

STUDY OF ANTIMICROBIAL ACTIVITY OF LEAF EXTRACT OF ANDROGRAPHIS PANICULATA

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Abstract

Adrographis Paniculata Is A Medicinal Plant Are Belong To The Family Acnathaceae. The Present Study Describe the Antimicrobial Properties of Adrographis Paniculata .For The Present Investigation, Sample of Adrographis Paniculata Leaf Extracts Obtained by Extraction in Chloroform and Methanol Were Used for Check Their Antimicrobial Activity.

Antimicrobial Activity Of Leaf Extracts Of Adrographis Paniculata Was Studied Using Solvent Chloroform And Methanol Against Bacterial Strain Like Gram Positive Bacteria Staphylococcus Aureus, Gram Negative Bacteria Escherichia Coli And Strain Of Fungi Aspergillus Niger. The Antimicrobial Activity Was Determined By Disc Diffusion Method The Chloroform Extract Were Found Highly Active Against Bacterial Strain Staphylococcus Aureus And Escherichia Coli.

Key words: Antibacterial activity, leaf extract, Adrographis Paniculata.

Introduction

Medicinal plants have a long history of use both in developing and developed countries. Among the few advantages of using antimicrobial compounds of medicinal plants include fewer side effects, better patient tolerance and relatively less expensive. All these data highlights the need for developing.

Alternative new regimens. The plant chosen, Andrographis paniculata (Acanthaceae) is commonly known as “King of Bitters”. The plant is an annual herb. It is branched, erect, growing up to 1 meter in height. The leaves and the stems of the plant are used to extract the active phytochemicals. (Pattanaik-&-Reddy-2008).

Materials and Methods

1) Sample collection:- The experimental material for the present study was collected from Ambikapur. For the present study, the leaves of Kalmegha (Andrographispaniculata) will be collected in early morning period, from the Rajpur forest, Chhattisgarh India, where the plant occurred in natural habitat such as red and sandy soil with slightly alkaline pH. At the time of collection, only large sized leaves were collected in sterilized polythene bag and brought to laboratory for further analysis (Gupta V et al, 2017, Shukla A k et al, 2014).

2) Extract preparation- Dried leaves (200 g) powder was subjected to extraction with 200ml solvent (methanol/chloroform) for 48 hours. The solvent extract was collected, filtered and concentrated in vacuums under reduced pressure and dried in desiccators and stored for further analysis. The concentrated solvent extract was further subjected to phyto chemical screening. (Daniyan and Mohammed, 2008).

3) Preparation of paper discs- In this method the test compounds, i.e. the leaf extract were introduced into a disc 0.5 mm and then allowed to dry. Thus the disc was completely saturated with the test compound. Then these discs were placed directly on the surface of agar plates, swabbed with the test organism.

Results and Discussion

Paper disc method-

Aqueous extraction- The results clearly showed that aqueous extractions of leaf in fresh leaf extract get highest zone against e.coli,s.aureus and a.niger was 8.7, 8.9 and 5.2 nm.

Methanol extraction- The results clearly showed that aqueous extractions of leaf in fresh leaf extract get highest zone against e.coli, s.aureus and a.niger was 23.2, 9.2 and 6.2nm.

Chloroform extraction- The results clearly showed That aqueous extractions of leaf in fresh leaf extract get highest zone against e.coli, s.aureus and a.niger was 17.2, 14.9 and 11.1nm.

A. ANTIBACTERIAL EFFECT OF LEAVES EXTRACT OF KALMEGH COMPARED WITH COMMON ANTIBIOTICS (Mahesh and Satish, 2008).

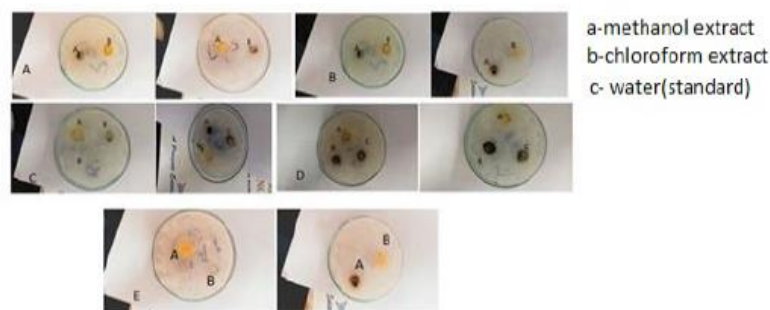
S . N O .	P L A T E	FRESH LEAF METHANOL EXTRACT ANTIBACTERIAL(mm)	DRY LEAF METHANOL EXTRACT ANTIBACTERIAL (mm)	FRESH LEAF METHANOL EXTRACT ANTIFUNGAL (mm)	DRY LEAF METHANOL EXTRACT ANTIFUNGAL(mm)	KANAMYCIN ANTIBACTERIAL (mm)	KANAMYCIN ANTIFUNGAL (mm)
1	A	12	17	06	07	18	08
2	B	10	16	05	08	17	09
3	C	10	15	07	10	15	08
4	D	11	16	05	07	17	10
5	E	NA	NA	06	06	NA	11

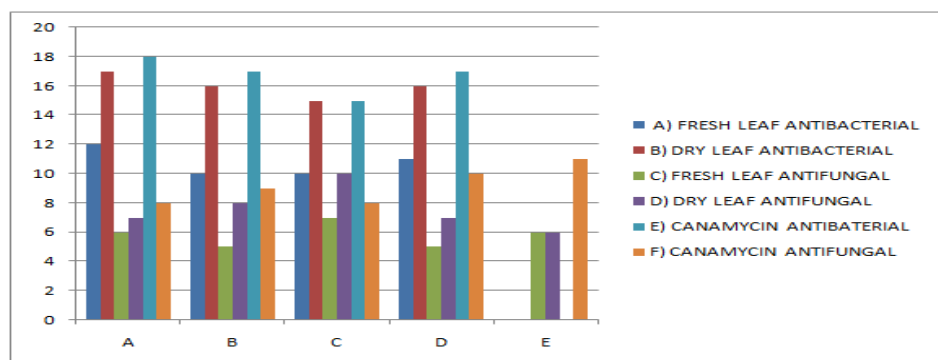
B. ANTIMICROBIAL EFFECT OF KALMEGH PLANT EXTRACT COMPARED WITH CHLOROFORM , METHANOL AND WATER EXTRACT (Sule *et al.*, 2010).

S.NO.	PLANT PART OF ANDROGRAPHIS PANICULATA	SOLVENT USED	ZONE OF INHIBITION (mm)		
			E.COLI	S.AUREUS	A.NIGER
1	ROOT	METHANOL	20.7	12.3	8.7
		CHLOROFORM	16.3	10.3	-
		WATER	14.7	10.1	5.7
2	STEM	METHANOL	23.2	15.3	6.3
		CHLOROFORM	17.6	13.7	11.1
		WATER	8.7	10.3	5.2
3	LEAF	METHANOL	23.2	9.2	6.3
		CHLOROFORM	17.2	14.9	11.1
		WATER	8.7	8.9	5.2

Fig:1 ANTIMICROBIAL ASSAY

Fig:2 ANTIMICROBIAL ASSAY OF LEAF ,STEM AND ROOT EXTRACT WITH METHANOL AND



GRAPH 1 shows anti microbial activity of different part of plant extract**DISCUSSION**

The threat of bioterrorism with multi-drug resistant pathogens emphasized the need for continued development of new antibiotics. Currently, the ongoing battle against bacteria and fungi prevails certainty of evolving resistance. Plants may be an important source of potentially useful structures for the development of new chemotherapeutic agents. The first step towards this goal is the in vitro analysis of plant extracts for their biological activity. The present study, stem extract of *Andrographis paniculata* have tested against clinical pathogens. Canamycin antibiotics used mainly for bacterial infection in many parts of the body, and also known as aminoglycoside antibiotics its work tries killing bacteria or preventing their growth.

compare with *Andrographis paniculata* the test are found positive result and used instead of canamycin. Antibacterial activity against *E.coli* and antifungal activity against *Candida tropicalis*. The present study opens a new era in correlating the Ayurveda and Siddha with modern microbiology. The promising result obtained in this study may lead to the development of a potential antibiotic from the stem extract of *Andrographis paniculata* against bacteria and fungi. Further it also encourages the young researchers to test other medicinal plants for their biological-activities.

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