

**Antimicrobial Activity of Medicinal Plant *Asparagus racemosus* Against Human Pathogenic Bacteria**

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**Abstract:** An attempt was made to analyse the antimicrobial activity of the pharmacologically important plant *Asparagus racemosus* against human bacterial pathogens. Antimicrobials were intensively studied by disc diffusion method using ethanol and aqueous extracts against pathogens. Result of present study showed the presence of antimicrobial activities against human pathogenic bacteria. The present study suggest that the leaves of *Asparagus racemosus* plant are potentially a good source of antimicrobial against human pathogens viz., *Klebsiella pneumoniae*, *Staphylococcus aureus*, *Proteus vulgaris*.

**Key words:** *Asparagus racemosus*, Antimicrobial activity, Disc diffusion method.

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**Introduction:**

In many developing countries herbal plants are usually the primary sources of medicine. Natural products derived from plants provide active constituents. These active constituents play an important role in resistance to bacteria. Herbal medicines are inexpensive and often available. In developing countries, synthesized medicines are not only expensive for the treatment of diseases but are also out of the reach of common people. Often these medicines are accompanied by adulteration and side effects. Therefore a need to discover infection fighting strategies to control microbial infections. The purpose of this study was to evaluate the antimicrobial activities of some medicinal plants used in Ayurveda and traditional medicinal systems for the treatment of manifestations caused by microorganisms. Therefore the lesf extaract of *Asparagus racemosus* were tested for their potential against the pathogen. *Asparagus racemosus* wild is belonging to both *liliaceae* and *asparagaceae* families. This is a Woody climbing plant growing to 1-2 metre height that grows in low forest areas throught India. *Asparagus racemosus* has been reported to have antipasmodic, aphrodisiac, diuretic, galactogoguge, nervine tonic and refrigerant. It is also used in the treatment of diabetes, rheumatism, diarrhoea, brain complaints, urinary disorder, jaundice, blood diseases, cough

and bronchitis. Antimicrobial activity of the *Asparagus racemosus* plant was carried out by the disc diffusion method.

#### **Material and method:**

The leaves of *Asparagus racemosus* were collected from Nature Nursery Pipliyapala, Choithram square, Indore (M. P.), India. The plant was identified by botany department from Gujarati science college, Indore. The leaves were thoroughly washed five to six times and then air dried. It was crushed into fine powder. Finally the fine powder was stored in air tight container at room temperature.

#### **Solvent extraction:**

The leaves of the plant were dried and prepared 250 grams of powder. The powder was mixed with 500 ml of methanol solvent. And heated in the Soxhlet apparatus for about 12 hours. The extract was concentrated under vacuum and dried in dessicators. The powdered material was mixed with 500 ml of distilled water. And was kept at room temperature for about 1 week. The extract obtained and filtered. The residue evaporated at 20 ° C.

The total of three microorganisms were used for antibacterial properties for the study. The microorganisms were obtained from the Microbial Collection Center, PMB Gujarati science college, Indore Madhya Pradesh India.

#### **Antimicrobial activity:**

Solution of different concentrations of extracts were prepared with methanol. Microorganisms were spread on the plate. Bacteria flourish in the culture's nutrients. It is solidify and filter paper disc of 8 mm in diameter that was impregnated with extracts were test on microorganisms. 10 mg/ml streptomycin sulphate used as positive control and methanol solvent (100 mg/ml) used as a negative control. Antimicrobial assay plates were incubated as 45<sup>0</sup>C here about 27 hrs. And diameter of zone inhibition were measured in mm.

**Result:** Results obtained in the present study revealed that tested medicinal plant the leaf extract of *Asparagus racemosus* possess antimicrobial activity against *Klebsiella pneumoniae*, *Staphylococcus aureus*, *Proteus vulgaris*. The highest Antimicrobial activity

recorded in *Proteus vulgaris* (20mm), *Klebsiella pneumoniae* (14mm), *Staphylococcus aureus* (10mm) compared to aqueous extract.

**Table-** Antibacterial activity of methanol and aqueous extract (100mg/ml) of plant by disc diffusion assay:

	Zone of inhibition (in mm)		
	Methanol	Aqueous	
Human pathogenic bacteria			Streptomycin sulphate 10 mg/ml
<i>Klebsiella pneumoniae</i>	14	10	23
<i>Staphylococcus aureus</i>	10	9	24
<i>Proteus vulgaris</i>	20	6	21

### **Discussion:**

The present study shows that all the phytochemical constituents are found in the methanolic and aqueous extract of leaves *Asparagus racemosus* which has been studied with negligible variation and thus it can be said that the activities against *Klebsiella pneumoniae*, *Staphylococcus aureus* and *Proteus vulgaris* which is significant perhaps or may be due to their phytochemical or secondary metabolites.

### **Conclusion:**

To formulate some new, different and more potent antimicrobial drugs of natural origin this study can be concluded to lead the establishment to some valuable compounds of it.

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