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ARTICLE

A Study of Antibacterial Activity of the Crude Extracts of *Synedrella nodiflora*.

Lekshmi, G.M.*, Aswathy, S.S., Harikrishnan, K.P., Haritha Krishnan, Krishnendu, M., Vishnumaya, A.S.

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Abstract

The leaves of *Synedrella nodiflora* extracted with ethanol and water in a soxlet extractor were used for the study purpose. The preliminary antibacterial activities of the extracts were determined by measuring the zone of inhibition produced by the extracts against various microorganisms (S*taphylococcus aureus, Pseudomonas auroginosa* and *E coli*). The extracts were compared with a positive control Gentamycin and negative control DMSO. All the extracts exhibited marked activities against the tested microorganisms. Ethanol extract exhibited more activity than water extract.

Keywords: *Synedrella nodiflora*, Antibacterial, Zone of Inhibition, *Staphylococcus aureus, Pseudomonas auroginosa* and *E coli.*

Introduction

Synedrella is commonly known as Cinderella weed, pig grass etc. It is usually found in frequently disturbed areas, in flower beds, along road sides and in crops and plantations. It grows best were the soil is moist and fertile and where there is plenty of light. The tiny yellow flower heads are in small clusters between the leaves and are surrounded by bracts at the base of the inflorescence. Cinderella weed is propagated by weeds it is used as animal feed, fodder, for environmental purposes like host of pest, for human food and beverage as vegetable, for medicinal and pharmaceutical uses. It is used for anticonvulsant and related neuropharmacological effects. It is used to treat epilepsy, headache, earache, stomach ache etc. The whole plant extract has been reported to possess potent anti inflammatory activity and central analgesic effects.

Materials and Methods

Healthy plants of *Synedrella nodiflora* was collected from different areas of Kottarakara of Kollam district (Kerala) during the month of November 2014. Herbarium specimen of the study material has been deposited in the department herbarium. Leaves were harvested, washed and dried in shade. Dried samples were powdered and5g were extracted with ethanol and water in soxhlet extractor. The ethanol and water extract was concentrated under vacuum in a rotary evaporator.

Department of Botany, St. Gregorios College, Kottarakara, Kerala, India
*Corresponding Author email : gmlekshmi@gmail.com

The antimicrobials present in the plant extract were allowed to diffuse out into the medium and interact in a plate freshly seeded with the test organisms. The resulting zones of inhibition will be uniformly circular as there will be a con of growth. The diameter of zone of inhibition can be measured incentimeters.

The medium was prepared by dissolving 33.9g of the commercially available Muller Hinton Agar medium (Hi-Media) in 1000mL. of distilled water. The dissolved medium was autoclaved at 151bs pressure at 121°C for 15 minutes. The autoclaved medium was mixed well and poured into l00mm petriplates (25-30 mL/plate) while still molten. One litre of nutrient broth was prepared by dissolving 13g of commercially available nutrient medium (Hi Media)in 1000mL distilled water and boiled to dissolved the medium completely. The medium was dispensed as desiredand sterilized by autoclaving at 151bs pressure (121°C) for15 minutes. Gentamycin is used as standard antibacterial agent (concentration 20mg/mL).

Petri plates containing 20mL Muller Hinton medium were seeded with 24hrs culture of bacterial strain such as, *Staphylococcus aureus*, (*Staphylococcus aureus, Pseudomonas auroginosa* and *E coli*). 10mm was bored using a well cutter and sample of 25, 50 and 100pJ concentrations were added. The plates were then incubated at 37°C for 24 hours. The antibacterial activity was assayed by measuring the diameter of the inhibition zone formed around the well(NCCLS,1993). Gentamycin is used as a positive control.

Results and Discussion

According to the World Health Organization, infectious diseases area significant cause of worldwide morbidity and

Table 1. Zone of inhibition produced by the *Synedrella nodiflora* extracts against various microorganisms

Sample	Microorganisms	Zone of inhibition(mm)
Gentamycin		30
Synedrella aqueous	*Pseudomonas auroginosa*	12
Synedrella ethanol		14
Gentamycin		35
Synedrella aqueous	*Staphylococcus aureus*	12
Synedrella ethanol		13
Gentamycin		32
Synedrella aqueous	*E coli*	11
Synedrella ethanol		14

Note : sample concentration : 10mg in 1ml DMSO
Antibiotic 200µg per well.

mortality, accounting for approximately 50% of all deaths in tropical countries. Infectious disease hospitalization rates have increased overtime and are associated with substantial morbidity, mortality, and economic consequences. Additionally, antimicrobial resistance to antibiotics is emerging as a serious health issue and alternatives to treat infectious diseases in the future need to be developed.

A number of studies have voiced the necessity of developing alternative antimicrobial drugs. Antimicrobial activity of plant extracts were already reported Mehru et al., (2008) and Al-Sieni and Abdul basit (2014). Plant anti microbials would appear to be an excellent choice. Our study revealed that, Synedrella nodiflora produced strong antimicrobials and may offer prospective new treatments for bacterial infections. Antimicrobial properties of Synedrella nodiflora were also discovered by Wijaya et al., (2011).The benefits of anti microbial properties from the plant can only be achieved, however, by using a specific solvent and solvent concentration in extracting the plant materials.

As the present study throw light on the antibacterial efficacy of medicinal plant extract, it offers a valuable source for the discovery of alternatives to the present antibacterial drugs. The increase of microorganisms to conventional drugs necessitated the search for new efficient and cost effective way for the control of infectious diseases.

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