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Research Article

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## Preliminary Phytochemical Investigations of *Unifoliata Butea* Species: A Member of Fabaceae

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### ABSTRACT

The present paper attempts to investigate preliminary phytochemical analysis of *Unifoliata Butea* Species, a member of fabaceae. Plant was reported from Mehkar in Tahsil Mehkar of Buldana district of Maharashtra State. The preliminary phytochemical tests of extracts of *Unifoliata Butea* from stem bark in solvents petroleum ether, ethanol, benzene, chloroform, acetone and water revealed the presence of alkaloids, glycosides, phytosterols, saponines, tannins and carbohydrates. The results obtained in the present study suggest that plant has medicinal properties.

**Keywords:** *Unifoliata Butea*, Palash, Fabaceae, alkaloids, glycosides, phytosterols, saponines, tannins and carbohydrates.

### ARTICLE INFO

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### 1. Introduction

Medicinal plants have been used in virtually in all cultures as a source of medicines since time immorial. Herbal medicine is still the mainsky of health care in several developing countries. The *Unifoliata Butea* Species belongs International Journal of Pharmacy and Natural Medicines

to the *Butea Monosperma*, family Fabaceae and commonly known as flame of forest, Dhak, Palash which has immense potential and appears to have a broad spectrum of activity on several ailments [1]. This species is rare and indiginious.

Generally leaves are 3-foliolate, petioles 10-15 cm long, stipules linear lanceolae in *Butea Monosperma*. leaves are unifoliolate in the present case study. *Unifoliolate Butea* is extensively used in Ayurved, Unani and Homeopathic medicine. It is used in urinary troubles, piles, white discharge. Stem paste is applied on cuts and wounds, paste from ponds in scorpion bite and seed powder is taken orally as contraceptive [2]. The stem bark is useful in treatment of dyspepsia, diarrhoea, dysentery, ulcer, sore throat and snake bite [3].

Literature survey revealed that phytochemistry of stem bark of *Unifoliolate Butea* species has not been much reported and hence it was thought worthwhile to investigate the phytochemistry of this species. The utility and importance of the tree to the local inhabitants of Buldana district form subject of matter of this investigation. Many publications on *Butea Monosperma* are reported in literature [4-6]. Ethnomedicinal knowledge of plants used by local peoples in Buldana district of Maharashtra (India) is reported by D. A. Patil and co-workers [7]. Indigeneous healthcare practices in Buldana district are reported by same authors [8].

In the present work preliminary phytochemical constituents of bark stem of *Unifoliolate Butea* are analysed from the tree which was identified from Tahsil Mehkar of Buldana district, Amravati division of Maharashtra state in Western India. It is situated at the Westernmost border of Vidharbha region of Maharashtra. Buldana district is bounded by Madhya Pradesh on the north-west. Akola, Washim districts on the east, Jalna district on the south and Jalgaon, Aurangabad districts on the west.

*Unifolia butera* tree is an erect, medium sized to 05-08 mtrs. in height with crooked trunk and irregular branches, bark rough, ash coloured. Leaves are unifoliolate, petiole 10-15 cm long, stipules linear lanceolate, Leaflet coriceous terminal 10-20 broadly ovate from a cuneate base, flowers are large in rigid racemes 15 cm long forming tumid nodes of dark olive green velvety rhachis pedicels about twice as long as the calyx. These flowers in the month of February and stay on nearly up to end of April. The size is nearly 2 to 4 cm in diameter. The fruits of palas are a flat legume. Podi are stalked 12-20 by 2-5 cm thicken & at the suluries.



**Figure 1:** Photograph of leaf & flowers of *Unifoliolate Butea*  
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## 2. Materials and Methods

The plant material for present investigation was collected from Mehkar, Tahsil Mehkar of Buldana District. The collected plant material was identified taxonomically by local taxonomist and flora [9]. After completion of description, identification and noting of ethno medicinal significances, the plant material was subjected for investigation of phytochemical constituents by reviewing literature. Methods proposed by Harbon [10] and Kokate [11] have been followed for phytochemical study of the plant. The plant material was treated and analysed at the laboratory of P.G. Department of Chemistry, Jijamata Mahavidyalaya, Buldana (M.S.) India.

### Preparation of Extracts:

The plant material stem bark collected was shade dried, crushed to powder and passed through sieve # 40. The sieved powder was stored in air tight polyethylene containers before extraction. The air dried powder was extracted in Soxhlet assembly successively first with petroleum ether. The extract obtained in the solvent was concentrated by distilling of solvent and then evaporated to dryness on water bath at 50°C. Before extracting with other solvent the residue powder was dried in hot air oven below 50°C. Dried residue was extracted successively with benzene, chloroform, acetone, ethanol and water. The extract obtained in each solvent was concentrated and solidified. Solvent free extract obtained as above was tested for the different phytochemical tests [12].

### Phytochemical Tests:

The presence or absence of different phyto-constituents were detected by usual prescribed methods [13-16].

### Detection of Alkaloids:

Small portions of solvent free alcoholic and water extract was transferred in three test tubes and was stirred with few drops of dil. HCl and filtered. The filtrate was tested carefully for alkaloids.

- Mayer's Test:** Test solution with Mayer's reagent (Potassium Mercuric iodide) gives cream coloured precipitate.
- Hager's Test:** The acidic solution with Hager's reagent (Saturated Picric acid solution) gives yellow precipitate.
- Dragendorff's Test:** The acidic solution with Dragendorff's reagent (Potassium Bismuth Iodide) gives reddish brown precipitate.

### Detection of Glycosides:

A small quantity of extract on hydrolysed with dil. HCl was used for test of glycosides.

- Bromine water test:** Test solution dissolved in bromine water gives yellow precipitate.
- The test solution treated with Sodium Picrate gives yellow orange colour.
- Legal's test:** Test solution when treated with Pyridine (made alkaline by adding Sodium nitropruside solution) gives the red colour.

### Detection of Phytosterols:

The petroleum ether, acetone and alcoholic extracts were treated separately with solution of potassium hydroxide 1% till complete saponification takes place. Mixture of 5ml treated extract, 5 ml distilled water and 5 ml ether was well

shaken & evaporated to half quantity by volume which was further tested for phytosterols.

- Lieberman – Burchard test:** The test solution treated with few drops of acetic anhydride and mixed with con. Sulphuric acid was added from the side of test tube, it showed a brown ring at the junction of the two layers. The upper layer turns green.
- Sulphur test:** Sulphur when was added in to the test solution, it sinks in it.

#### Detection of Saponins:

Foam test: To 1 gm alcoholic and aqueous extract, 1 ml of distilled water was added with constant shaking from the foam, which was stable for 15 minutes.

#### Detection of Tannins:

To small quantity of alcoholic and aqueous extract addition of 5% Ferric chloride solution gave green colour indicated presence of Tannins.

#### Detection of Carbohydrates:

Test solutions were subjected to Molisch's test, Benedict's test and Fehling's solution tests indicated presence of carbohydrates.

### 3. Results and Discussion

The phytochemical screening of the stem bark of *Unifoliata Butea* species showed presence of alkaloids, glycosides, phytosterols, saponins, tannins and carbohydrates. The phytochemical constituents of *Unifoliata Butea* species in extracting solvents are tabulated in table no. 1.

**Table 1:** Phytochemical constituents of *Unifoliata Butea* species (Stem bark)

Test	Reagent	Extracting Solvent					
		Petroleum Ether	Benzene	Chloroform	Acetone	Ethanol	Water
Alkaloids	Mayer's Reagent	-	-	+	-	-	-
	Hager's Reagent	+	-	-	+	+++	++
	Dragendroff's Reagent	++	++	+	+++	++	++
Glycosides	Bromine water	-	+	++	-	-	+++
	Sodium Picrate	-	+	++	-	-	+++
	Legal's test	-	+	++	-	-	+++
Phytosterols	Liebermann- Burchards Test	++	+++	-	-	-	++
	Sulphur test	++	+++	-	-	-	++
Saponins	Foam test	-	+++	++	-	-	++
Tannins	Ferric chloride solution test	-	-	-	+++	+++	+++
Carbohydrates	Molisch's test	-	-	-	+++	++	+++
	Benedict's test	-	-	-	+++	++	+++
	Fehling solution test	-	-	-	+++	++	+++

(Low +, medium ++, high +++, absent -)

### 4. Conclusion

The constituents of *Unifoliata Butea* species were analysed by different preliminary phytochemical tests showed the presence of alkaloids, glycosides, tannins, saponins, phytosterols and carbohydrates. Plant has significant value in ethno-medicinal system but it is not used in health care system as its occurrence is restricted to particular area. There is urgent need of research on this rare and indigenous species from medicine point of view.

### 5. Acknowledgement

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