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Phytochemical Analysis of different parts of *Annona squamosa L*

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Abstract: Phytochemicals are non-nutrient bioactive components found in plants that are primarily responsible for scavenging toxic radicals after oxidative stress by generating antioxidants, the main cause of most chronic diseases. Phytochemical screening is to isolate various constituents of the plants for assessing their biological activity or medicinal uses. The Qualitative analysis is very essential to identify the phytochemical constituents present in medicinal plants. The medicinal value of plants is due to the presence of particular bioactive constituents. Annona squamosa is an important medicinal plant which found in tropical and subtropical area. In India this plant is used as medicine traditionally. Each part of the plant is used to treat various diseases. Hence this present study is focused to screen the presence of phytochemicals in different parts (stem, leaf, flower and seeds) of the Annona plant. Totally 15 phytochemical screening tests were conducted. The methanol extracts of leaves and seeds showed a greater number of phytochemicals than other two extracts. We have found out phytochemicals like tannins, flavonoids, terpenoids, steroids, phlobatanins, alkaloids, anthroquinones, anthocyanins, leucoanthocyanins and emodins in leaves and seeds extracts.

Keywords: Bioactive, Medicine, alkaloids, flavonoids, and anthocyanins

I. INTRODUCTION

In recent years the term ‘phytochemical’ has been used to distinguish plant chemicals that do not meet the classical definition of essential nutrients. Some phytochemicals produce activity in biological systems, including humans; hence, the term ‘bioactive phytochemicals.’ Liu (2013) has defined phytochemicals as bioactive non nutrient compounds in fruits, vegetables, grains, and other plant foods that have been linked to reductions in the risk of major noncommunicable chronic diseases. However, a large percentage of these compounds still remain unknown with respect to chemical structure and/or the biological role in humans (Liu, 2013). Phytochemicals are found in plants and their consumption generally provides beneficial health effects. Annona squamosa is a small tree which called as custard apple and sugar apple belongs to the family Annonaceae. In Tamilnadu this plant is called as Seetha pazham (Raj et al., 2009; Srivastava et al., 2011).

The leaves of Annona are used as a vermicide, for treating various skin diseases. The crushed leaves were used for ulcers and wounds. Scrapings of root-bark are used for toothache. Powdered seeds are used to kill head-lice and fleas but care should be taken that the powder does not come in contact with the eyes as this causes great pain. The crude extracts of different parts and pure isolated phytoconstituents of its fruits was reported to acquire anti-diabetic, antiviral, antioxidant activity, respiratory stimulant, during pregnancy and diuretics properties, very useful for the improvement of the immune system, nervous system and also for the development of the brain in the fetus. Sitaphal can be the most effective remedy of choice for various diseases and this new research will definitely help mankind to lead a disease free and healthy life (Wang et al 2015).

The phytochemical compounds like Carbohydrates, Saponins, Phenols and Terpenoids are present in the peels of custard apple. It has been showed significant antibacterial activity against Bacillus substilis, Staphylococcus aureus, Pseudomonas auriginosa and E. coli. The peel extracts have been showed antifungal activity and antioxidant activity (Siva Priya et al., 2017). Hence the present study was focused to analyze the presence of phytochemicals in different parts of the custard apple like stem (Bark), leaves, flowers and seeds.

II. MATERIALS AND METHODS

Collection of plant materials

Fresh plant materials were collected randomly from the region of Tirunelveli, India. They were washed and then shade dried. Dried materials were powdered using the blender and stored in air tight bottles.

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Methanol extraction

10 g powder of each sample was added to 100 ml of methanol in a conical flask and plugged with cotton wool. After 24 hours the supernatant was collected and the solvent was evaporated to make the crude extract and stored at 4° C.

Phytochemical analysis

Phytochemical analysis of methanol extracts of different parts of plants was conducted following the standard procedure (Harbone, 1973).

III. RESULT AND DISCUSSION

In the present investigation more active phytochemical compounds are present in seed and leaves extracts when compared to other two extracts. The seed extracts contain thirteen phytochemicals like tannins, flavonoids, terpenoids, steroids, phlobatanins, alkaloids, anthroquinones, anthocyanins, saponins, carbohydrates, leucoanthocyanins, coumarins and emodins (Table 1).

The leaves extract contains twelve phytochemicals like tannins, flavonoids, terpenoids, steroids, saponins, phlobatanins, alkaloids, anthroquinones, anthocyanins, leucoanthocyanins, coumarins and emodins.

The stem extract contains eight phytochemicals namely tannins, flavonoids, alkaloids, phlobatanins, anthroquinones, anthocyanins, leucoanthocyanins and coumarins.

The flower extract contains seven phytochemicals namely tannins, flavonoids, terpenoids, phlobatanins, anthocyanins, anthroquinones, and alkaloids (Fig 1).

Huge number of phytochemicals were observed in seeds and leaves of Annona squamosa. Gajalakshmi et al., (2011) reported that all the parts of Annona plant could be used as ethnomedicine for various purposes. The stem bark of S. cumini contain betulinic acid, ß-sitosterol, friedeanol, epi-friedeanol and eugenin. It also contains ß-sitosterol-D-glucoside, Kamepferol-3-0- glucoside, quercetin, myricetin, astragalin, and gallic acid (Sengupta and Das 1965; Gupta and Sharma, 1974). Kane et al 2016 analysed the presence of the phytochemical constituents like terpenoids, phlobatannins, reducing sugar, flavonoids and alkaloids in Glochidion ellipticum.

Table 1: Results of phytochemical analysis of the selected flowers

S.No	Phytochemicals	Stem	Leaves	Flowers	Seeds
1	**Tannins**	+	+	+	+
2	**Flavonoids**	+	+	+	+
3	**Terpenoids**	-	+	+	+
4	**Saponins**	-	+	-	+
5	**Steroids**	-	+	-	+
6	**Phlobatanins**	+	+	+	+
7	**Glycosides**	-	-	-	-
8	**Alkaloids**	+	+	+	+
9	**Anthroquinones**	+	+	+	+
10	**Anthocyanin**	+	+	+	+
11	**Leucoanthocyanin**	+	+	-	+
12	**Carbohydrates**	-	-	-	+
13	**Proteins**	-	-	-	-
14	**Emodins**	-	+	-	+
15	**Coumarins**	+	+	-	+

Figure 1: Numbers of Phytochemicals in Annona squamosa L.

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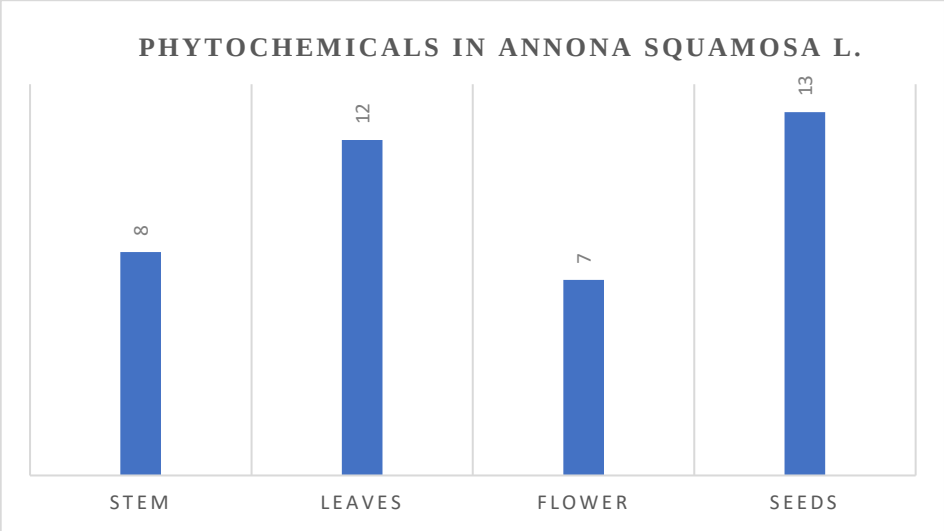

IV. CONCLUSION

Phytochemicals plays an important role in human health. In this study, we have concluded that leaves and seeds of Annona squamosa contains a greater number of phytochemicals. So that the leaves and seeds are used for various medicinal purposes. Less number of phytochemicals are found in stem and flower extracts. Alkaloids and flavonoids are found in all the parts of the plant. Hence, they could exhibit significant bactericidal activity.

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