Journal of Advances and Scholarly Researches in Allied Education
Vol. 16, Issue No. 5, April-2019, ISSN 2230-7540

Study the Bioactive Compounds of *Nyctanthes Arbor-Tristis* and *Curcuma Caesia* Leaves and its Antimicrobial Activity against Pathogens

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Abstract – Medicinal plants contain bioactive compounds that are used to cure various human diseases. There are antibacterial activities in medicinal plants. The present study consists of two different medicinal plants, Nyctanthes arbor-tristis and Curcuma caesia are available locally in the Bhilai region of Chhattisgarh, India. The leaves of selected medicinal plants were washed, dried in air and then used. To find phytochemical components in plants, chloroform was used from leaf samples for phytochemical analysis. The main objective of the research work was to verify the presence or absence of phytochemical components in all selected medicinal plants. The results of phytochemical analysis of these medicinal plants have shown that terpinoids, flotanates, reducing sugar, flavonoids and alkaloids were present in the medicinal plants mentioned above. The phytochemical analysis of plants is very important commercially and there is great interest in pharmaceutical companies to produce new medicines to cure various diseases. An additional comparative study of bioactive compounds present in both plant extracts showed their possible medicinal use in the treatment of diseases in humans.

Keywords: Phytochemicals, Nyctanthes Arbor-Tristis, Curcuma Caesia

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INTRODUCTION

Herbal medicines are the basis of many modern medicine industries present for our various diseases. Medicinal plants that contain one or more parts contain a substance that can be used for therapeutic purposes or is a precursor to the synthesis of useful medicines (Sofovorro, 1982). Most of the plants used in Indian traditional medicine system have been found to be active against microorganisms (Khan et al, 1994, Ahmed et al, 1998, Ahmed and Beg, 2001). Phytochemicals present in some parts of plants are natural bioactive compounds found in plants, which together with fibers and nutrients create stress and status as an integrated part of the immune system against various diseases. In the present study, we not only evaluated important biological compounds of both plants, but also made comparative studies. For an effective dose concentration and to understand their medicinal functions, the quantitative estimation of the concentration of several trace elements is essential.Phytochemical compounds are unit gift in plant elements area unit the natural bioactive compound found in plants, that work with fibers and nutrients to create an integrated a part of system against stress conditions and numerous diseases. The present study deals with the phytochemical standardization and antimicrobial activity of chloroform extract of *Nyctanthes arbor-tristis* and *Curcuma caesia* leaves. The most aim of study is to screening the phytochemical compound and there antimicrobial susceptibility against pathogen of crude extract of Nyctanthes arbor-tristis leaves and roots. The extract therefore obtained when standardization could also be used as healthful agents.

Classification of *Nyctanthes arbor-tristis*:

Kingdom:	**Plantae**
Clade:	**Angiosperms**
Clade:	**Eudicots**
Clade:	**Asterids**
Order:	**Lamiales**
Family:	**Oleaceae**
Genus:	**Nyctanthes**
Species:	**N. arbor-tristis**

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Fig. 1: *Nyctanthes arbor-tristis*Classification of ***Curcuma caesia***:

Kingdom:	**Plantae**
Clade:	**Angiosperms**
Clade:	**Monocots**
Clade:	**Commelinids**
Order:	**Zingiberales**
Family:	**Zingiberaceae**
Genus:	***Curcuma***
Species:	***C. caesia***

Fig. 2: *Curcuma caesia*

MATERIAL AND METHOD:

Sample Collection:

The plant parts of *Nyctanthes arbor-tristis* and *Curcuma caesia* leaves were collected from field of Durg and Bhilai, and then the plant identified taxonomically and was preserved for extraction.

Extraction:

The Extraction of *Nyctanthes arbor-tristis* and *Curcuma caesia* leaves from Hot and Cold Extraction procedure was done by Soxhletion and Maceration method using organic solvent (Chloroform).

Readiness of Solvent Extracts for monocot family caecia rhizomes

Moonshot was used to wash legume legumes, which were washed with legally flowing water, at this time, once the evacuation rhizomes were sifted and dust was requested. With respect to 50 g, the dry powder of the monocotyledonous variety of Casiah rhizomes was separated with 5 cc of fuel abuse. The situation was improved in several weeks so that the separation of cells was separated at 30 ° C. To obtain a roughness for a phytochemical examination, 70 ° C was concentrated in the water shower. When everything disappeared, a lot of concentration was recorded and then marked. Put the extracts indefinitely at 4˚C indefinitely.

Maceration technique for *Nyctanthes arbor-tristis* and *Curcuma caesia* leaves:

Después de secar el Polvo de Nyctanthes, 200 meters of petrol used in 50 gallons of organisms and incubators in a seminar with 200 meters of extra cylinders for a semester, and 25 semanas for seminars for five semesters. Fue Hecho Se extrajeron las material textile fabricators and instrumentation of rotatorios de absorbing gaseosa, from the extract of the horn in the second half of the 50th hour of 24 hours, the final day, the temperature of 4 ° C, to 4 ° C in the foreskin los fitoconstituyentes, el monocasco superior Entrusted by the expansion of the enclosures.

IDENTIFICATION TESTS FOR PHYTOCHEMICAL CONSTITUENTS

After the procedure, tests were performed to detect the presence of active chemical components such as carbohydrates, proteins, starch, amino acids, steroid glycosides, flavonoids, alkyloids, tannins, saponin, phenols. Phytochemical analysis All extracts were applied for abuse in the general methods.

1. Test for Carbohydrate

Molisch's test: Molisch was added to 3 ml of 3 ml of reagent test solution, stirred for a few minutes. Then, gradually, add 2 ml of centrifugal sulfuric acid to the edges of the test tube. The development of the purple ring in the union of two liquid substances indicates the presence of carbohydrates.

2. Test for Proteins

Biuret test: 3 ml of test solution were treated with 4% sodium hydroxide (3 to 5 drops) and 1% copper

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sulfate solution (3-5%). The appearance of blue indicates the presence of proteins.

3. Test for Quinones

Approximately 0.5 grams of extracts were extracted and extra cc extracts were extracted and an extra cc red color of H2SO4 was formed to focus, which shows the presence of quenone. One drop of ethanol test resolution is placed on a filter paper, followed by one drop of ethanol phenylatonitrile resolution and one drop of 0.1 n hydroxide. A positive reaction looks like a blue or purple colored by a yellow ring.

4. Test for Aminoacids

Ninhydrin test: Test the solution (3 ml) and 3 drops of 5% lead acetate solution in a water bath for 10 minutes. The color change of the purple or blue color indicates the presence of amino acids.

5. Test for Steroids

Salkowski test: Chloroform (2 ml) and 2 ml of concentrated sulfuric acid were mixed in 2 ml of test solution, stirred and allowed to stand. Converting the red and acid layer into a yellowish green fluorescence in the color of the lower layer of chloroform indicates the presence of steroids.

6. Test for Glycosides

Keller-Kiliani test: Glacial acetic acid (3-5 drops), 5% FeCl3 and one drop of concave. The sulfuric acid was mixed in the test tube, which contained 2 ml of tea. S. The appearance of reddish brown in the union of two layers and the green in the upper layer indicates the presence of glycosides.

7. Test for Flavanoid

Shinoda test: To remove the powder (10 mg), 5 ml of ethanol (95%), 3 drops of hydrochloric acid and 0.5 g of magnesium turning were added. The color of the pink solution indicates the presence of flavonoids.

8. Test for Alkaloids

To the dry extract (20 mg) dilute hydrochloric acid (1-2 ml) was added, shaken well and filtered. With filtrate the following tests were performed.

(A) Mayer's test: To the 3 ml of test solution 3 drops of Mayer's reagent (potassium mercuric iodide) was added. Appearance of reddish brown or cream precipitate indicates the presence of alkaloids.

(B) Dragendorff's test: 3 ml of the test solution was mixed with Dragendorff's reagent (potassium bismuth iodide). Appearance of reddish brown precipitate indicates the presence of alkaloids.

9. Test for Terpenoids

Salkowski test: Concentrated sulphuric acid (2 ml) was added to 2 ml of test solution. The solution was shaken and allowed to stand. The colour of lower layer changes to yellow indicating the presence of triterpenoids.

10. Test for Saponins

Foam Test: Powdered extract (10-20 mg) was shaken vigorously with water (1 ml). Development of persistent foam which is stable at least for 15 minutes indicates the presence of saponin.

11. Test for Phenols

Ferric Chloride test: Test extract were treated with 4 drops of Alcoholic $FeCl_3$ solution. Formation of bluish black colour indicate the presence of Phenol

Antimicrobial activity:

The disc diffusion method (Kirby Bauer *et al*., 1966) was used to test antibacterial activity of the extracts against pathogenic bacteria.

OBSERVATIONS:

Table No. 1: Comparative Table of Phytoconstituents of *Nyctanthes arbor-tristis* and *Curcuma caesia* leaves extracts:

S. No.	Phytochemicals	*Nyctanthes arbor-tristis*	*Curcuma caesia*
1	Alkaloids	+ve	+ve
2	Terpinoid	+ve	+ve
3	Phenols and Tannins	+ve	+ve
4	Saponins	+ve	-ve
5	Flavonoids	-ve	-ve
6	Quinines	-ve	-ve
7	Proteins	-ve	-ve
8	Steroids	-ve	-ve
9	Cardiac Glycosides	-ve	-ve
10	Carbohydrates	-ve	+ve
11	Amino Acid	-ve	-ve

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Antifungal activity by disc diffusion assay:

Fig. 3: Antifungal activity of *N. arbor-tristis* and

***C. caesia* leaves of different solvent system**

Table 2: Antifungal activity of chloroform extract of plant leaf

NAT, Leaf Chloroform	Concentration		
	50 mg	100 mg	150 mg
R. stalonizer	1 mm	1 mm	2 mm
A. niger	1 mm	3 mm	5 mm
F. oxysporum	1 mm	1 mm	2 mm

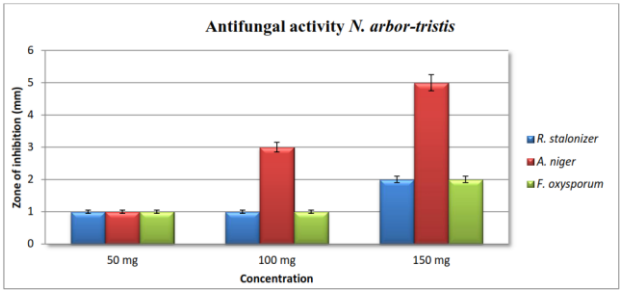

Fig. 4: Antifungal Activity of Chloroform Extract of *N. arbor-tristis* Plant leaf

Table 6: Antifungal activity of chloroform extract of plant leaf

C.caesia leaf, Chloroform	Concentration		
	50 mg	100 mg	150 mg
R. stalonizer	2 mm	2 mm	4 mm
A. niger	0 mm	1 mm	2 mm
F. oxysporum	1 mm	2 mm	2 mm

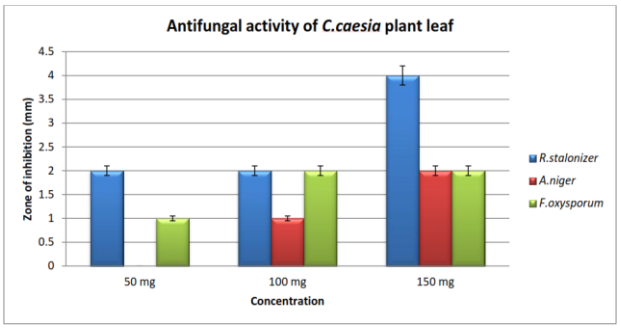

Fig. 5: Antifungal Activity of Chloroform Extract of *C. carsia* Plant leaf

Antimicrobial activity by well diffusion assay :

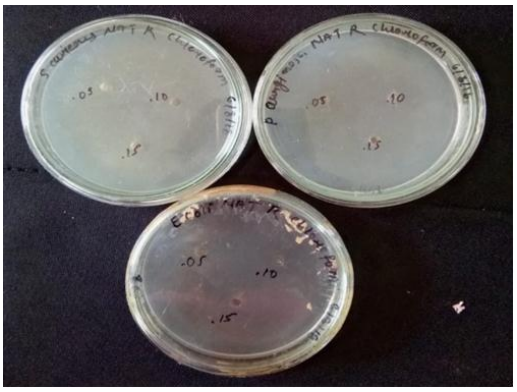

Fig. 6: Antibacterial activity of *N. arbor-tristis* and

***C. caesia* of different solvent system**

Table 7: Antibacterial activity of chloroform extract of plant leaf

NAT, Leaf, Chloroform	Concentration		
	50 mg	100 mg	150 mg
E.Coli	2 mm	2 mm	3 mm
S. aureus	0 mm	1 mm	2 mm
P. aeruginosa	1 mm	1 mm	2 mm

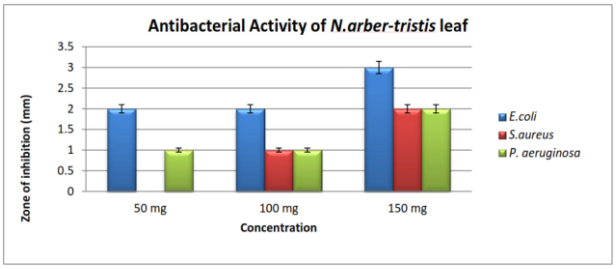

Fig. 7: Antibacterial Activity of Chloroform Extract of *N. arbor-tristis* Plant leaf

Table 8: Antibacterial activity of chloroform extract of plant leaf

C.Caesia Leaf, Chloroform	Concentration		
	50 mg	100 mg	150 mg
E.coli	1 mm	1 mm	2 mm
S. ureus	0 mm	1 mm	3 mm
P. aeruginosa	1 mm	3 mm	3 mm

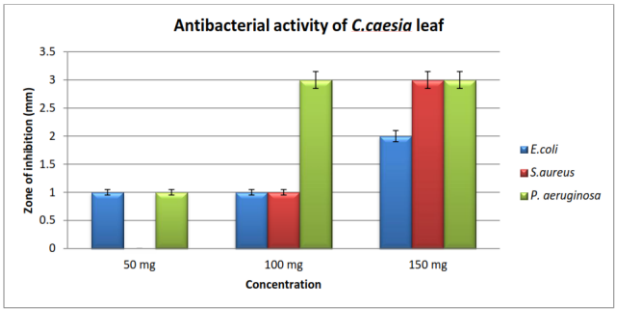

Fig. 8: Antibacterial Activity of Chloroform Extract of *C.caesia* Plant leaf

RESULTS AND DISCUSSION:

Plants that show that the reducing phytochemical components, ie, taranoids, flavonoids, alkaloids, sugars and finols are present or absent in these plants and the results are summarized in Table 1. Our subjects were examined that the alkaloids and flavonoids are present. N. Arbor-Tristis and C. The extract of Ketis, while the reducing sugars and tarpinoids were found absent. In previous studies, it was reported that flavonoids and terpanoids were present in the chloroform extracts in the extracts of Nyctanthes arbor-tristis and Curcuma caesia (Pietta, 2000), while alkaloids and phenols were found in them.

Many of the biochemical components of plants have shown excellent biological activities (Gupta et al., 1993, Cowan, 1999, Ivu et al., 1999, Ogunle and Ibetoy, 2003, Ticikeng et al., 2005). Tannins were found in the two medicinal plants selected for screening. Tannin has incredible stiffness. It is known that they accelerate the treatment of the mucous membranes of injuries and inflammation. The flavonoid is also present in both the selected medicinal plants as a powerful water-soluble antioxidant and a free radical scavenger, which inhibits the damage of oxidative cells and also has a strong anti-cancer activity (Rio et al, 1997 and Salah et al. , nineteen ninety five). It also helps in the management of oxidative stress induced by diabetes. It has been found that terpenoids are useful in the prevention and treatment of many diseases, including cancer. The tarponeoides are known as antimicrobials, antifangales, antiparácicos, antiviral, antiallergic, antispasmodic, anti-hyperglycemic and anti-inflammatory and moderate immune properties (Rabi et al, 2009 and Wagner et al, 2003). In addition, terpenoids can be used as protective substances in the storage of agricultural products because they are well known as pesticide properties (Sultana et al, 2008).

In these current studies, the phyto-components reported in the extract of leaves Nyctanthes arbor-tristis are cardioglycosides, flavonoids, kelogenic glycosides, alcohol, alcohol, extracts in tannins, cardioglycosides, phenols, steroids, flavonoids and leaves of cure.

Because the plant is rich in several types of secondary metabolites, such as tannins, phenols, steroids, flavonoids and cardioglycosides, it can be used to produce a more effective antimicrobial agent to remove the leaves of arist-tristis and kerkuma cassia. . Effective extracts in the form of modern medicine to combat E.coli and Pseudomonas. Due to the biological and medicinal examination of these medicinal plants with modern equipment, now there may be some new safe and interesting medicine. In the case of drug-resistant microorganisms, it can be further exploited for the separation and characterization of new phytochemicals used in the treatment of infectious diseases.

CONCLUSION:

With all these broad-spectrum antibacterial properties, n. Arbor-Tristis and C. Kesia can be considered an effective antimicrobial agent to treat infectious diseases against human pathogens. The results of the phytochemical analysis of these

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medicinal plants have shown that redepanids, phenol, reduction of sugars, flavonoids and alkaloids are present in the medicinal plants mentioned. The study scientifically supported the ethno-pharmacological use of the plant as an antimicrobial and antifungal agent, and ethnopharmacies may be responsible for some of the differences observed in gastrointestinal preparation methods. The phytochemical analysis of plants is commercially very important and is very interested in pharmaceutical companies. For the production of new drugs for the treatment of various diseases. The comparative study of the bioactive compounds present in both plant extracts revealed their possible medicinal use in the treatment of diseases in humans.

REFERENCE:

Ahmad, I. & Beg, A.Z. (2001). Antimicrobial and phytochemiacl studies on 45 Indian medicinal plants against multi-drug resistant human pathogens. Journal of Ethno pharmacology 74: pp. 113-123.

Ahmad, I., Mehmood, Z. & Mohammad, F. (1998). Screening of some Indian medicinal plants for their antimicrobial properties. Journal of Ethno pharmacology 62: pp. 183-193.

Cowan, M.M. (1999). Plant Products as Antimicrobial Agents. Clinical Microbiological Review 12(4): pp. 564-582.

Gupta, S., Yadava, J. N. S. & Tandon, J. S. (1993). Antiscretory (antidiarrhoeal) activity of Indian medicinal plants against *Escherichia coli* enterotoxin-induced secretion in rabbit and guinea pig ileal loop models. International Journal of Pharmacology 31(3): pp. 198-204.

Harborne J. B. (1973). Methods of plant analysis. In: Phytochemical Methods (Chapman and Hall, London).

Iwu, M.M., Duncan, A.R. & Okunji, C.O. (1999). New antimicrobials from plant origin. J. janick (ed.), ASHS Press, Alexandria, VA, pp. 457-462.

Khan, M.A., Khan, T. & Ahmad, Z. (1994). Barks used as source of medicine in Madhya Pradesh, India. Fitoterapia 65(5): pp. 444-446.

Ogunleye, D.S. & Ibitoye, S.F. (2003). Studies of antimicrobial activity and chemical constituents of *Ximenia Americana.* Tropical Journal of Pharmaceutical Research 2(2): pp. 239-241.

Rabi T. & Bishayee A. (2009). Terpenoids and breast cancer chemoprevention. Breast Cancer Res Treat; 115: pp. 223-239.

Rio D.A., Obdululio B.G., Casfillo J., Marin F.G. and Ortuno A. (1997). Uses and properties of citrus flavonoids. J Agric Food Chem; 45: pp. 4505-4515.

Salah N, Miler NJ, Pagange G, Tijburg L, Bolwell GP, Rice E, et. al. (1995). Polyphenolic flavonoids as scavenger of aqueous phase radicals as chain breaking antioxidant. Arch Biochem Broph 1995; 2: pp. 339-46.

Sofowora A. (1993). Medicinal Plants and Traditional Medicine in Africa. John Wiley and Sons Limited, 2: pp. 96-106.

Sultana N. & Ata A. (2008). Oleanolic acid and related derivatives as medicinally important compounds. J Enzyme Inhib Med Chem; 23: pp. 739-756.

Trease G.E. (2002). Evans WC Pharmacognosy (15th Edn. Saunders, pp. 214-393).

Tshikalange, T.E., Meyer, J.J. & Hussein, A.A. (2005). Antimicrobial activity, toxicity and the isolation of a bioactive compound from plants used to treat sexually transmitted diseases. Journal of Ethnopharmacology 96(3): pp. 515-9.

Wagner K.H. & Elmadfa I. (2003). Biological relevance of terpenoids: Overview focusing on mono-di and tetraterpenes. Ann Nutr Metab; 47: pp. 95-106.

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