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The Estimation, Synthesis and Evaluation of Antibacterial gel of Cuscuta (Amarvel).

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ABSTRACT: This study was carried out with an objective to investigate the antibacterial potentials of leaves of Cuscuta. The aim of the study is to assess the antibacterial activity and to determine the zone of inhibition of extracts on some bacterial and fungal strains. In the present study, the microbial activity of hydroalcohol extracts Cuscuta.(an ethnomedicinal plant) was evaluated for potential antibacterial activity against medically important bacterial and fungal strains. The antibacterial activity was determined in the extracts using agar disc diffusion method. The antibacterial activities of extracts (5, 25, 50, 100, 250 µg/ml) of Cuscuta were tested against two Gram-positive- Staphylococcus aureus, Streptococcus pyogenes; two Gram-negative-Escherichia coli, Pseudomonas aeruginosa human pathogenic bacteria -Aspergillus niger, Aspergillus clavatus, Candida albicans.Zone of inhibition of extracts were compared with that of different standards like ampicillin, ciprofloxacin, norfloxacin, and chloramphenicol for antibacterial activity. The results showed that the remarkable inhibition of the bacterial growth was shown against the tested organisms. The phytochemical analyses of the plants were carried out. The microbial activity of the Cuscuta was due to the presence of various secondary metabolites. Hence, these plants can be used to discover bioactive natural products that may serve as leads in the development of new pharmaceuticals research activities.

KEYWORDS: Cuscuta, in vitro antibacterial activity, secondary metabolites

I. INTRODUCTION

• Plant materials remain an important resource to combat serious diseases in the world. The traditional medicinal methods, especially the use of medicinal plants, still play a vital role to cover the basic health needs in the developing countries. The medicinal value of these plants lies in some chemical active substances that produce a definite physiological action on the human body.The most important of these bioactive constituents of plants are alkaloids, tannin, flavonoid and phenolic compounds1. Within the recent years, infections have increased to a great extent and antibiotics resistance effects become an ever-increasing therapeutic problem2. Natural products of higher plants may possess a new source of antimicrobial agents with possibly novel mechanisms of action3,4. They are effective in the treatment of diseases (mouth ulcer) while simultaneously mitigating many of the side effects that are often associated with synthetic antimicrobials5.Therefore, it is of great interest to carry out a screening of these plant (Cuscuta)in order to validate their use in folk medicine and to reveal the active principle by isolation and characterisation of their constituents. Systematic screening of them may result in the discovery of novel active compounds6. In this study, methanol extracts of six plants, which had been described in herbal books and folklore medicine of India, were screened for their antimicrobial and antibacterial activity

II. ANTI BACTERIAL & ANTIMICROBIAL ASSAY –

• Disc diffusion method Kirby-Bauer method was followed for disc diffusion assay9. In vitro antimicrobial and antibacterial activity was screened by using Mueller Hinton Agar (MHA) obtained from Himedia (Mumbai). The MHA plates were prepared by pouring 15 ml of molten media into sterile petriplates. The plates were allowed to solidify for 5 min and 0.1% inoculum suspension was swabbed uniformly and the inoculum was allowed to dry for 5 min. The same procedure has been followed for the fungi using Sabouraud dextrose agar. The different concentrations of extracts (1, 2 and 4 mg/disc) were loaded on 5 mm sterile individual discs. The loaded discs were placed on the surface of medium

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and the compound was allowed to diffuse for 5 min and the plates were kept for incubation at 37°C for 24 h. Negative control was prepared using respective solvent. Gentamycin (10 µg/disc) was used as positive control. At the end of incubation, inhibition zones formed around the disc were measured with transparent ruler in millimeter.These studies were performed in triplicate. Minimum Inhibitory Concentration (MIC) Asssay The MIC method was applied on extracts that proved their high efficacy against microorganisms by the disk diffusion (Kirby-Bauer) method. The highest dilution of a plant extract that still retains an inhibitory effect against the growth of a microorganism is known as MIC10. Selected plant extracts were subjected to a serial dilution (25 mg/ml to 0.37 mg/ml) using sterile nutrient broth medium as a diluent. In a 96-well titre plate 20 µl of an individual microorganism and 20 µl of selected plant Extract were loaded and inoculated at 372 C for 24 h. The highest dilution of the plant extract that retained its inhibitory effect resulting in no growth (absence of turbidity) of a microorganism is recorded as the MIC value of the extract. A control experiment was run in parallel to study the impact of the solvent alone (without plant extracts) on growth of the nine test organisms. Methanol was diluted in a similar pattern with sterile nutrient broth followed by inoculation and incubation

III. OBSERVATION

• Colour – greyish-brown

• Odour – thyme-like

• Taste – It has a strong, bitter taste

• Solubility – highly soluble in ethanol and ether, while it is insoluble in water

IV.RESULT

• Antibacterial and antimicrobial resistance (AMR) threatens the effective prevention and treatment of an ever-increasing range of infections caused by bacteria, parasites, viruses.

V. CONCLUSION

Frequent use of antibiotics creates more pressure for the selection of antibiotic-resistant bacteria

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