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### Evaluation of phytochemicals and fluroscent analysis of flower extract of *Couroupita guianensis* Aubl

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#### ABSTRACT

The present study was to investigate the presence of phytochemicals, the fluroescence characteristics of powdered drug in the flower of *Couroupita guianensis*. Phytochemical analysis and fluroscent analysis has been studied using standard procedures. Phytochemical analysis revealed the presence of alkaloids, carbohydrates, glycosides, saponins, phenols, tannins, flavonoids, protein and steroids in the flower extracts. In fluroscent analysis characteristic colour changes were observed with different chemical reagents in flower powder under visible light. Our findings provided evidence that alcoholic extracts of flower contain bioactive compounds and its justifies their use in the traditional medicine for the treatment of different diseases.

**Keywords:** Medicinal plants, Phytochemical compounds, Fluroscent analysis .

#### INTRODUCTION

Historians from all around the world have produced evidence to show that apparently all primitive people used herbs – often in a sophisticated way. Knowledge of herbs has been handed down from generation to generation for thousands of years [1].

Plants are the basis for the development of modern drugs and medicinal plants have been used for many years in daily life to treat disease all over the world [2]. However, the knowledge of plant is rapidly winding due to the influence of western lifestyle,

reducing in number of generations throughout the world [3].

Plants have provided man with all his needs in terms of shelter, food, flavors and fragrances. Plants have formed the basis of system among traditional medicine which has given rise to some important drugs still in use today. Many ancient nations have awakened to the importance of herbal medicine which brings more cures [4].

*Couroupita guianensis* Abul belongs to family lecythiaceae was first described. It is used extensively as an ingredient in many preparations

which cure gastritis, scabies, bleeding piles, dysentery, scorpion poison and many. The flowers are used to cure cold, intestinal formation, stomach ache, diarrhea, anti analgesic and anti inflammatory activity [5].

## MATERIALS AND METHODS

### Collection of plant materials

The flowers of *Couroupita guianensis* were collected from the Mannargudi, Thiruvarur dt, Tamilnadu, India. They were identified and authenticated by Dr. John Britto, The Rapiant Herbarium and Centre for Moduler Systematics, St. Joseph's college, Trichurapalli, Tamilnadu, India.

### Preparation of flower extract

After collection and identification of the flower materials were washed 2-3 times distilled water. The materials were shade dried until all the water molecules evaporated and plants became well dried for grinding. After drying, grinded into fine powder stored in closed container separately with proper labeling for further use. Powdered flowers were subjected to organic fraction of collection based on polarity crude alcohol extraction and aqueous extraction.

### Crude alcohol and aqueous extraction

25g of powdered plant material were taken in two separate containers and 250 ml of ethanol, and water added in individual containers. The materials held for 48 hours to collect the extract and dried.

### Phytochemical analysis

Phytochemical analysis of all extracts was carried out by following standard procedures [6].

### Fluorescence analysis

A small quantity of dried and finely powdered material was placed on a clean grease free microscopic slide and added 1-2 drops of the freshly prepared reagent solution, mixed gently by filling the slide and waited for 1-2 minutes. Then the slide was viewed in daylight. The colors observed by the application of different radiations were recorded [7].

## RESULTS AND DISCUSSION

Studies on the native or folk medicine use of medicinal plants are important from the scientific point of view in that it enables rapid scientific studies towards finding and envelopment of newer drug from centuries old practical use-derived knowledge of medicinal plants.[8]

**Table 1:** Quantitative analysis of phytochemicals in aqueous and ethanolic extracts of *Couroupita guianensis* flower

S.no	Compounds	Aqueous extract	Ethanolic extract
1	Alkaloids	+	+
2	Carbohydrates	+	+
3	Flavonoids	+	+
4	Glycosides	+	+
5	Proteins	+	+
6	Saponins	-	+
7	Terpenoids	-	-
8	Phenolics	+	+
9	Tannins	+	+
10	Steroids	-	+

(+) indicates presence; (-) indicates absence

In the present investigation, preliminary phytochemical screening has been one in the extracts of flowers and comparison made between each other. The results revealed the presence of medically active

compounds in the plant it showed the presence and absence of various phytochemical constituents were summarized in the Table 1.

The presence of alkaloids, carbohydrates, flavonoid, glycosides, phenolics and tannins were revealed in both alcoholic and aqueous extracts. Saponins and steroids were absent in aqueous extract. Terpenoids were absent in both extracts.

Phytochemical analysis conducted on the plant extracts revealed the presence of constituents which are known to exhibit medicinal as well as physiological activities [9].

The medicinal value of these plants lies in some chemical substances that have a definite physiological action on the human body. Different phytochemicals have been found to possess a wide range of activities which may help in protection against chronic diseases. For example alkaloids protect against chronic diseases. Anti tumor, anti-inflammatory and anti microbial properties are due to the presence of alkaloids [10].

Anti-parasitic, anti bacterial and antifungal activities are due to the presence of flavonoids. Flavonoid has been referred to as nature's biological response modifiers because of strong experimental evidence of their inherent ability to modify the body's reaction to allergen, virus and carcinogens. They show anti-allergic, anti-inflammatory, anti-microbial and anti-cancer activities. Some flavonoids have also been reported to behave like the some coumarins in the inhibition of giant cell formation in HIV – infected cell cultures [11].

Tannins are used as tanning agents as they possess astringent, anti oxidant and antimicrobial activities

[12]. Bactericidal and fungicidal properties are due to the presence of tannins. Plants tannins are also source of commercial tannic acid and tanning agents [13].

Anthelmintic activity was reported due to the presence of phenolics (flavonoids & tannins)[14]. The phenolic compounds are one of the largest and most ubiquitous groups of plant metabolites. They possess biological properties such as antiapoptotic, antiaging, anti carcinogen, anti-inflammation, antiatherosclerosis [15].

In addition to their industrial uses such as foaming agents and detergents, saponins have a wide range of medicinal applications. saponins containing plants are important because of their detergent hameolytic properties, hypercholesterolemia and antibiotic properties. The steroids and saponins were responsible for central nervous system activities [16]. Glycosides are known to lower the blood pressure according to many reports [17]. Natural antioxidants mainly come from plants in the form of phenolic compounds such as flavonoid, phenolic acids and tocopherols [18]. Terpenes are very important group of organic compounds that have been reported as potent drugs use in treatment of wide range of ailments. The most rapidly acting anti-malarial, artemisinin and its derivatives are terpenes [19]. The study also reveals that the presence of contained alkaloids, carbohydrates, proteins, phenolics, flavonoids, steroids, saponins, tannins , and glycosides.

**Table 2:** The fluorescence characteristics of powdered drug under visible light after treating with different chemical reagents.

S.no	Plant sample	Day light
1	Powder as such	Green colour
2	Powder + conc.H <sub>2</sub> SO <sub>4</sub>	Dark brown
3	Powder + conc.HCl	Dark brown
4	Powder + acetone	Red
5	Powder + acetic acid	Red
6	Powder + FeCl <sub>3</sub>	Yellow
7	Powder + NaOH	Red
8	Powder + CHCl <sub>3</sub>	White
9	Powder + sodium citrate	Dark brown
10	Powder + NaCl	Light yellow

The results of fluorescent studies of dried flower powder of *Couroupita guianensis* with different chemical reagents are given in Table 2. Some of the substance may be often converted into fluorescent derivatives by using different chemical reagents though they are not fluorescent, hence we can often assess qualitatively some crude drugs using fluorescence as it is the most important parameter of pharmacological evaluation [20].

## CONCLUSION

The results obtained in this study suggest the identified phytochemical compounds may be the bioactive constituents which are medicinally valuable. The phytoconstituents of different extracts of *Couroupita guianensis* would be helpful in treating many diseases and the fluorescent analysis of powdered drug play an important role in the determination of quality and purity of the drug.

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