

Short Communication

Antibacterial Studies on Chloroform Extract of *Alysicarpus longifolius* (Sperng.) Wight & Arn, a Plant of High Medicinal Value

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Abstract

Alysicarpus longifolius is a medicinal plant of varied medicinal properties unknown to the world. The chloroform extract of the plant showed compounds of antimicrobial, anti-oxidant and anticancer properties. In order to study the antibacterial nature of the extracts, agar disc diffusion method was used. It was performed against two bacterial strains, namely, *Bacillus subtilis* and *Escherichia coli*. Chloroform extract showed significant degree of antibacterial activity against tested pathogens.

Keywords: Antimicrobial, *Alysicarpus longifolius*, Chloroform extract.

INTRODUCTION

Modern world faces very many health hazards due to microorganisms. Medicinal plants are Nature's boon to cure such health hazards (Mahesh and Satish, 2008). There had been increasing interest to plunder the potentiality of these plants through the study of their extracts which serve as new antimicrobial agents (Ibrahim, 1997). The plant taken for our study is *Alysicarpus longifolius* (Sperng.) Wight & Arn which is an herb commonly known as long-leaved Alyce clover. The chloroform extract of the plant when suspended to phytochemical analysis showed compounds which have antimicrobial properties (Patil *et al.*, 2011; Savithramma *et al.*, 2011). The antibacterial activity of the extracts could be assessed by making use of two bacterial strains, namely, *Bacillus subtilis* and *Escherichia coli*.

MATERIALS AND METHODS

Plant Material

The whole plant including roots, stems and leaves which was disease-free and healthy was collected in bulk from Chennai area and used for the preparation of chloroform extract.

Preparation of Extract

The plants were thoroughly washed and were shade dried. They were powered using a blender. Using Soxhlet extractor, and by suspending 25 grams of the powder, chloroform extract was prepared. The extract was collected, concentrated and stored in air tight bottle. It was then subjected to antibacterial activity assay.

Preparation of Inoculums

Stock cultures were maintained at 4°C on slant of nutrient agar. Active cultures for experiments were prepared by transferring a loop full of cells from the stock cultures to test tubes of nutrient broth for bacteria that were incubated at 18 hours at 37°C. The assay was performed by agar disc diffusion method.

Agar Disc Diffusion Method

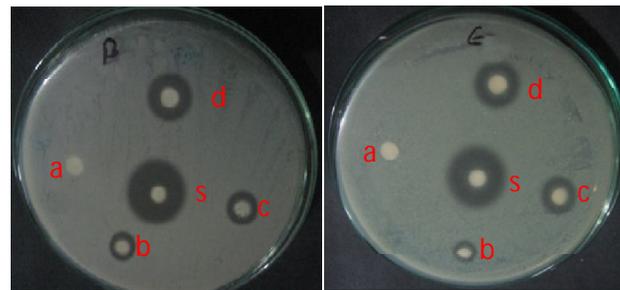
Antibacterial activity of the given sample was determined by disc diffusion method on Muller Hinton Agar (MHA) medium. The MHA medium is poured in to the Petri plates. After the medium was solidified, the inoculums were spread on the solid plates with sterile swab moistened with the bacterial suspension. The discs were placed in MHA plates with different concentrations (1 mg, 500 µg and 250 µg) of the sample were placed in the disc. Streptomycin (10 µg) is taken as the standard and DMSO served as negative control. The plates were incubated for 24 hrs, at 37°C. Then the microbial growth was determined by measuring the diameter of zone of inhibition.

RESULT

The chloroform extract was found to have significant antibacterial activity in the case of both gram positive and gram negative bacteria (Table 1; Figure 1). But the concentration should be increased at least to 2000 µg in order to have effective antibacterial activity.

Table 1: Antibacterial activity of chloroform extract of *A. longifolius*

S.No.	Test organisms	Zone of Inhibition in mm				
		1000 µg	500 µg	250 µg	DMSO	
1	<i>Bacillus subtilis</i>	13	10	9	-	23
2	<i>Escherichia coli</i>	15	10.5	9	-	23



B: *Bacillus subtilis*

E: *Escherichia coli*

a: DMSO; b: 250 µg; c: 500 µg; 1000 µg; s: streptomycin

Figure 1: Antibacterial activity of Chloroform extracts of *A. longifolius*

DISCUSSION

Phytochemical screening of chloroform extract showed compounds of various medicinal properties following the procedures stated by Chhetri et al., (2008). By antibacterial analysis, the chloroform extract showed a significant antibacterial activity which was found to be little higher in the case of *Escherichia coli* compared to that of *Bacillus subtilis*. The values when compared with those of the standard Streptomycin were found to be lesser. But increasing the concentration may substantiate effective activity. Following the procedures in Kumara Swamy et al., (2012) and analysing various extracts may prove the significance of chloroform extract as antimicrobial source as far as *A. longifolius*. Moreover, the plant was found to have several medicinal properties. Further analyses with various other extracts (Akter et al., 2010) may bring to limelight the unknown facts regarding *A. longifolius*.

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