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Golden Research Thoughts

GRT

ASSESSMENT OF ANTIMICROBIAL EFFECT OF *M. ARVENSIS* (L). LEAF EXTRACTS AGAINST THE BACTERIAL ISOLATES FROM ACNE PUS.



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ABSTRACT :

Scientific experiments on the antimicrobial properties of plant components were first documented in late 19th century. Since then a tremendous amount of work had been carried out worldwide that include screening of various medicinal plants used by traditional healers, for their antimicrobial activity and purification as well as characterization of the active substance. Till date a lot of work had been done in this area and a lot of it is yet to be revealed.

KEYWORDS : Synthesis , Characterization of Cobalt , antitumour activity.

INTRODUCTION:

This revival of interest in plant-derived drug is mainly due to the current widespread belief that green medicine is safe and more dependable compared the costly synthetic drugs many of which have adverse side effects (Neeraj et. al. 2011).

Microorganisms have developed resistance to many antibiotics and as a result, an immense clinical problem in the treatment of infectious



diseases has been created. The resistance of the organisms has increased due to the indiscriminate use of commercial antimicrobial drugs commonly applied for the treatment of infectious diseases. This situation forced the researchers to search for a new antimicrobial substance from various sources including medicinal plants. Essential oils from several plant species are able to control the Gram-negative and Gram-positive bacteria. Recently, an extensive research on the antimicrobial activity of essential oils against pathogens, seeking natural and safer means for hygiene has been carried out (R ta Mickiene et.al. 2011).

M. arvensis L., popularly known as 'Pudina', is consumed in many countries including India

mainly for its antiseptic, insect repellent, carminative, antispasmodic, diaphoretic and anti-inflammatory properties. Traditionally, the infusion of this herb is used for stomachache and vomiting (MATOS, 2000). *M. arvensis* L. is a species of great economic interest among medicinal and aromatic plants due to its essential oils, which are a rich source of menthol, with several industrial applications in oral health care products, flavourings, aromatic food and drinks, perfumeries and pharmaceutical products (IMAI et al., 2001).

MATERIALS AND METHODS:

Isolation and Identification of microorganisms

To check the antimicrobial activity of *M. arvensis* L. the organisms were isolated from pus of human skin. For the isolation of microorganism present in acne the streak plate method was used. The surrounding area of the acne was disinfected with dettol. The pus in the acne was taken out on sterile swab. Pus of acne was streaked on sterile nutrient agar plates. Colonies with different morphologies were taken. Suspensions of the colonies were again streaked on sterile nutrient agar plates. These isolated organisms were identified

Method used for identification was-

The identification was done by geneOmbio laboratories, Pune Conserved gene sequencing 16S rDNA, 18S rDNA or ITS region (using geneOmbio primers)

Antimicrobial activity-

Materials:

Muller Hington agar

Method:

To check the antimicrobial activity Agar well diffusion method was used.

Muller Hington agar butts were inoculated with test organisms, *Bacillus* sp 2 & *Bacillus* sp 1

Results were recorded as the measure of zone of inhibition.

Results:

Identification of bacterial cultures-

After obtaining the report, sequence was preceded for BLAST analysis.

The result obtained was as follows -

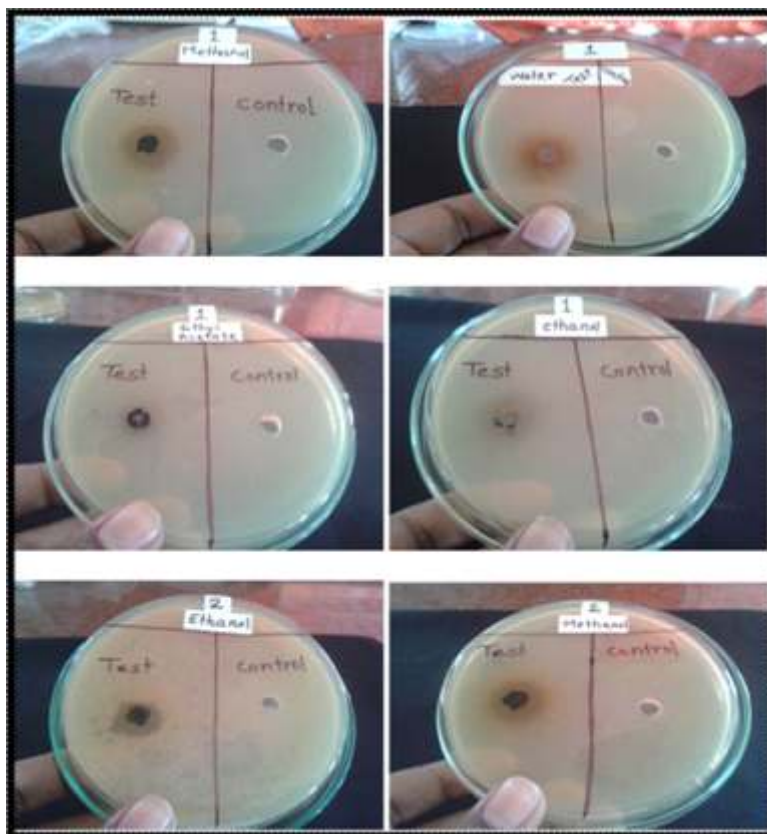
Organism culture 1st - *Bacillus* sp1

Organism culture 2nd - *Bacillus* sp 2

Antimicrobial activity-

Tab 1.1 – Zone of inhibition in millimetre

Organism	Solvent of extraction			
	Ethanol	Methanol	Ethyl acetate	Water
<i>Bacillus sp 1</i>	20	15	14	0
<i>Bacillus sp 2</i>	13	18	0	0



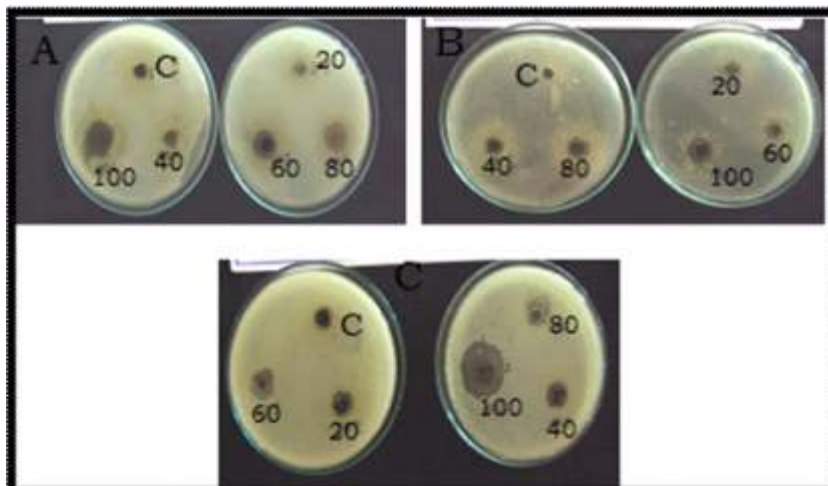
1 – Bacillus sp 1
2 – Bacillus sp 2

Fig 1.1 – antimicrobial activity testing

From the above results it can be concluded that *M. arvensis* is showing antimicrobial activity against both the organisms Bacillus sp 1 and Bacillus sp 2.

There for further the concentrations of *M. arvensis* extracts were varied and checked for its activity and then the results were as fallows –

Organism culture - Bacillus sp 1



A – Antimicrobial activity of ethanol extract

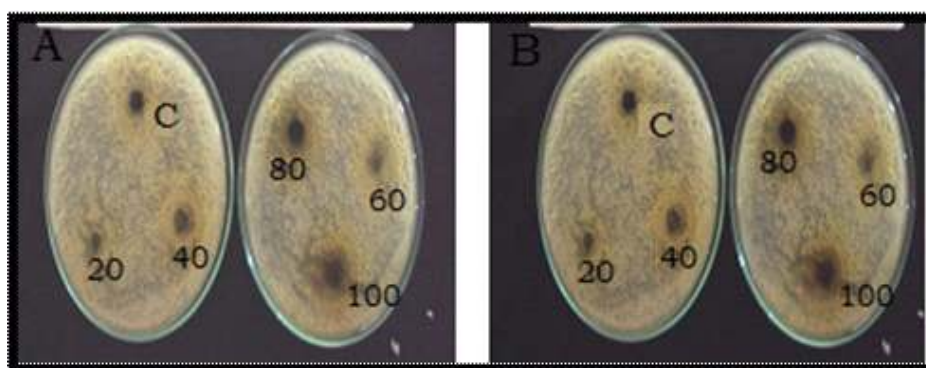
B - Antimicrobial activity of methanol extract
 C - Antimicrobial activity of ethyl acetate extract

Fig 1.2 – antimicrobial activity testing with different concentration of extract on *Bacillus* sp 1

Table – 1. 2: zone of Inhibition in millimetre

Concentration (mg/ml)	Solvent of extraction		
	Ethanol	Methanol	Ethyl acetate
20	10	10	12
40	13	11	14
60	14	14	15
80	17	16	17
100	20	17	24

Organism culture- *Bacillus* sp - 2



A – Antimicrobial activity of ethanol extract
 B – Antimicrobial activity of methanol extract

Fig 1.3 – antimicrobial activity testing with different concentration of extract on *Bacillus* sp 2

Table – 1.3: zone of inhibition in millimetre

Concentration (mg/ml)	Solvent of extraction	
	Ethanol	Methanol
20	6	11
40	11	13
60	13	14
80	12	16
100	13	18

STATISTICAL ANALYSIS –

From the above data the standard deviation and ANOVA is calculated

Standard deviation –

Table 1.4 – Standard Deviation

Organism	Solvent of extraction		
	Ethanol	Methanol	Ethyl acetate
<i>Bacillus sp1</i>	0.44017	0.355903	0.467351
<i>Bacillus sp 2</i>	0.395495	0.355903	-

DISCUSSION:

Form the above observations it can be concluded that *M. arvensis* L. shows antimicrobial activity against both the strains of bacillus isolated form acne. Agar well diffusion is a potent method for the antimicrobial activity testing. As the extracts of *M. arvensis* shows antimicrobial activity against both the organisms there is a need to isolate and identify the antimicrobial compounds present in *M. arvensis* by using different techniques.

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