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Phytochemical Analysis Of *Albizia Chinensis* (Osbeck)Merr Medicinal Plant

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Abstract: *The frond of Albizia chinensis(osbeck)merr extract was obtained from the powder using 80% methanol. Preliminary phytochemical works were carried out for detection of secondary metabolite. Estimation of alkaloids, flavonoids, protein, saponins, was carried out using appropriate test. A thin layer chromatographic technique was used for compound separation and identification from the extract. The total ash, acid insoluble ash, sulphate ash, water soluble ash values of entire plants of control and commercial raw drugs have been revealed. The control of total ash values of entire plant Albizia chinensis is 25mg, 23.19mg, 63mg, 0.52mg, and 65.5mg. The fluorescence character of entire plant Albizia chinensis was undergone in day light and UV 254nm. The extract was subjected to GC-MS analysis and 10 compounds shown use activities. 10 therapeutically active compounds present in the extract. This compound identification could provide valuable information for the preparation of cataract medicine from frond bark of Albizia chinensis (osbeck) merr.*

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I. Introduction

Phytochemical are chemical compound produced by plants, generally to help them thrive or thwart competitors predators or pathogens. The name comes from the Greek word phyton, meaning plant. Some phytochemicals have been used as poisons and others as traditional medicine. Plants are composed entirely of chemicals of various kinds which have many biological activities Phytochemicals generally are regarded as research compound rather than essential nutrients because proof of their possible health effects has not been established yet. Phytochemicals under research can be classified into major categories, such as carotenoids and polyphenols, which include phenolic acid, flavonoids and stilbenes/lignans. Flavonoids can be further divided into groups based on their similar chemical structure, such as anthocyanins, flavones, flavanones and isoflavones, and favnols. Flavanols further are classified as catechins, epicatechine, and proanthocyanidins.

India has been rich culture of medicinal plants with herbs and spices, with high potential for Ayurvedic, Unani, Siddha and traditional medicines. Few medicinal plants have been studied chemically and pharmacologically for their potential medicinal value (Gupta *et al.,* 2005; Sandhu *et al.,* 2005). Human beings have used plants for the treatment of diverse ailments for thousands years (Sofowara, 1982; Hill *et al.,* 1989). According to the World Health Organization, most of the people depends on the traditional medicines for their psychological and physical health requirements (Rahe and Van Stoden, 2000), because they don't afford western pharmaceuticals (Salie *et al.,* 1998), together with their side effects and lack of healthcare facilities (Griggs *et al.,* 2001).

II. Materials And Methods

Preparation of Extracts

The *Albizia chinensis* bark were collected and they were shade dried at room temperature. The dried bark was subjected to size reduction to a coarse powder using dry grinder and passing through sieve. 100 gm powder of *A. chinensis* bark was extracted with 80% of methanol in 60 hours. The extract was concentrated by recovery of methanol.

Preliminary Phytochemical studies

Phytochemical screening was performed from the methanolic extacts of bark of *A. chinensis(oseck)merr* by using standard method (Kokate *et al.,* 2005*).* Tests were performed to detect the presence of various phytochemicals like alkaloids, flavonoids, proteins, carbohydrates, saponins, glycosides, phytosterols, steroids, tannins, phenol and amino acid.

Quantitative Determination

Estimation of alkaloids, flavanoids, protein, and saponins were determined by standard procedure**.**

Thin Layer Chromatography

Thin layer chromatography is a multi-stage distribution process and involves the use of solvents or mixtures, sample molecules adsorbent. It comprises a stationary phase consisting of thin layer of adsorbent material, usually silica gel G, silica gel slurry was prepared.

The shad dried bark powdered and subjected was used for TLC analysis. The compounds are separated by using three solvent. System:1 Alkaloids: Benzene: Ethanol-9:1 ratio, solvent system:2 Saponins: Chloroform: Methanol: Water-7:3:1 ratio, solvent system: 3 Carbohydrates: Acetone: water -95:5. The TLC plates (20x20cm) were coated with 1mm thickness of silica gel G. after air drying the slurry on TLC plates in open for 30 minutes. The silica gel was activated by heating the plate in an over at 110°C for 2 hours.

Physicochemical Parameters

Total ash value, Acid-insoluble ash value, Water soluble ash value, Loss on drying and Extractive values were determined using standard procedures**.**

GC-MS ANALYSIS

The extracts were analyzed in GC-MS fissions GC-MS instrument. A split less mode was chosen with helium as carrier gas. The column was MS of 30m in length, 0.25 mm in diameter and 0.25mm film thickness and (1mg/ml). The active fraction (substance) dissolved in ethanol were injected in the following condition. Injector temperature-28°C carrier helium pressure 150 Icpa, ionization mode E solvent delay (min)2.00, temperature gradient, 20c per minutes from 100 to 315°C.

III. Result And Discussion

Preliminary phytochemical

In the preliminary phytochemical studies the methanolic extract of *Albizia chinensis(osbeck)Merr*. Showed negative result for some test. The occurrence of negative result was may be due to the poor quantity of the phytochemicals. However there result may provide a basic idea about the preliminary phytochemical constituent of *Albizia chinensis (Osbeck) Merr*. The detail result of preliminary phytochemical was give in the Table-1

Quantitative Analysis

The phytochemicals present in the plant plays an important role in biological studies. The quantitative analysis of phytochemicals present *Albizia chinensis (Osbeck) merr*. Plant was give table 2.

Physico-chemical Parameters

Ash value

The physical content evaluation of the drug is a important parameter in detecting adulteration (or) improper handling of crude drugs. The ash value of the drugs gives an idea of the inorganic composition and other impurities present in the plant species control incineration of crude drug result in ash residue consisting of an inorganic material. This values various within fairly wide limits and is there for an important parameter for the purpose for evaluation of crude drugs. In certain drug the percentage variation of ash from sample to sample is quality unwanted parts of drug. Some time posses a character that will raise the ash value.

The total ash, acid insoluble ash, sulphated ash, water soluble ash values of entire plants of control and commercial raw drugs have been revealed. The control of total ash values of entire plant *Albizia chinensis* is 25mg, 23.19mg, 63mg, 0.52mg, 65.5mg.

Fluoresence

Fluorescence analysis standard procedures were followed (Afaq *et al*., 1998; Abid *et al*., 2005). Many phytocompounds fluorescence when suitable illuminated. The fluorescence colour is specific for each compound. A non fluorescence compound many fluorescence it mixed with impurities that are fluorescent. The fluorescence character of entire plant *Albizia chinensis* was undergone in day light and UV 254nm. Out 11 test, 7 test were varied in colours in day light and UV 254nm 7 test were varied in colors when compared control to commercial.

Thin layer chromatography (TLC)

The methanol extract were subjected to thin layer chromatography profiling using suitable solvent system. The compound is separated by using three solvent systems.

Solvent system 1: Alkaloids - Benzene: Ethanol = 9:1

Solvent system 2: Chloroform - Methanol: water = 7:3:1

Solvent system 3: Carbohydrates – Acetone: water = 95:3

Compound in TLC is compound with standard Rf value of phytochemical and identification as alkaloids 0.62, saponins 0.72 and carbohydrates 0.18

The Rf value of Alkaloids – 0.41

The Rf value of Saponins – 1.23
The Rf value of Carbohydrates – 5.3

GC-MS

The GC-MS analysis led to the identification of 10 compounds from the gas chromatography fraction of the methanol extract of *A. chinensis(osbeck)merr.* The active principle with their retention time (RT), biological activity in the methanolic extract is presented.

The results pertaining to GC-MS analysis led to the identification of number of compounds from the GC fractions of the methanolic extract of *Albizia chinensis(osbeck)merr*. These compounds were identified through mass spectrometry attached with GC. The results of the present study were tabulated in Table 4. The gas chromatogram shows the relative concentrations of various compounds getting eluted as a function of retention time. The heights of the peak indicate the relative concentrations of the components present in the plant. The mass spectrometer analyzes the compounds eluted at different times to identify the nature and structure of the compounds. The large compound fragments into small compounds giving rise to appearance of peaks at different m/z ratios. These mass spectra are fingerprint of that compound which can be identified from the data library. This report is the first of its kind to analyze the chemical constituents of *A. chinensis* using GC-MS. In addition to this, the results of the GC-MS profile can be used as pharmacognostical tool for the identification of the plant and compounds with different chemical structures. The presence of various bioactive compounds confirms the application of *A. chinensis* for various ailments by traditional practitioners. However, isolation of individual phytochemical constituents may proceed to find a novel drug.

IV. Conclusion

It is concluded that the medicinal plants has been highly contributed to traditional medicine. The methanolic extracts of bark of *A. chinensis(oseck)merr* was used to identify the phytochemicals present in the plant and they are quantitatively determined. The total ash value, acid insoluble ash, water soluble ash values were determined as per WHO guide lines. Solvent system for separation and identification of compounds were standardized. The presence of bioactive compounds in the methanol extract was identified by GC-MS analysis. The basic test to identify the compounds with medicinal values of *A. chinensis* was identified.

TABLE-1 PRELIMINARY PHYTOCHEMICAL ANALYSIS OF *Albizia chinensis*

S. NO	TEST FOR	NAME OF THE TEST	INFERENCE
1	Alkaloids	Mayer's test	+
		Wagner's test	+
2	Carbohydrates	Molisch's test	-
		Benedict's test	+
3	Saponins	Forth test	+
		Foam test	+
4	Phenols	Ferric chloride test	+
5	Flavanoids	Alkaline reagent test	+
6	Steroids	Distilled water	-
7	Phytosterols	Liebermann Burchards test	+
8	Protein	Millon's test	+
9	Amino acid	Ninhydrin test	+
10	Glycosides	Modified borntrager	+
11	Tannins	Alkaline reagent test	-

TABLE 2-QUANTITATIVE DETERMINATION OF PHYTOCHEMICAL ANALYSIS OF *Albizia chinensis (Osbeck)merr.*

S. No	Estimation	(mg/g/dry.wt)
1.	Alkaloids	3.1
2.	Flavonoids	0.78
3.	Protein	1.22
4.	Saponins	0.68

TABLE 3. PHYSICO-CHEMICAL CHARACTERIZATIONS OF *Albizia chinensis (Osbeck)merr.*

S. No	Types of ash	Unit
1.	Total ash	25
2.	Acid insoluble	23.19
3.	Water soluble	63
4.	Loss on drying	0.52
5.	Extractive value	65.5

TABLE 4- GCMS ANALYSIS OF *Albizia chinensis (Osbeck)merr.*

Peak#	R.Time	I.Time	F.Time	Area	Area%	Height	Height%	A/H	Name compound
1.	20.389	20.267	20.408	296.579	3.12	44426	3.81	6.68	4-OCTANOL
2.	20.542	20.408	20.692	920632	9.67	61015	5.23	15.09	1.3-DIOXANE
3.	20.735	20.692	20.783	426095	4.48	88957	7.63	4.79	2-METHYL-1-THIA-CYCLOPENTAN
4.	20.823	20.783	20.858	372074	3.91	98643	8.46	3.77	MOME INOSITOL
5.	20.967	20.950	21.075	795874	8.36	103227	8.85	7.71	d-Mannose
6.	21.092	20.075	21.225	1093779	11.49	121060	10.38	9.04	3-Pentanol,2,2,4,4-tetramethyl
7.	21.275	21.258	21.300	347455	3.65	141782	12.16	2.45	Thiophene , 2-butyltetrahydro-
8.	21.317	21.300	21.450	1356882	14.26	147314	12.64	9.21	INOSITOL
9.	21.467	21.450	21.667	2250506	23.65	169444	14.53	13.28	Alpha-d-Mannofuranoside, Methyl
10.	21.694	21.667	21.867	1656177	17.40	190016	16.30	8.72	ALPHA-D-6,3-FURANOSE,METHYL

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