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Phytochemical Analysis of Leave Extract of *Nyctanthes arbortristis*

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Abstract: *Nyctanthes arbor-tristis is commonly known as Night-flowering Jasmine, Coral Jasmine and Parijat. The present studies attempts Phytochemical activity of leaves extract of Nyctanthes arbortristis. The crude powder extracts of the leaves of the above plants were taken for the study. Screening of phytochemical of Nyctanthes arbortristis for the presence of tannins, flavonoids, terpenoids, saponins, steroids, carbohydrates, Cardiac glycosides, alkaloids, proteins, using standard methods. Phenolic compounds, tannins, cardiac glycosides, carbohydrates, Cardiac glycosides, proteins and alkaloids were present in Nyctanthes arbortristis. Anthraquinone glycosides and flavonoids were absent.*

Key words*: Flavonoids Phytochemical screening, Saponins, Steroids, Terpenoids.*

I. Introduction

Natural product is a source for bioactive compounds and has potential for developing some novel therapeutic agent. Over the last decade there has been a growing interest in drugs of plant origin and such drugs formed an important class for disease control. Herbs are staging a comeback and herbal 'renaissance' is happening all over the globe. The herbal products today symbolize safety in contrast to the synthetics that are regarded as unsafe to human and environment (Bhatt, 1957). Medicinal plants contain some organic compounds which provide definite physiological action on the human body as well as their physiological activities due to the presence of bioactive substance include tannins, alkaloids, carbohydrates, terpenoids, steroids and flavonoids (Edigo, 2005).

Nyctanthes arbor-tristis Linn belongs to family Nyctantheaceae. Commonly known as Harishringi. The vernacular names of the plant *Nyctanthes arbor-tristis* are in Hindi- Parijata, Sanskrit- arsinghar, tamil- Prajaktha, Marathi– Sephalika, Telugu- Night Jasmine (Yadav). Correlation between the phyto constituents and the bioactivity of plant is desirable to know for the synthesis of compounds with specific activities to treat various health ailments and chronic diseases as well (Pandey, 2013). Owing to the significance in the above context, such preliminary phytochemical screening of plants is the need of the hour in order to discover and develop novel therapeutic agents with improved efficacy. Numerous research groups have also reported such studies throughout the world (Raphael, Kumari SPK, 2012).

Secondary plant metabolites (phytochemicals), previously with known pharmaceutical activities, have been extensively investigated as a source of medicinal agents (Tanaka H 2002). Thus it is anticipated that phytochemicals with adequate antibacterial and antifungal efficacy will be used for the treatment of bacterial and fungal infections (Kubo, 1995). The present study was undertaken to investigate the phytochemical analysis of leaves extraction of the present study was undertaken to investigate the antimicrobial activity and phytochemical analysis of *Nyctanthes arbor-tristis* and secondary metabolite present in it.

II. Material & Methods

2.1 Collection of the plant samples: Fresh plant parts were collected randomly from Durg district of Chhattisgarh. The plants were identified and studied according to their families Fresh plant materials were collected and washed under tap water, shade dried and then homogenized to fine powder and stored in airtight bottles.

2.2Preparation of plant extract: Ten grams of air dried powder was taken in 100 ml of petroleum ether in a conical flask, plugged with cotton wool and then kept on a rotary shaker at 190-220 rpm for 24 hours. After 24h, the supernatant was discarded and petroleum ether was evaporated from the powder. This dry powder was then taken in 100 ml of solvent (methanol or acetone) in a conical flask, plugged with cotton wool and then kept on a rotary shaker at 190-220 rpm for 24 h. After 24 h, the extracts were centrifuged at 5000 g for 10 min, the

supernatant was collected, solvents were evaporated and the dry extract was weighed and stored at 4C in airtight bottles. The extraction was done at least three times for each plant. The preliminary qualitative phytochemical analysis was carried out in crude dry powder of selected plants.

Soxhlet extraction method: Leaves of selected plants were collected locally. Leaves were washed; air dried under shade and powdered with the help of Grinder. Powdered leaves were weighed and packed in soxhlet. Solvent used for soxhletion was petroleum ether and ethanol. Extraction was continued at the temperature of 35°C till clear solvent was observed in thimble. Extract was concentrated in water bath at 40°C. Concentrated extract was concentrated at 40°C in hot air oven. Concentrated extract was packed in an air tight container.

Qualitative Phytochemical screening: *Nyctanthes arbor- tristis* with petroleum ether extract were subjected to various qualitative tests for the identification of plant constituents present in this species (Nandkarni & Khare, 2007 and Bakshi,1999).

Table 1: Phytochemical analysis of *Nyctanthes arbor- tristis*

Test	Observation
Test for alkaloid	
1.0ml of plant extract was taken and then add 1.0 ml of saturated solution of picric acid was added.	Yellow colour appears
Test for tannins	
About 0.5 g of the extract was boiled in 10 ml of water in a test tube and then filtered. A few drops of 0.1 $fecl_3$ was added	Brownish green or blue- black coloration.
Test for saponins	
• 0.5g of extract was added in 5ml of distilled water in a test tube. The solution was shaken vigorously. • The frothing was mixed with 3 drops of olive oil and shaken vigorously.	Stable persistent froth appears. Formation of an emulsion
Test for cardiac glycosides	
0.5g of extract was diluted to 5 ml in water was added 2 ml of glacial acetic acid containing one drop of $feCl_3$. This was underlaid with 1 ml of conc. Sulphuric acid.	A brown ring at the interface. A violet ring was appeared below the brown ring. Greenish ring may form just above the brown ring.
Test for tarpenoids	
5 ml of extract was mixed with 2 ml of chloroform and 3 ml of conc. H_2SO_4 was carefully added to form a layer.	A reddish brown coloration of the interface was formed.
Test for phenol	
2 ml of extract was taken and add 2 ml of Folin's reagent.	Appearance of violet or brown colour.
Test for Flavonoids	
5 ml of dil. Ammonia solution were added to a portion of the crude extract followed by addition of conc. H_2SO_4.	Yellow coloration occurs.
Carbohydrates : Moliseh's test	
To 2ml of the extract, add l ml of α-napthol solution, add concentrated sulphuric acid through the side of the test tube.	Purple or reddish violet colour at the junction of the two liquids reveals the presence of carbohydrates
Fehling's test	
To 1 ml of the extract, add equal quantities of Fehling solution A and B, upon heating	Formation of a brick red precipitate indicates the presence of sugars
Benedict's test:	
To 5ml of Benedict's reagent, add 1ml of extract solution and boil for 2 minutes and cool.	Formation of red precipitate shows the presence of sugars
Test For Anthraquinone Glycosides	
To 200 mg of each extracts, dil. sulphuric acid was added and boiled. Then it was filtered and cooled. To the cold filtrate, 3 ml of benzene was added and mixed. The benzene layer	Ammonical layer was observed.

was separated and to it, ammonia (2 ml) was added	
Test for proteins and amino acids:	
Biuret test:	
Add 1 ml of 40% sodium hydroxide solution and 2 drops of 1% CuSO4 solution till a blue colour is produced, and then add 1 ml of the extract	Formation of pinkish or purple violet colour indicates the presence of proteins.

Table 2: Phytochemical Evaluation of *Nyctanthes arbortristis*

Chemical Test	Result
Test for Alkaloid	Positive
Test for Tannins	Positive
Test for Saponins	Positive
Test for Cardiac glycosides	Positive
Test for Tarpenoids	Positive
Test for Phenol	Positive
Test for Flavonoids	Negative
Test for Carbohydrates : Moliseh's test Benedict's test: Fehling's test	 Positive Positive Positive
Test for Anthraquinone Glycosides	Negative
Test for proteins and amino acids Biuret test:	Positive

III. Result And Discussion

In the present study plants were collected and were authenticated. Then they were shade dried and powdered and were subjected to phytochemical screening. The dried powdered leaves of *Nyctanthes arbortistis* were subjected to soxhlet extraction with petroleum ether. The qualitative chemical tests for the extracts were performed. The investigation showed that *Nyctanthes arbortristis* contains phenolic compounds, tannins, cardiac glycosides, carbohydrates, Cardiac glycosides, proteins and alkaloids were present in *Nyctanthes arbortristis*. Anthraquinone glycosides and flavonoids were absent.

IV. Conclusion

We can conclude that the selected leaf extracts were showing many secondary metabolites are present. Phytochemical analysis of *Nyctanthes arbortristis* leaves extracts was done by using the extracts which were obtained by cold extraction method and soxhlet method. The screening of phytochemical constituents of plants *Nyctanthes arbortristis* indicated the presence of carbohydrates, proteins and alkaloids in common. The plant contains more metabolites and there is a need for further investigations using fractionated extracts and purified chemical components.

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