

SCREENING OF PHYTOCHEMICAL COMPOUNDS PRESENT IN ETHANO MEDICINAL PLANT FROM ACANTHACEAE FAMILY: A SHORT REVIEW

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ABSTRACT

The present study describes the phytochemical test and antibacterial activity of *Andrographis paniculata*. *Andrographis paniculata* is commonly known as “Kalmegh” and “King of better”. *Andrographis paniculata* belongs to the family of Acanthaceae. This plant is used in a treatment for example common cold, diarrhoea, fever, etc. The phytochemical testing is used to show a protein, sugars, gum, flavonoids, quinones, alkaloids, tannins, and triterpenoids. In the present study of the aqueous and methanol extracts of the leaves of *andrographis paniculata* were studied for their antibacterial activity by agar well diffusion method against gram positive and gram negative bacteria as well as against fungi. The use of plant extract with known antimicrobial properties can be of significance for treatment.

IndexTerms: *Andrographis paniculata*, *Acanthaceae*, *Phytochemical compound*, *antimicrobial activity*.

INTRODUCTION

Andrographis paniculata is also known as king of better and kalmegh. *Andrographis paniculata* is a plant belongs to family acanthaceae native to india and srilanka. Mostly the leaves and roots are the used in the medical treatment. *Andrographis paniculata* plant is an annual plant with three feet height and the leaves are 7.5cm long and 2.5cm wide and the plant flower colour is white. This plant is used for the digestive problem, fever, sore throat, cure fever, and cold. *Andrographis paniculata* is used for the fever like chikungunya, swineflu, typhoid, snake bites and common cold etc. *Andrographis paniculata* plant extract exhibits anti-typhoid, antifungal, antifertility, inflammatory, antimalarial, cardiovascular, and inflammatory activities.[6][7][10] *Andrographis paniculata* plants are rich in a secondary metabolism of phytochemical constituents such as proteins, sugars, gum, alkaloids, steroids, quinones, tannins, flavonoids and other disease.[1][2][3] In Chinese country is widely used to get rid of body heat and fevers and to dispel toxins from the body. In Scandinavian countries is commonly used to prevent and treat common cold. In *andrographis paniculata* plants diterpenoids and flavonoids are main two chemicals are present to be responsible for the most biological activities of this plant.[4] A *andrographis paniculata* plant has been reported as having antibacterial, antifungal, antiviral, hypoglycemia, hypocholesterolemic, and adaptogenic effects.[5] The leaves extracts were prepared by using three types of solvents for example aqueous, ethanol/methanol and acetone. Screening of antibacterial activity of this three solvent derived extract for agar well diffusion method. *Andrographis paniculata* is used for the anti-cancer,[8] anti-hiv,[9] and other. *Andrographis paniculata* has been reported to have a broad range of pharmacological effects including antihyperglycemic,[11-13] antioxidant,[14,15] hepatoprotective[16-20] and sexual dysfunctions[21]. The present study was to identify the active components present in a *andrographis paniculata* for antimicrobial activity. In vitro antimicrobial activity of this plant extract use is chloroform and chloroform+HCL and this component identification use a GC-MS analysis.

MATERIAL AND METHOD

Collection of plant leaves

Andrographis paniculata plants leaves collected from the near necessary in barod, India. This collected leaves is washed with running tap water and after washed by distilled water. After that washed leaves dried in sun or room temperature for the 3-4 days and grinded into powder form. This powder form will be used for a solvent extraction. This powder leaves will be extracted with acetone, aqueous, methanol and ethanol.

Preparation of aqueous extracts

The making of the aqueous extracts to 10g of dried powder mixed with the 100ml of sterile distilled water and kept on a water bath shaker for 12h at 40°C. After that this solution is filtered through Whatman no 1 filter paper. Then the filtrate was used for preliminary chemical color reactions for a phytochemical group.

Preparation of acetone and methanol extracts

The preparation of a acetone extracts the ratio of the acetone and distilled water is 4:1. For example 25g dried powder was extracted using 100ml of the extraction solvent acetone in soxhletat 55c for 48h. And preparation of a methanol extracts to used a 80% of methanol solvent with 25g of dried powder in soxhletat at 60c for 48h. These extracts used to preliminary different phytochemical screening for the analysis of various phytochemical groups.

Phytochemical test

The obtained extracts were subjected to phytochemical testing according to standard test:

Test for alkaloids: The test extracts with few drops of 2N HCL and shaken. After the aqueous layer will be formed, after the one or two drops of Mayer's reagent will be added. Formation of white precipitate indicates the presence of alkaloids.

Test for triterpenoids (Noller's test): The substance was warmed with tin and thionyl chloride. The purple coloration will be formed to indicates the presence of triterpenoid.

Test for steroids: One gram of substance was dissolved in few drops of acetic acid, acetic anhydride. After warmed and cooled in under tap water and add drop of sulphuric acid were added along sites of test tubes. The green color will be formed the steroid is present.

Test for flavonoids (Shinoda's test): To the substance in alcohol, a few magnesium turnings and few drops of concentrated HCL were added and boiled for five minutes. The red color will be formed the flavonoids is present.

Test for tannins: The substance will be mixed with basic lead acetate solution. Formation of white precipitate indicates the presence of tannins.

Test for quinones: The substance will be mixed with the sodium hydroxide. Blue, green, and red color will be formed the presence of quinones.

Test for protein: The substance will be mixed with the Biuret reagent. The blue reagent turns violet in the presence of protein.

Test for sugars: The substance will be mixed with equal volume of Fehling's A and B solutions and heated on water bath. The red color will be formed the sugar is present.

Test for gum: To The substance and few ml of water mix and shake well. Formation of swells and adhesives indicates to the presence of gum.

Antimicrobial activity test

Agar well diffusion method

Antimicrobial activity was determined by agar gel diffusion methods. The sterile discs impregnated with 100ulof andographis paniculata plants leaf extracts were placed on the test pathogen seeded agar plates. The plate were kept for half an hour for pre incubation diffusion and later kept for incubation at 37°C for 24hrs. After the incubation time is over the plates were observed for the measurement of inhibition zone produced by the extracts.

Conclusion

Andographis paniculata is the great indian medicinal plant having a lot of phytochemicals and vigorously involved in the killing of microorganism. From the literature study analysis it can be concluded that *andographis paniculata* is a traditional remedy for fever, cold and various infections. It also employs various immunological applications in cancer, immunomodulatory activity, viral disease like HIV, cardiovascular disease, in preventing liver toxicity, thus improving functions of heart and liver. In the plant extract were screened for the presence of major secondary metabolic classes such as alkaloids, proteins, flavonoids, terpenoids, tannin, gum, and steroid are according to common phytochemical method. *Andographis paniculata* planta chloroform extract showed antimicrobial activity against all the tested pathogenic clinical strains of bacteria.

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