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Antimicrobial Activity and Phytochemical Screening of Catharanthus Roseus

Biotechnology

KEYWORDS : Catharanthus roseus, antibacterial, phytochemical

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ABSTRACT

The present study was carried out by using antibacterial potential and phytochemical analysis of dry leaves of Catharanthus roseus was conducted using agar disc diffusion method. The maximum activity was observed against all microorganisms, the minimum inhibitory concentration was determined depending on microorganisms. Catharanthus roseus was observed to have antibacterial activity. The experiment carried out revealed the presence of different types of phytochemical constituents.

INTRODUCTION

Natural products including plants, animals and minerals have been the basis of treatment of human diseases. Use of plants as a source of medicine has been inherited and is an important component of the health care system. (Nayar et *al.,* 1999).

In recent years, many drugs have been isolated from natural source as the modern medicine system treats the symptoms and suppresses the disease but does little to ascertain the real cause. Toxic drugs which may suppress or relive some aliments usually have harmful side-effects. Drugs usually hinder the self-healing efforts of the body and make recovery more difficult. There, the current scenario is to isolate the active constituents present in the plant material to develop medicinally drugs which are having rare chances of adverse effects (Mohammed *et al.,* 2011).

Medicinal plants grow naturally around us. Over centuries, cultures around the world have learned how to use plants to fight illness and maintain health. These readily available and culturally important traditional medicines from the basis of an accessible and affordable health care regime and are an important source of livelihood for indigenous and rural population.

ANTIMICROBIAL ACTIVITY

The different parts of plants were used and extracts were subjected to antimicrobial assays (Patil *et al*., 2010).The study of antimicrobial antifungal property of periwinkle leaves extract have been checked against microorganism.Like *Escherichia coli, Klebsiell aoxytoca, Klbsiella pneumonia, Pesudomonas aerugenosa, Staphylococcus aureus (*S.Balaabiramie*t al.,* 2012).

The antifungal activity have been checked against *Aspergillus niger, Candida albinos, Penicillium chrysogenum,* (S.Patharajane*t al*., 2012)

PHYTOCHEMICAL TEST

Phytochemicals are basically divide in two groups that is primary and secondary metabolites according to their functions in plant metabolism. Primary metabolites comprise of commonsugar, amino acids, proteins, whereas Secondary metabolites alkaloids, flavonoids, and tannins (Anandaraje*t al.,* 2011). The phytochemical screening of both methanol and aqueous the crude plant extracts revealed the presence of various secondary metabolites (Shalinie*t al., 2012).*

MATERIALS AND METHODS

EXTRACTION OF PLANT MATERIAL

PREPARATION OF ETHANOLIC EXTRACTS

10g of sterilized plant leaves were grinded with ethanol. Then they were ground well with the help of mortar and pestle. The plants were subjected to centrifugation for 15 min at 1000 rpm. Again, it was filtered through Whatmann No.1 filter paper. The supernatant were collected with plant extracts of different dilution.

ANTIMICROBIAL ACTIVITY

SAMPLINGOF PLANT MATERIAL: Fresh leaves of catharanthusroseus was collected. The leaves were washed thoroughly 2-3 times with running tap water and dried under shade. The total dried mass was grounded to a fine powder. The powder obtained after grinding was kept in small plastic bags with proper labeling.

ANTIBACTERIAL TESTING

Sterile molten nutrient agar at around 40 C was added and poured in sterile petri plate and allowed to be solidified. After solidification 4 mm wells were prepared. In these wells solvent extracts were added. The plate was incubated over night at 37 C. After incubation the zones of inhibition were measured and recorded.

CULTURE OF ANTIBACTERIAL ACTIVITY:

The microorganism used were as follows,*Stephylococcusaureus,Peseudomonasaeruginosa, Bacillus subtils, S.mutants, Shigellaboydii, Escherichia coli, klebsiellaoxytoca.*

ANTIFUNGAL TEST

Fresh leaves of catharanthusroseus was collected. The leaves were washed thoroughly 2-3 times with running tap water and dried under shade. The total dried mass was grounded to a fine powder. The powder obtained after grinding was kept in small plastic bags with proper labeling.

CULTURE OF ANTIFUNGAL ACTIVITY:

Catharanthusroseus leaves extract activity against were screened for their antifungal activity against *Aspergillusniger, Candida albicans, Pencillumchrysogenum, Aspegillusflavus.*

PHYTOCHEMICAL SCREENING:
Different qualitative chemical tests can be performed for establishing profile of methanol and aqueous extract for its chemical composition. The following tests were performed (Alkaloids, Mayer's test, Molish test, Fehling's test, Barfoed's test Benetict's test, Saponine test Millon's test, Lead acetate test, Steroids and Salkowski test) on extracts to detect various phytoconstituents present in them.

RESULTS AND DISCUSSION
ANTIMICROBIAL ACTIVITY

Antimicrobial activity of catharanthus roseus extract against pathogenic organism tested, ethanolic fractions gave better results when compared to other organism tested. Among seven organism tested *Klebsiella oxytoca, S.mutans*, *Stephylococcus, aureus*four organism showed better result.

ANTIFUNGAL ACTIVITY
The antifungal activities of *catharanthus roseus* plant leaves extract obtained by the disc diffusion method. The leaves extract were tested exhibited the antifungal activity against *Aspergillusniger, Candida alibicans, Penicillum chrysogenum.* Among the species tested Candida *alibicans* gave better results. Ethanolic extract of *catharanthus roseus* extract showed better result on Candida *alibicans* pathogen. As can be seen from the literature survey that this planthas been mostly studied with respect to its anti-cancer properties and its anti-diabetic properties. The studies have been done on the anti-microbial properties of the plant extracts. Therefore, this study focuses on the anti-microbial properties of the leaf extract.

PHYTOCHEMICAL SCREENING
The phytochemical screening for methanol plant extract of catharanthus *roseus* parts showed presence of alkaloids, phytosterols, phenolic compounds, tannins.

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