHANOL	METHANOL	HOT WATER
a) Biuret Test	+ ve	- ve	+ ve

### Test For Alkaloids

	ETHANOL	METHANOL	HOT WATER
a) Dragendorff's Test	+ve	- ve	+ve
b) Mayer's Test	- ve	+ ve	+ ve
c) Hager's Test	+ ve	+ ve	- ve
d) Wanger's Test	+ ve	+ ve	+ ve

The results confirm the presence of constituents which are known to exhibit medicinal as well as physiological activities. The phytochemical characteristics of the leaf extract of *Meizotropis pellita* investigated are summarized in table. The results reveal the presence of medicinally active constituents like Alkaloid, carbohydrates, Proteins in the leaves of *Meizotropis pellita*. While Amino acids, steroids, terpenoids, phytosterols and glycosides were absent in these leaves found here. The results obtained in this study thus suggest that the identified phytochemical compounds may be the bioactive constituents responsible for the efficacy of the leaves of the plants studied. The presence of some of these compounds have also been confirmed to have antimicrobial activity. Hence it could be inferred that the plant extracts could be a source for the industrial manufacture of drugs useful in the chemotherapy of some microbial infection.

## Conclusion

The major step of standardization is Phytochemical screening the conclusion revealed with phytochemical screening result make a general therapeutic aspect on plant drug sample. It is used as a herbal medicine.

Collected leaves of *Meizotropis pellita* from medicinal garden IBT .The leaves are extracted in different solvent i.e. in methanol, acetone ,hot water and cold water. Evaluation of phytoconstitutes present in them was done. The plant extract contains alkaloids. Extract also contains carbohydrates, and carbohydrates. The present study provides evidence that solvent extract of *Meizotropis pellita* contains medicinally important bioactive compounds and this justifies the use of plant species as traditional medicine for treatment of various diseases.

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