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A STUDY ON ANTIBACTERIAL ACTIVITY OF THE SAUROPUS AND ROGYNOUS LEAF

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ABSTRACT

The plants sauropus and rogynous is the multivitamin plant. It is usually known as the Star gooseberry which belongs to the family of Euphorbiaceae. It is native to the country South East Asia. The complete plant is extensively used in the traditional and, folkloric systems of the medicine. In the traditional systems of medicine, the plant is stated to possess useful effects as an anti-cancerous, antioxidant, antifungal and, anti-septic. The current investigation is directed to takeout antibacterial actions of the ethanol, methanol, and aqueous extracts of the plant Sauropus and rogynous leaves contrary to some Gram positive and the Gram negative microbial strains. To assess antibacterial action, the agar dispersal assay was accomplished. Streptomycin was utilized as a mention antibiotic and the outcomes were equated with the movement of ethanol, methanol, and aqueous extracts of the sauropus and rogynous. Methanol extract exposed more antibacterial commotion than the aqueous extract. Methanol extract has showed the significant antibacterial activity in contrast to all these six bacterial strains, while the aqueous extract exposed moderate activity contrary to Salmonella typhimurium and the Klebsiella pneumoniae.

KEYWORDS: *Sauropus and Rogynous, Antibacterial Commotion, Klebsiella Pneumonia, Salmonella Typhimurium.*

1. INTRODUCTION

Sauropus and rogunous is the shrub plant of the Euphorbiaceae family. It can develop up to 3.5-meter height. The leaves are very simple, consecutively arranged, lanceolate or lozenge in shape. The upper surface of this leaf is dark green in the colour whereas the lower surface is the light green. The floras are unisexual by means of the female seeming first before the male, minor, in the axillary clusters. The fruits are curved capsules with six different partitions [Fig.-1]. The young branches and the leaves are using for vegetables. The medicinal plant products were shown to be valuable in minimizing the contrary effects of numerous chemotherapeutic agents in addition to in prolonging longevity and reaching +ve overall health. The increasing global curiosity in this medicinal potential of the plants throughout the last few decades is consequently quite logical. Antibiotics meanwhile their overview are one of the most vital weapons in fighting contrary to bacterial contagions and have mostly helped human beings. Numerous pathogenic organisms are emerging plasmid-mediated confrontation to the prevailing drugs. Henceforth, there is a necessity for the novel usual compounds that can be got from the plants or the microorganisms. Plants, especially, have been a source of the motivation for unusual drug compounds meanwhile days unmemorable. Plants serve as a pool of operative chemo-theraputants and make available valuable sources of the usual products in this control of numerous bacterial diseases. Many studies specify that plants cover bio-active compounds for instance peptides, alkaloids, glycosides, saponins, flavonoids, terpenoids, etc., with the antimicrobial activity in contradiction of fungal, bacterial, and the viral infections. Medicinal plants are used for the centuries as therapies for the human diseases since they comprise components of the therapeutic value. About 81% of the world's population trusts on plants and the plant products for their "healthcare". India signified by the rich culture, traditions and the natural biodiversity, offers an exclusive chance for the drug discovery researchers. The receipt of customary medicine as an another form of health care and the progress of microbial resistance to the accessible antibiotics has led to examine the antimicrobial action of medicinal plants. The growing failure of chemotherapeutics and the antibiotic resistance showed by the pathogenic microbial infectious agents has chief to the screening of numerous medicinal plants for their possible antimicrobial activity. In contradiction of the synthetic drugs, antimicrobials of the plant origin are not related with side effects and have the vast therapeutic potential to the heal various infectious diseases. The potential for emerging antimicrobials from the higher plants seems gratifying as it will chief to the improvement of a phytomedicine to act alongside microbes.

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Fig.-1: Sauropus and rogynous habit with leaves and fruits

The applications of plant compounds to treat the infections is an ancient practice in a huge part of the world, particularly in developing countries wherever there is dependence on the outdated medicine for a variability of the diseases.

Attention in plants with the antimicrobial properties has revitalized as an effect of current problems linked with the use of the antibiotics. India has the rich heritage of information on the plant based drugs both for use in defensive and also curative medicines. A country alike India is very much appropriate for growth of drugs from the medicinal plant as it is amusing in biodiversity. The medicinal value of the plants has presumed a more vital dimension in the past few periods. This is mainly because of the discovery that excerpts from plants comprehend not only minerals and the main metabolites but also the diverse diversity in current years by reason of the increasing cases of microbial resistance to this time honoured antibiotics. In latest years' no's of studies have been described dealing with the antimicrobial screening of the extracts of the medicinal plants. A variability of compounds is collected in plants accounting for the constitutive antimicrobial deeds. In the existing Study antibacterial actions of the ethanol, methanol, and the aqueous extracts of Sauropus and rogynous leaves in contrast to three Gram positive and the three Gram negative bacterial strains were carried out and also discussed.

2. EXPERIMENTAL

Plant Material Collection

The plant section was serene from the Agasthiyamalai biosphere area of the Kalakkadu Mundanthurai Tiger Reserve Forest, South Western Ghats region, Tirunelveli District, Tamilnadu. The Plant sample was wash away carefully 2-3 times with the running water and washed with sterile distilled water for elimination of dust and the soil particle. The new young leaves of these plant were used to analysis the antibacterial action using dissimilar organic solvents methanol, ethanol, and the aqueous extract by using the distilled water.

Extract Preparation

The aqueous, methanol and ethanol extract of plant material was ready by using as percolation technique at room temperature. The extracts were drinkable over a muslin cloth. Filtrate was then focused to one fourth of these original volume and used.

Culture useful

Six bacterial rinsing were applied for testing the antimicrobial movement of the Sauropus and, rogynous. Amongst the 6 organisms investigated, three were Gram positive specifically Bacillus cereus, Staphylococcus aureus, Bacillus subtilus, and the other 3 were Gram -ve organisms explicitly Klebsiella pneumonia, Salmonella typhimurium and Escherichia coli.

In-vitro Antibacterial Analyze

The Disc dispersal method as exemplified by Bauer was used to define the progress inhibition of bacteria by the plant extract. S. M. Hinton agar media was dispensed into the sterile petri dish and, subsequently solidification the 1 ml of the bacterial culture were swabbed with the sterile cotton swab underneath aseptic condition. Sterile discs were ready by means of Whatman No.1 filter paper of 5mm width was used in this study. 100 µl of the plant extract was loaded in this disc and, air dried. Then the discs were located onto this surface of the medium. The plates were nurtured at 37˚C for 24 hours to form this reserve zones. The antibacterial movement was planned by computing the diameter of zone of the inhibition in mm. The antibacterial activity viewing zone of inhibition was equated with the standard Streptomycin as optimistic control.

3. OUTCOMES AND DISCUSSION

The antibacterial activity of this Sauropus and rogynous leaf extract in ethanol, methanol, and aqueous extract were carried out distinctly and the outcomes were given in this Table-1, 2 and 3 correspondingly. The fatty acid gratified of the cotyledon of this Sauropus was likewise analysed. The cotyledon comprises about 18 to 20% of the fatty acid content which can be applied as a biofuel. The extract of methanol leaf of Sauropus and rogynous displays more inhibitory effect in the direction of the gram positive bacteria when equated with the ethanol and the aqueous leaf extract.

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Table- 1: Anti-microbial activity of Sauropus and the rogynous leaves in the methanol extract

Sl. No	Bacterial Strains	Inhibition zone(mm)	Standard Streptomycin(mm)	Percentage of inhibition
Gram positive organism				
1	Bacillus cereus	12	15	75
2	Bacillus subtilis	7	14	47
3	Staphylococcus aureus	11	17	61
Gram negative organism				
1	Escherichia coli	6	12	46
2	Klebsiella pneumoniae	10	16	59
3	Salmonella typhimurium	14	19	79

Table- 2: Anti-microbial activity of the Sauropus and the rogynous ethanol extract

Sl. No	Bacterial Strains	Inhibition zone(mm)	Standard Streptomycin(mm)	Percentage of inhibition
Gram positive organism				
1	Bacillus cereus	10	15	62
2	Bacillus subtilis	8	14	53
3	Staphylococcus aureus	12	17	67
Gram negative organism				
1	Escherichia coli	6	12	46
2	Klebsiella pneumoniae	7	16	41
3	Salmonella typhimurium	9	19	48

The methanolic leaf extract correspondingly displays more inhibitory effect in contradiction of the gram negative bacteria when relate with this ethanolic and the aqueous extract. The antibacterial activity of this leaf extract is because of the existence of multi vitamins and the peptides, saponins, terpenoids, glycosides, alkaloids, flavonoids etc. Subsequently the aqueous leaf extract displays very low antibacterial movement the raw leaf can be occupied just now as greens as the medicine. The seeds comprise fatty acid which is non-toxic and it can be subjugated for these production of potential Biofuel.

Table- 3: Anti-microbial activity of the Sauropus and the rogynous leaves in aqueous extract

Sl. No	Bacterial Strains	Inhibition zone(mm)	Standard Streptomycin(mm)	Percentage of inhibition
Gram positive organism				
1	Bacillus cereus	9	17	63
2	Bacillus subtilis	8	16	48
3	Staphylococcus aureus	12	19	70
Gram negative organism				
1	Escherichia coli	5	14	46
2	Klebsiella pneumoniae	8	17	53
3	Salmonella typhimurium	10	19	53

REFERENCES

1. *R.M.Perez, Pharmaceut Biol,* ***41****,105, (2003)*
2. *P.Kaushik and A.K. Dhiman, Bishen Singh Mahendra Pal Singh, Dehra Dun, India, (2000).*
3. *S.M.Jachak, A.Saklani,Current Science,* ***92****,1251, (2007).*
4. *I.Janathan I, M.Yassin , C.Chin, L.Chen , N.Sim, Pharmaceut Biol.,* ***41****,392, (2003)*
5. *B.Abu shanab, G.Adwan, N.Jarrar, A.Abu hijleh, K.Adwan, J. Boil.,* ***30****,195, (2006).*
6. *M.R.Khan, M.Kihara, A.D.Omoloso, Natural product Sciences,* ***7****, 9, (2001)*
7. *R.Perumalsamy and S.Ignacimuthu, J. Ethnopharmacol.,* ***69****, 63, (2000).*
8. *M.W.Iwu, A.R.Duncan, C.O.Okunji, ASHS Press, Alexandr, VA, pp. 457-462, (1999):*
9. *R.Jamine, P.Daisy, B.N.Selvakumar, Research Journal of Microbiology,* ***4****,369, (2007).*
10. *K.M.Elizabeth, Indian Journal of Clinical Biochemistry,* ***20****,150, (2005).*
11. *R.E.Dimayuga and S.K.Garcia, Journal of Ethnopharmacology,* ***31****(2), 181, (1991).*
12. *M.Gundidza and N.Gaza, Journal of Ethnopharmacology,* ***40****(2), 127, (1993).*