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## PHYTOCHEMICAL SCREENING OF LEAVES OF ARTOCAPUS INTEGRAL TREE

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**Abstract:** In the detection of the bioactive principles present in medicinal plants which may lead to drug discovery. Preliminary screening of phytochemicals is more important. Phytochemicals are divided into (1) primary metabolites such as sugars and fats, which are found in all plants; and (2) secondary metabolites—compounds which are found in a smaller range of plants, serving a more specific function. Chlorophyll, proteins and common sugars are included in primary constituents and secondary compounds have terpenoid, alkaloids and phenolic compounds. The various extracts of leaves were used for the phytochemical analysis to find out the phytochemical constituents in the plants *Artocarpus Integra*.

**Keywords:** Phytochemical, Sugar, Terpenoid, *Artocarpus Integra*



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## INTRODUCTION

Many of the pharmaceuticals currently available to physicians have a long history of use as herbal remedies, including opium, aspirin, digitalis, and quinine. All plants produce chemical compounds as part of their normal metabolic activities. These phytochemicals are divided into (1) primary metabolites such as sugars and fats, which are found in all plants; and (2) secondary metabolites—compounds which are found in a smaller range of plants, serving a more specific function[1]. Phytochemicals are naturally occurring in the medicinal plants, leaves, vegetables and roots that have defense mechanism and protect from various diseases.. Chlorophyll, proteins and common sugars are included in primary constituents and secondary compounds have terpenoid, alkaloids and phenolic compounds [2]. Terpenoids are very important in attracting useful mites and consume the herbivorous insects [3]. Alkaloids are used as anaesthetic agents and are found in medicinal plants [4].The medicinal plants are useful for healing as well as for curing of human diseases because of the presence of phytochemical constituents [5]. Besides therapeutic agents Medicinal plants are also a big source of information for a wide variety of chemical constituents which could be developed as drugs with precise selectivity. These are the reservoirs of potentially useful chemical compounds which could serve as newer leads and clues for modern drug design [6]. Successful determination of biologically active compounds from plant material is largely dependent on the type of solvent used in the extraction procedure [7].

The jackfruit also known as jack tree, jakfruit, or sometimes simply jack or jak[8] is a species of tree in the Artocarpus genus of the mulberry family in the Artocarpus genus of the mulberry family (Moraceae). It is native to parts of South and Southeast Asia, and is believed to have originated in the southwestern rain forests of India, in present-day Goa, Kerala, coastal Karnataka, and Maharashtra.[9] The Artocarpus Integra tree is well suited to tropical lowlands, and its fruit is the largest tree-borne fruitogram .

### Collection of Plant Materials:

Leaves of fanas plants were obtained from forest of Allapali region district Gadchiroli. The plant materials were transported to Laboratory of Department of Chemistry N. S. Sc. & Arts College, Bhadrawati.

### II. Processing of Plant Materials:

The leaves were washed in running water and facilitate to drying. The pieces of plant material were dried for 12hrs in a hot air oven .The dried plant materials (leaves) was taken separately

and ground using an electric blender to obtain a fine powder. The powdered samples were stored in a clean glassware container.

#### **Solvent Extraction:**

5g portions of powdered plant materials were each separately dissolved in 50ml of each water, ethanol, ethyl acetate, methyl acetate and hexane. The solution was left to stand at room temperature for 24hrs and was filtered with Whatman filter paper. The filtrate was used for the phytochemical screening using the following tests.

#### **Phytochemical Screening Test:**

##### **Alkaloids:**

(Wagner's reagent) A fraction of extract was treated with 3-5drops of Wagner's reagent [1.27g of iodine and 2g of potassium iodide in 100ml of water] and observed for the formation of reddish brown precipitate (or colouration).

##### **Carbohydrates (Molisch's test):**

Few drops of Molisch's reagent were added to 2ml portion of the various extracts. This was followed by addition of 2ml of conc. H<sub>2</sub>SO<sub>4</sub> down the side of the test tube. The mixture was then allowed to stand for two-three minutes. Formation of a red or dull violet colour at the interphase of the two layers.

##### **Cardiac glycosides:**

5ml of each extract was treated with 2ml of glacial acetic acid in a test tube and a drop of ferric chloride solution was added to it. This was carefully underlayered with 1ml concentrated sulphuric acid. A brown ring at the interface indicated the presence of deoxysugar characteristic of cardenolides. A violet ring may appear below the ring while in the acetic acid layer, a greenish ring may form.

##### **Flavonoids:**

2ml of extracts was treated with few drops of 20% sodium hydroxide solution. Formation of intense yellow colour, which becomes colourless on addition of dilute hydrochloric acid, indicates the presence of flavonoids.

Phenols (Ferric chloride test) :

A fraction of the extracts was treated with aqueous 5% ferric chloride and observed for formation of deep blue or black colour.

**Phlobatannins (Precipitate test) :**

Deposition of a red precipitate when 2mls of extract was boiled with 1ml of 1% aqueous hydrochloric acid was taken as evidence for the presence of phlobatannins.

**Tannins (Braymer's test):**

2mls of extract was treated with 10% alcoholic ferric chloride solution and observed for formation of blue or greenish colour solution.

**Terpenoids (Salkowki's test) :**

1ml of chloroform was added to 2ml of each extract followed by a few drops of concentrated sulphuric acid. A reddish brown precipitate produced immediately indicated the presence of terpenoids.

**III. RESULT AND DISCUSSION:**

Results obtained for qualitative screening of phytochemicals in leaves extract for different solvents are in table 1.

According to Solomon Charles Ugochukwuetal[10] the factors affecting the choice of solvent are; quantity of phytochemicals to be extracted, rate of extraction, diversity of different compounds extracted, diversity of inhibitory compounds extracted, ease of subsequent handling of the extracts, toxicity of the solvent in the bioassay process, potential health hazard of the extract.

Extract of water showed the presence of carbohydrates, phenols flavonoid, tannin and terpenoids. Ethanolextracts had alkaloid, carbohydrates, phenol, tannin flavonoid and terpenoids. Hexane extract had alkaloid, and terpenoid flavonoids. Methanol extract had the presence of carbohydrate, flavonoids, phenol, sterols, tannins and terpenoids. Tannins are known to inhibit pathogenic fungi. The flavonoids and phenolic compounds in plant have been reported to exert multiple biological effects including antioxidant, free radical scavenging abilities, anti inflammatory, anti carcinogenic etc. Flavonoid is present as a potent water-soluble antioxidant and free radical scavenger, which prevent oxidative cell damage and also have strong anticancer activity [11-12]. It is shown that except ethyl acetate in all the extract flavonoid is present. Terpenoids exhibit various important pharmacological activities i.e., anti-

inflammatory, anticancer, anti-malarial, inhibition of cholesterol synthesis, anti-viral and anti-bacterial activities [13].Leaves are rich interpenoids.

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**Table 1: Phytochemical screening of leaves of *Artocapus Integra***

Phytochemicals	Leaves extract				
	Water	Ethanol	Ethyl acetate	Methyl acetate	Hexane
Alkaliod	-	+	-	-	-
Tannins	+	+	+	+	-
Carbohydrates	+	-	+	+	-
Cardiacglycosides	-	-	-	-	-
Flavonoids	+	+	-	+	+
Phenols	+	+	+	+	-
Phlobatannins	-	-	-	-	-
Terpenoids	+	+	+	+	-

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