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To Study Pharmacognostic, Physicochemical and Phytochemical Study of Stem Bark of *Bauhinia purpurea* Linn

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ABSTRACT

To present study was deals with the study of pharmacognostic and phytochemical analysis of stem bark of *Bauhinia purpurea* Linn, during the study the different parameter like Macroscopic and Microscopic, physico-chemical and Preliminary Phytochemical analysis of various extract of stem bark of *Bauhinia Purpurea* Linn, during microscopic studies of authenticated plant *Bauhinia purpurea linn* stem bark was done with the help of Motic image plus 2.0 microscope. Microscopic studies of stem bark show the presence of cork (few layers polygonal tabular cells),cortex which having 10 to 12 parenchyma and stone cells layer (pericyclic), pericyclic fibers (non-lignified), sclereids (sclerenchymatous cells), Medullary rays narrow at inner side ,wider in the sclereids band side, contains starch ,acicular raphides and oil cells was found to be Big –isolated. Physicochemical investigation shows the total ash, acid insoluble ash, water soluble and alcohol soluble extractive value were 9.5% w/w, 1.9% w/w and 14% w/w, 6.6%w/w respectively. The preliminary phytochemical analysis reveleaved the presence of steroid, tannins, flavonoids, carbohydrate, protein and saponin. the pharmacognostic and phytochemical investigation of *B. Purpurea* for authentication and standardization of sample.

Keywords: *Bauhinia purpurea*, Phytochemical Study, Stem Bark.

1. Introduction

Bauhinia purpurea Linn a medium sized deciduous tree, bark ashy to dark brown, nearly smooth, young parts brown-pubescent. Leaves 7.5-15 cm. long, rather longer than broad, cleft about half way down into 2 acute or rounded lobes, flowers large rosy purple commonly cultivated throughout India. Literature survey revealed that the bark of *Bauhinia purpurea* is traditionally used as an astringent in diarrhea. Flowers are laxative. The bark, root and flower mixed with rice water are used as a maturant for boils and abscesses [1, 2, 3].

2. Material and method

2.1 Plant material

The stem bark of plant *Bauhinia purpurea* Linn Were collected locally, from Bharatnagar opposite L.I.T Nagpur. It was authenticated by Prof. (Mrs.) Alka Chaturvedi, Department of Botany, Nagpur University, Nagpur. Its herbarium is deposited in the above department. (Voucher specimen no.9132) The stem bark of *Bauhinia purpurea* was dried in shade under normal environmental condition and subjected to size reduction with the help of Laboratory Grinder. Such powdered drug was charged into Soxhlet apparatus and extraction was carried out with Petroleum ether, Chloroform, Ethyl Acetate, Acetone, Methanol and maceration of Hydro alcoholic extract.

2.2 Macroscopic and Microscopic evaluation

Macroscopic evaluation were done by using simple microscope to determine the color, odour, shape and size and Microscopic study was carried out by thin transverse section of stem bark. The section were cleared with chloral hydrate and stained with hydrochloric acid: phloroglucinol (1:1) under the motic image plus 2.0 microscope.

2.3 Physicochemical study [11]

Physicochemical parameters of the powdered drug such as total ash, water soluble ash, and acid insoluble ash were determined. Alcohol and water soluble extractive value were determined to find out % amount of soluble component in alcohol and water. The moisture content was detected by loss on drying method.

2.4 Determination of Ash and Extractive Values [5, 6, 7]

The ash of any organic material is composed of their non-volatile inorganic components. Controlled incineration of plant drugs results in an ash residue, which is composed of an inorganic mixture of metallic salts and silica. In certain drugs, the percentage variation of weight of ash from sample to sample is very small and marked difference indicates a change in quality. Unwanted parts of drugs sometimes possess a character, which will raise the ash value, for example, the sclereids in the unwanted pericarp of colocynth and the cork on liquorice, which is not required in the powder of the peeled drug. More direct contamination, such as sand or earth, is immediately detected by the ash value [5].

2.5 Total ash

Ashing involves an oxidation of the component of the product. A high ash value is indicative of contamination, substitution, adulteration or carelessness in preparing the crude drug for marketing. The total ash usually consist of carbonates, phosphates, silicates and silica which includes both physiologic ash- which is derived from the plant tissue itself and non- physiologic ash- which is the residue of the adhering material to the plant surface, e.g. sand and soil [6].

1 g of powdered drug was taken in a tared silica dish previously dried and weighed. It was ignited in a furnace until free from carbon. The ash obtained was weighed [6].

2.6 Acid insoluble ash

It is the residue obtained after boiling the total ash with dilute hydrochloric acid, and igniting the remaining insoluble matter. This measures the amount of silica present especially as sand and siliceous earth [5].

To the crucible containing the total ash, 25 ml of dilute hydrochloric acid was added, covered with a watch glass and boiled gently for 5 minutes.

The insoluble matter was collected on an ash less filter paper, washed with hot water until the filtrate is neutral. It was dried on a hot plate and ignited to constant weight. The residue was allowed to cool in a suitable dessicator for 30 minutes, and then weighed without delay [5].

2.7 Water-soluble ash

It is that part of the total ash which is soluble in water. It is good indicator of either previous extraction of the water-soluble salts in the drug or incorrect preparation. It is expressed as a minimum value [7].

To the crucible containing the total ash, 25 ml of water was added and boiled for 5 minutes. The insoluble matter was collected on an ash less filter paper, washed with hot water, and ignited in a crucible for 5 minutes. The weight of this residue was subtracted from the weight of total ash [5].

2.8 Extractive value

This method determines the amount of active constituents in a given amount of medicinal plant material when extracted with solvents. It is employed for materials for which as yet no suitable chemical or biological assay exists.

2.9 Water-soluble extractive

Value is applied to drug that contains water-soluble active constituents of crude drugs, such as tannins, sugars, plant acids, mucilages, glycosides, etc.

2.10 Alcohol-soluble extractive

Method is frequently employed to determine the approximate resin content of drug. It is also used as an official method for assay in case of myrrh and asafetida.

About 2 gm of accurately weighed homogenized drug was placed in a glass stoppered conical flask. It was macerated with 100 ml of solvent for 6 hours, shaking frequently and then was allowed to stand for 18 hours.

Extract was filtered rapidly taking care not to lose any solvent. 25 ml of the filtrate was transferred to a tared flat –bottom dish and evaporated to dryness on a water bath. The residue was dried at 105 ^{o}C till its weight became constant, cooled in a dessicator for 30 minutes and weighed without delay [5,11].

2.11 Phytochemical study

The plants may be considered as biosynthetic laboratory for multitude of compounds like alkaloids, glycosides, volatile oils, tannins, saponins, flavonoids etc. These compounds are termed as secondary metabolites and are responsible for therapeutic effects.

To check the presence or absence of primary and secondary metabolites in following extracts like petroleum ether, chloroform, ethyl acetate, acetone, methanol, and hydro-alcoholic of stem bark of *Bauhinia purpurea* they were subjected to preliminary phytochemical screening [8,9,10].

3. Results and Discussion

The microscopic studies of authenticated plant *Bauhinia purpurea* stem bark was done with the help of Motic image plus 2.0 microscope. The stem bark, study for their microscopic characters Microscopic studies of stem bark show (Figure 1-5) the presence of cork (few layers polygonal tabular cells), cortex which having 10 to 12 parenchyma and stone cells layer (pericyclic), pericyclic fibers (non-lignified), sclereids (sclerenchymatous cells), Medullary rays narrow at inner side, wider in the sclereids band side, contains starch, acicular raphides and oil cells was found to be Big –isolated. Physicochemical investigation shows the total ash, acid insoluble ash, water soluble and alcohol soluble extractive value were 9.5% w/w, 1.9% w/w and14% w/w, 6.6% w/w (Table No.1) respectively and shown in and Successive extraction of dried powder of stem bark was carried out with solvents of increasing polarity *viz*. petroleum ether (40–60 °C), chloroform, ethyl acetate, acetone and methanol and macerated with hydro-alcoholic solvent to obtain respective extracts. Preliminary phytochemical screening of extracts was carried out (Table No-2) to reveal the presence of different primary and secondary metabolites. Petroleum ether, chloroform and ethyl acetate extracts revealed the presence of steroids. Acetone, methanol and hydro-alcoholic extracts showed the presence of flavonoids, carbohydrates, saponins, tannins, and amino acid [11].

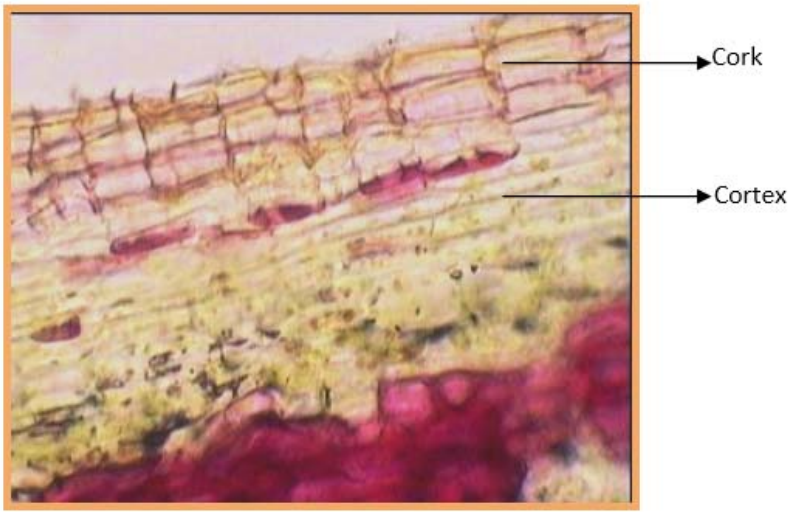

Fig 1: T.S of stem bark of *B. Purpurea* (Cork, Cortex)

.2

Fig 2: T.S of stem bark of *B. Purpurea* (Medullary rays)

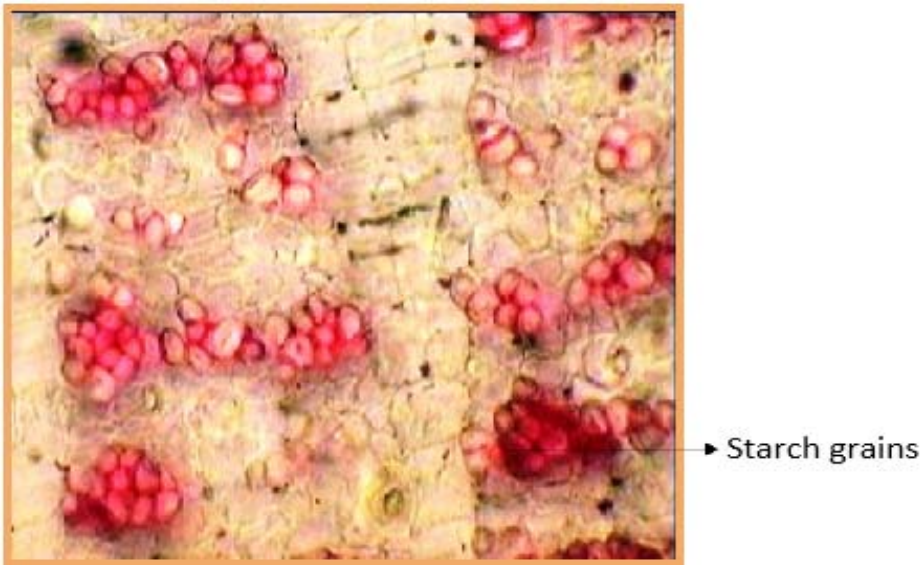

Fig 3: T.S of stem bark of *B. Purpurea* (starch grains)

Fig 4 T.S of stem bark of *B. Purpurea* (stone cell layer)

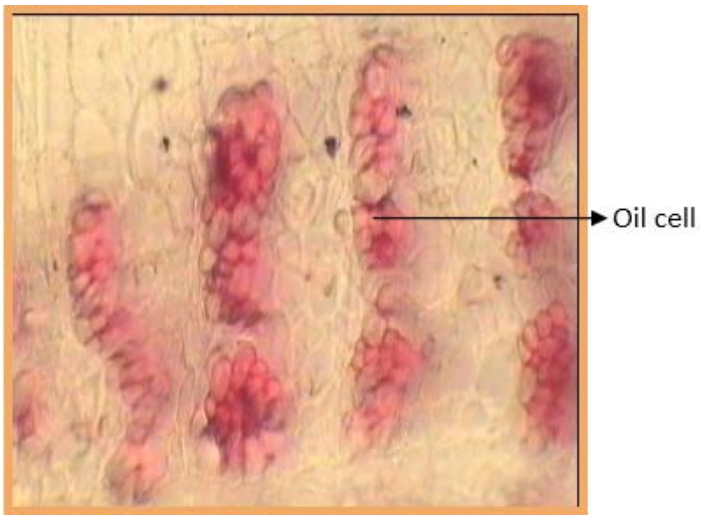

Fig 5: T. S of stem bark of *B. Purpurea* (oil cell)

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