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Preliminary phytochemical screening of *Nyctanthus arbor tris-tis* (Linn.)

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Abstract

Phytochemicals are present in different parts of plants which are utilized as important components of living organism. In the present study the leaves of the plants were separated and shade dried at room temperature till constant weight was obtained and were ground to powder manually. After the *Nyctanthus arbor tris-tis* leaf powder prepared from water and water with 1% formic acid. The starch, glucose, protein and flavonoids are analysis in fresh leaves of *Nyctanthus arbor tris-tis*. Qualitative studies of secondary metabolites like alkaloids, steroids, carbohydrates, phenolic compound, gum, resin, saponins and glycosides were studied in the leaf extract of water and water with 1% formic acid. Result of this study soluble protein, starch, glucose and flavonoids will be present in *Nyctanthus arbor tris-tis* leaf powder. Likewise the screening of phytochemical components such as alkaloids, steroids, carbohydrates, phenolic compound, saponins and glycosides are present in *Nyctanthus arbor tris-tis* extracts of water and water with 1% formic acid but gum and resin are absence of *Nyctanthus arbor tris-tis* plant leaf extract of water with 1% formic acid. Finally, it can be concluded that *Nyctanthus arbor tris-tis* is a viable phytochemical source and the further research can be conducted on this plant to explore its hidden potential.

Keywords: 1% formic acid, *Nyctanthus arbor tris-tis* (Linn) and phytochemical analysis

1. Introduction

Nyctanthus arbor tris-tis (Night-flowering jasmine) belongs to the family Oleaceae is a species of Nyctanthes, native to south Asia, Southeast Asia and is considered to be one of the most important Medicinal valued plants in the world. Medicinal plants are rich in secondary metabolites which are potential source of drug and essential oils. The biosynthesis of secondary metabolites which are potential source of drugs although controlled genetically is affected strongly by environmental influences. As a result there are fluctuation in the consideration and quantities of the secondary metabolites such as alkaloids, glycosides, volatile oils and steroids. The term phytochemistry, is the study of organic chemicals that are present in plants. There are great varieties of organic substances that are elaborated and accumulated by plants. The plants contain alkaloids, amino acid, steroids, phenols and saponins etc., (Sukumar, 1987). It also deals with the chemical structure of these substances. Glycosides is a type of sugar which is bound to a non-carbohydrate moiety, generally glycosides is a small organic molecule. Glycosides play a various important roles in living organisms. Many plants species store chemicals in the form of inactive glycosides. These chemicals can be activated by enzyme hydrolysis (Brito and Marco, 2007) [7], which is cause the sugar fraction to be broken down and make the chemical which available for use of living things. Terpenoids components contribute to the odor of eucalyptus, the flavors of cinnamon and ginger, the yellow color provided in sunflowers and the red color given in tomatoes (Michael Specter, 2009). The objective of the present study was to analyse preliminary phytochemical screening of *Nyctanthus arbor tris-tis* and biochemical attributes of the plants such as proteins, glucose, flavonoids and starch.

2. Material and Methods

2.1 Collection of plant sample

Fresh plant leaves of *Nyctanthus arbor tris-tis* (Linn) were collected from sivakasi. The plant material was identified in the department of Botany, Ayya Nadar Janaki Ammal College, Sivakasi by refereeing to the flora of the presidency of the Madras (Gamble, 1920).

2.2 Preparation of Crude Extract

Fresh *Nyctanthus arbor tris-tis* whole leaves were washed with distilled water to remove impurities followed by water with 0.1 % sodium chloride, chopped into small pieces, air dried and grinded into powder. The dried powder was extracted with 1% formic acid. Then it was filtrated through cheese cloth and entire extract of *Nyctanthus arbor tris-tis*. This concentrated leaf extract was used for further experiments. (Kelmanson *et al.*, 2000) [4].

2.3 Screening of Phytochemical Components

The freshly prepared extracts were subjected to standard phytochemical analyses for different constituents such as tannins, alkaloids, flavonoids, sterols, glycosides, saponins, terpenoids, gum resin and carbohydrates as described by Harborne, 1973 [5].

2.4 Biochemical attributes

Protein content was estimated by Lowry's (1951) [2] method using Bovine serum albumin as standard. Fresh leaf bits were incubated in 80% acidified methanol (methanol: water: HCl; 80:20:1) for 12 h at 4°C in dark to extract the flavonoids with intermittent shaking. The absorbance of the methanol extract at 315 nm was used to quantify the flavonoid content (Mirecki and Teramura, 1984) [1]. Starch and glucose was estimated by

3 Results

3.1 Soluble Protein, Starch, Glucose and Flavonoids

In the present investigation, the soluble protein, starch, glucose and flavonoids was found to 1.7 mg/g LFW, 1.6 mg/g

LFW, 1.88 mg/g LFW, 0.35mg/g LFW in *Nyctanthus arbor tris-tis* (Fig.1).

3.2 Phytochemical analysis

Preliminary phytochemical analysis for leaves of *Nyctanthus arbor tris-tis* are tabulated in Table 1. When performed qualitative tests for phytochemicals in *Nyctanthus arbor tris-tis* a number of phytochemicals shows positive results in their specific tests. Though some were found in abundance while some in trace amount. In the present study, the phytochemical screening of medicinal plants namely *Nyctanthus arbor tris-tis* Showed positive results for saponins, tannins, flavonoids, triterpenoids, glycosides, alkaloids, carbohydrates, steroids, gum and resin.

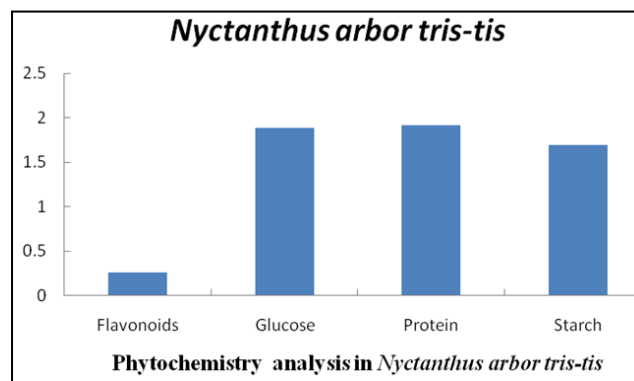


Fig 1: Changes in phytochemistry constituents in *Nyctanthus arbor tris-tis* plant leaf extract

3.3 Table 1: Table summarizing the qualitative results for phytochemicals in the studied plant parts [leaf]

Sl. No	Phytochemical test	Water extract	Water with 1% formic acid.
1	Detection of Alkaloids		
	Mayer's test	+	+
	Wagner's test	+	+
2	Detection of flavonoids Alkaline reagent test	-	+
3	Detection of carbohydrates Benedict's test	+	+
4	Detection of phenolics compound and tannins Lead acetate test	+	+
5	Test for triterpenoids and sterols Salkowski's test	+	+
6	Gum	+	-
7	Detection of resin	+	-
8	Detection of saponin	+	+

+ = indicates presence of phytochemicals

- = indicates absence of phytochemicals

4 Discussions

Phytochemical analysis conducted on the plant extracts revealed the presence of constituents which are known to exhibit medicinal as well as physiological activities (Sofowra, 1993) [9]. The phenolic compounds are one of the largest and most ubiquitous groups of plant metabolites (Singh *et al.*, 2007) [10]. Analysis of the plant extracts revealed the presence of phytochemicals such as tannins, glycosides, sterols, flavonoids, saponins, phenolic compound, carbohydrates and alkaloids (Table: 1). These findings are in agreement with the earlier findings of Zimmerman *et al.* (1984) [3]; Wilson and Chakrabarty (1998). Karou (2006) also underscored the importance of *Stylosanthes acuta* for its phytochemical analysis in this study. In the present investigation, quantitative studies of proteins, glucose, starch and flavonoids were

estimate in the aqueous leaf extract of *Nyctanthus arbor tris-tis* and result were estimate in table leaf of this plant contains higher amounts of protein glucose, starch and flavonoids. Some plants have essential nutritional importance by their components of protein, carbohydrates, oils, fats, minerals, vitamins and water which are responsible for growth and development in man, animals and plants. In addition to vitamins and pro-vitamins in fruits and vegetables the occurrence of bioactive plant components mainly called as phytochemical has been considered of fundamental nutritional importance in the prevention of many disease such as cancer, cardiovascular disease and diabetes. So the intake of antioxidant phytochemicals like phenolic compounds and flavonoids will lead to the protection against non-communicable diseases in human beings like cancer,

cardiovascular diseases and cataract (Rao, 2003 and Matkowski, 2008)

5 Conclusions

The selected medicinal plants are the source of the secondary metabolites such as alkaloids, flavonoids, terpenoids, and reducing sugar. Medicinal plants play a vital role in preventing various diseases. Medicinal plants are used for discovering and screenings of the phytochemical constituents which are very useful for the manufacturing of new drugs.

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