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Phytochemical screening of the ethanolic extracts of *Butea monosperma* (Lam.)

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Abstract

The present paper deals with the evaluation of the presence of phytoconstitute in ethanolic fractions of *Butea monosperma* (Lam.). Leaves powder of the plant was extracted successively with ethanol. Qualitative chemical tests were carried out for the ethanolic extract of *B.monosperma*. The results of the tests showed the presence of carbohydrates, reducing sugars, saponins, phenolics, tannins, and flavonoids. On the basis of all the qualitative tests performed in each extracts; ethanolic extract was subjected for the further phytochemical and pharmacological studies.

Key-Words: *Butea monosperma*, Leaves, Ethanolic Extract

Introduction

Butea monosperma (Lam.) Taub (Syn. *Butea frondosa*; Family Fabaceae) popularly known as 'dhak' or 'palas' commonly known as 'Flame of forest', palash, mutthuga, bijasneha, khakara, chichara, Bastard teak, Bengal kino.^[1] *Butea monosperma* (Fabaceae) commonly called Palash and "Flame of the forest" is a tree growing in abundance in most part of India, Berma, Srilanka and Pakistan is valued in Indian peninsula for its religious general and therapeutic applications

It grows throughout India except in very arid parts and is a medium sized deciduous tree. Parts used are bark, leaf, flower, seed and gum ect. They comprise one of the largest families of flowering plants, numbering 630 genera and 18,000 species.^[2]

Butea monosperma is a small to medium-sized deciduous tree, 5-15 (max. 20) m tall, up to 43 cm dbh; trunk usually crooked and tortuous, with rough greyish-brown, fibrous bark showing a reddish exudate; branchlets densely pubescent. Leaves trifoliate; petiole 7.5-20 cm long with small stipules; leaflets more or less leathery, lateral ones obliquely ovate, terminal one rhomboid-obovate, 12-27 x 10-26 cm, obtuse, rounded or emarginate at apex, rounded to cuneate at base, with 7-8 pairs of lateral veins, stipellate.

Flowers in racemes, 5-40 cm long, near the top on usually leafless branchlets; calyx with campanulate tube and 4 short lobes; corolla 5-7 cm long, standard, wings and keel recurved, all about the same length, bright orange-red, more rarely yellow, very densely pubescent. Fruit an indehiscent pod, (min. 9) 17-24 x (min. 3) 4-6 cm, stalked, covered with short brown hairs, pale yellowish-brown or grey when ripe, in the lower part flat, with a single seed near the apex. Seed ellipsoid, flattened, about 3 cm long. Glucoside, Kino-oil containing oleic and linoleic acid, palmitic and lignoceric acid. It also contains glucose, glycine, a glycoside (aglycon) and an aromatic hydroxy compound. Burma and Ceylon extending in the north west himalayas as far as Jhelum except in very arid parts.^[3] Commonly *Butea monosperma* is used as tonic, astringent, aphrodisiac and diuretics. ^[4] Roots are useful in filariasis, night blindness, helminthiasis, piles, ulcer and tumours. ^[5] It is reported to possess antifertility, aphrodisiac and analgesic activities. ^[6] Flowers are useful in diarrhoea, astringent, diuretic, depurative and tonic. ^[7] The stem bark is useful in indigenous medicine for the treatment of dyspepsia, diarrhoea, dysentery, ulcer, sore throat and snake bite ^[8]. It is mainly useful as antihelminthic appetizer, aphrodisiac, laxative etc.^[9,10].

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Material and Methods

Plant Material

The plant part (leaves) were collected and authenticated by Department of Crop and Herbal physiology, Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur (M.P.) in the month of November, 2013 and dried in shade and were coarsely powdered and used for preparation of extract.

Preparation of ethanolic extracts

Firstly separate the chlorophyll from powdered part of plant by the activated charcoal than dry. The plant material (30 g) was coarsely grinded and subjected to defatting by Petroleum ether.

The marc obtained after petroleum ether was subjected to ethanol extraction in soxhlet apparatus. The extraction was continued for a period of 6-7 days to achieve complete extraction. Finally extract was dried at 40°C under pressured and stored at 4°C until use. The dried extracts of the drugs were evaluated for physical parameters such as consistency, color, odor and taste.

Preliminary phytochemical investigations

The preliminary phytochemical investigations were carried out with ethanolic extracts of leaves of *B. monosperma* for qualitative identification of phytochemical constituents present. The tests were carried out by standard methods. All the chemicals and reagents used were of analytical grade.

Results and Discussion

The plant after drying, was powdered and it was subject for the organoleptic characterization. The colour of the powdered drug was found to be light green with aromatic odour and coarse texture. After this 30 gm powdered drug was carried out for direct ethanolic extraction. The extractive value was calculated and was found to be 10.2 %. The extract was further examined for its physical characterization like colour, odour, consistency, etc. The colour of the extract was brown, with a semi-solid consistency. Extract had pungent odour, showed the presence of desired phytochemicals i.e. Flavonoids, Tannin. Qualitative chemical tests were carried out for the ethanolic extract of *B. monosperma*. The results of the tests showed the presence of carbohydrates, reducing sugars, saponins, phenolics, tannins, and flavonoids.

Conclusion

Today we are witnessing a great deal of public interest in the use of herbal remedies. Herbal medicine is based on the premise that plants contain natural substances that can promote health and alleviate illness. This work was conducted to explore the hidden potential of this unexplored herb. Initially due to the less data available in this plant we felt tough to decide the basis of our

work, so the strong basis was opted to work on that plant was the other species of the same genera and phytochemical reported on this plant mainly flavonoids. In recent findings done on these plants as well as flavonoids. It was thought worthwhile to investigate and to provide the scientific data on its use as an antibacterial agent. The successive solvent extraction was the primary work done in it, the extractive value of all the extracts except the ethyl acetate and ethanolic extract were in workable quantities. Qualitative tests revealed the fact that ethanolic extract of this plant contains major phytochemicals viz. phenolics, flavonoids, tannins, saponins, and traces of alkaloids. It was thought worthy to select this extract for the further studies.

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Table I: Organoleptic characters of powder of crude drugs

Drug	Nature	Color	Odour	Texture
<i>Butea monosperma</i>	Coarse	Dark green	Aromatic	Rough

Table II: Physical characteristics of extracts of *Butea monosperma*

Name of Extract	Consistency	Color	Odor	Extractive value (%w/w)
Petroleum ether	Semi- Solid	Dark green	Characteristic	7.7%
Ethanol extract	Semi- Solid	Brown	Pungent	10.2%
Direct)				

Table III: Qualitative chemical tests performed in the ethanolic extract of *Butea monosperma*

Phytoconstituents	Ethanolic extract
Alkaloids	+
Glycosides	-
Phenols/Tannins	+
Flavonoids	+
Saponins	++
Fixed oil/Fats	+
Gums & Mucilage	+
Carbohydrates	-
Amino acids	-
Steroids	+

+ = Present - = Absent

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