Preliminary Phytochemical Analysis of Seed Extract from Guazuma tomentosa Kunth.

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ABSTRACT

Guazuma tomentosa is one of significant therapeutic plant. It is otherwise called Guazuma umbifolia (generally known as Mutamba or Bhadraksha or Guacimo) having a place with family Sterculiaceae. Generally entire plant is utilized for its multipurpose advantages, for example astringent, in cold, looseness of the bowels, as diuretic, in diarrhea, in venereal illnesses and so forth. Its non-restorative uses includes, as a fuel wood, in creation of charcoal, ropes (bark and stem, because of their intense and sinewy nature). The present examination manages the fundamental phytochemical screening uncovers the nearness of alkaloids, sugars, protein and amino corrosive, flavonoids, tannins, phenols, fixed oils, glycosides and saponins.

Key words – Bhadraksh, Veneral, Astringent

INTRODUCTION

Guazuma tomentosa is a plant local to tropical America, Equador and Colombia. In spite of its etno-pharmocological utilizes, by and by it is demonstrated to have numerous restorative important uses in light of the nearness of numerous phyto-constituents for example colistin, colatannins, catechins, caffeine, kaempferol, procyanidin B-2, procyanidin B-5, procyanidin C-1, tartaric corrosive, theobromine, thickener, and so on. Herbal drugs were utilized to cure human sickness in every condition. Majority of population of developing country still depend on herbal medicines for primary health care. Medicinal herbs are moving from fringe to mainstream use with a great number of people seeking remedies and health approaches free from seeking side effects caused by synthetic chemicals (Dubey N.K.et al. 2002). Worldwide more than 80 % of the individuals rely upon restorative plant species to meet their day today human services (WHO, Geneva, Switzerland 2002). Restorative plants utilized as hotspots for extricates or unadulterated items for helpful use speak to a quickly extending region of wellbeing science (Chopra R.N et al 1956). Higher plants, as wellsprings of restorative mixes have kept on assuming a prevailing job in the support of human wellbeing since old occasions. It is accounted for that more than 50 % off all cutting edge clinical medications are of characteristic item inception and regular items assume a significant job in tranquilize improvement programs in Pharmaceutical industry (Onorato, MMJ. Borucki. G. Baillargeon, D. P. Paar 1999).

METHODOLOGY

A) Collection, identification and processing of plant material :

Dried (ripen) seeds were collected from Pandit Jawaharlal Nehru Van Udyan, Pathardi Phata, Pandavleni, Nashik. Plant was correctly identified with the help of Flora of Maharashtra and Flora of Nashik district. Plant material was then crushed to fine powder with electric blender and stored in airtight bottles. This sample was used for extraction of organic compound.

Extraction of organic crude material from seed of *Guazuma tomentosa* :

50 gm of seed powder sample weighted and used for soxlation.

Solvent used:

Depending on polarity the following solvent selected

1. Ethanol 2. Methanol 3. Petroleum ether 4.Hexane 5. Distilled water

a) Phytochemical analysis of plant extract:

The phytochemical are essential to metabolism and chemical process of plant body. The phytochemical are studied alkaloids, terpenoids, steroids, flavonoids, glycosides, tannins and saponin.

IDENTIFICATION TEST :

The test were done to find the presence of active chemical such as alkaloids, glycosides, terpenoids, steroids, flavonoids, saponin, tannin by the following procedure.

Alkaloids:-

Detection of alkaloids (Evans2002):

Solvent free extract 50 gm is stirred with ml of dilute hydrochloric acid and filtered. The filter is tested carefully with various alkaloid reagents as follows.

a. Mayer's test: To a few ml of filtrate, a drop or two of Mayer's reagent are added by the side of test tube. A white or creamy precipitate indicates the test as positive.

Mayer's Reagent: Mercuric chloride (1.358 gm) is dissolved in 60 ml of water and potassium iodide (5.0 gm) is dissolved in 10 ml of water. The two solutions are mixed and up to 100ml with water.

b. Wagner's (Wagner 2004): To a few ml of filtrate, few drops of Wagner's reagent are added by the side of the test tube. A reddish brown precipitate confirms the test as positive.

Detection of Carbohydrates and Glycosides: The extract (100 gm) is dissolved in 5 ml of water and filtered. The filter is subjected to the following tests.

a. Mollich's test: 2 ml of filtered, two drops of alcoholic solution of a napthol are added, the mixture is shaken well and 1 ml of concentrated sulphuric acid is added slowly along the sides of the test tube and allowed to stand. A violet ring indicates the presence of carbohydrates.

b. Barfoed'stest:To 1 ml of filtered, 1 ml of Barfoed's reagent is added and heated on a boiling water bath for 2 min. red precipitate indicates presence of sugar.

Barfoed'sreagent:Copper acetate, 30.5 gm is dissolved in 1.8 ml of glacial acid.

c. Benedict's test: To 0.5 ml of filtrate, 0.5 ml Benedict's reagent is added. The mixture is heated on a boiling water bath for 2 min. A characteristic colored precipitate indicates the presence of sugar.

d. To 3 ml of the aqueous extract was added about 1 ml of iodine solution. A purple color at the interphase indicates the presence of carbohydrates.

e. Keller Kiliani test :2 ml of extract was dissolved in 2 ml of glacial acetic acid containing one drop of ferric chloride solution. The mixture was then poured into the test tube containing 1 ml of concentrated sulphuric acid. A brown ring at the interphase indicates the presence of deoxe sugar characteristics of cardenolides.

Detection of Saponin: The extract (50mg) is diluted with distilled water and up to 20 ml. The suspension is shaken in a graduated cylinder for 15 min. A two cm layer of form indicates the presence of saponin.

Detection of Proteins and Amino acids : The extract (100 mg) is filter paper and the filtrate is subjected to tests for proteins and amino acid.

a. Million's test: 2 ml of filtrate, few drops of Million's reagent are added. A white precipitate indicates the presence of proteins.

b. Ninhydrintest:Two drops of ninhydrinsolution (10 mg of ninhydrin in 200 ml of ethanol) are added to 2 ml of aqueous solution filtrate. A characteristic purple color indicates the presence of amino acids.

Detection of phenolic compounds and Tannins:

Ferric chloride test:

a) The extract (50 mg) is dissolved in 10 ml of distilled water. To this, few drops of neutral 5% ferric chloride solution are added. A dark green color indicates the presence of phenolic compounds.

Detection of Gum and Mucilage: The extract (100mg) is dissolved in 10 ml of distilled water and to this 25 ml of absolute alcohol is added with constant stirring. White or cloudy precipitate indicates the presence of gums and mucilage.

Glycoside: The solution of the extract in glacial acetic acid, few drops of ferric chloride and concentrated sulphuric acid and observed for a reddish brown coloration at the junction of two layers and the bluish green color in the upper layer.

Terpenoids and Steroids: 0.4 mg of extract was treated with 0.5 ml of acetic anhydride and 0.5 ml of chloroform. Then concentrated solution of sulphuric acid was added slowly and red violet color for steroids (Siddique and Ali 1997)

Flavonoids: 0.4 ml of extract solution was treated with 1.5 ml of 50 % methanol solution. The solution was warmed and metal magnesium was added. To this solution, 5-6 drops of concentrated hydrochloric acid was added and red color for flavones

Tannins: To 0.5 ml of extract solution 1 ml of water 1-2 drops of ferric chloride solution was added. Blue color was observed for Gallic tannins and green black for catecholic tannins.

Fixed oils and Fats: A small quantity if extract is pressed between two filter papers. Oil stain on the paper indicates the presence of fixed oils.

Saponification test:

A few drops of 0.5 N alcoholic potassium hydroxide solutions are added to a small quantity of extract along a drop of phenolphthalein. The mixture is heated on water bath for two hours. Formation of soap partial neutralization of alkali indicates the presence of fixed oils and fats.

Table No 1 – Physicochemical characteristics of different extracts from seed of *Guazuma tomentosa*

Solvent	Initial weight of powder (gm)	Final weight of powder (gm)	Weight of crude extract (gm)	Color of extracts
Distilled water	50	47.50	2.50	Coffee
Ethanol	50	48.00	2.00	Dark brown
Methanol	50	49.00	2.40	Brown
Petro. ether	50	48.00	2.20	Light green
Hexane	50	48.85	2.50	Pale yellow

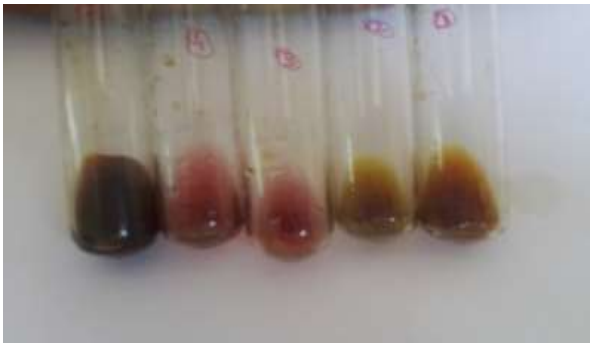
Table No 2:- Preliminary phytochemical analysis of crude extract from seed of *Guazuma tomentosa*.

Sr.No.	Phytochemical test	Ethanol	Methanol	Petro.ether	Hexane	D.W
1.	Alakaloid					
	a.Mayer's test	++	+++	+	-	++
	b.Wagner's test	++	++	+	+	-
2.	Carbohydrate					
	a.Mollich's test	+	-	++	+	-
	b.Barfoed's test	-	-	-	-	-
	c.Benedict's test	-	-	-	-	-
	d.Keller-Kiliani test	-	-	+	++	-
3.	Saponins					
	a.Foam test	-	-	++	+	-
4.	Proteins and Amino acids					
	a.Million's test	++	++	-	-	+++
	b.Ninhydrin test	-	-	++	-	+++
5.	Phenolic compounds					
	a.Ferric test	-	-	+	+	-
6.	Tannins					
	a.Gelatin test	++	++	+	+	+++
7.	Gum and Mucilage					
	a.95% alcohol	-	-	++	++	-
8.	Fixed oils and Fats					
	a.Spot test	++	++	+	+	+++
	b.Saponification test	++	++	+	+	-
9.	Carbohydrate					
	a.Iodine test	-	-	-	-	++
10.	Flavonoid	+++	++	+	+	++
11.	Glycosides	-	-	++	++	-

Results and Discussion:-

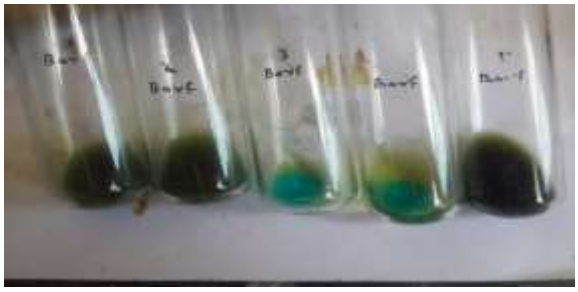
The plant material was subjected to successive extraction with Ethanol, Methanol, Petroleum ether, Hexane and distilled water. Result of phytochemical properties is showed in (Table No. 1). Phytochemical studies of different extract reveled presence of alkaloids, carbohydrates, steroids, saponin, tannins and phenols etc.in (Table No. 02). All the plant extracts detected presence of alkaloids. Carbohydrates strongly present in Petroleum ether and Hexane extract. Saponin and phenolic compounds are only present in petroleum ether and Hexane extract. Fixed oil and volatile oils are strongly present in all extract but in Hexane it is very less. Flavonoids and Glycosides are strongly present in petroleum ether and Hexane extract. The phytochemical compounds identified in the presence study this are bioactive and it shows various pharmacological activities as Astringent in cold, in cough, in diarrhea, as diuretic in dysentery, in venereal diseases etc.(Minakshi Sharma, Shruti Chopra, ShyamBaboo Prasad).

Photographs of Phytochemical Identification test:-

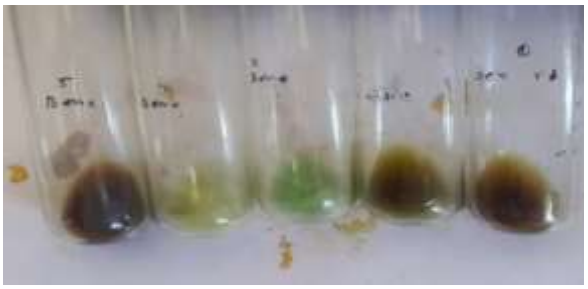


Mayer's Test

Wagner's Test



Barfoed's Test



Benedict's Test

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