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Antimicrobial activity of *Acacia catechu* bark extracts against selected pathogenic bacteria

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The acceptance of traditional medicines as an alternative form of healthcare and the in-efficiency and other ill-effects of available antibiotics has led researchers to explore the potential of medicinal plants which are a rich source of antimicrobial agents and powerful drugs. *Acacia catechu*, commonly called as katha finds its use in Ayurveda and is traditionally used for curing many diseases and commonly for mother and child healthcare. Taxifolin is the main constituent of *Acacia catechu* which possesses antifungal, antiviral, antibacterial, anti-inflammatory and anti-oxidant activity. Efforts were made in the present work to explore the antimicrobial activity of the plant material (collected from Bilaspur area in Himachal Pradesh) against six known clinical pathogens *Escherichia coli*, *Listeria* sp., *P. auregenosa*, *Bacillus* sp., and *Staphylococcus aureus* obtained from Indira Gandhi Medical College & Hospital (IGMC), Shimla. Efforts were also made to select the efficient extraction method and solvent combination and the minimum requirement of the plant extract (MIC) to inhibit the microorganisms. Results reported indicated that cold percolation method for extraction of plant extract using different solvents is the best, simple one yielding maximum extract. Among various methods used, maximum antimicrobial activity was recorded by disc diffusion than well diffusion method. The results of the experiments conducted to determine the minimum inhibitory concentrations (MIC) of the solvent extracts against the known pathogens (10, 20, 30 and 40 µl) indicated significant antimicrobial activity against all clinical isolates. Ethanol extract showed maximum zone of inhibition while aqueous extract were less effective. The ethanolic extract of bark of *A. catechu* was more effective against *S. aureus* and *E. coli* when used at 6-8 mg/ml conc. However, the extract was comparatively less effective against *P. auregenosa* and *Listeria* sp. at conc. 8 mg/ml and least while using chloroform extract against the bacterial isolates *S. aureus*, *Listeria* sp., *Bacillus*, *P. auregenosa*, E. coli, etc. The experiments to determine the MIC of this plant extracts (acetone and ethanol extract) showed that 0.625 mg/ml concentration of Acacia catechu bark extract is enough for the inhibition of bacteria like E. coli and P. auregenosa. The results noticed in the study showed that the extracts obtained from plant bark had shown strong antibacterial activity and can be serve as a very good source for the invention of new therapeutic agents to kill pathogenic bacteria and to prevent diseases caused by them by the use of plant/plant extracts which has no side-effect.

Keywords: *Acacia catechu*, taxifolin, antimicrobial activity, and traditional healthcare

Biography

Arvind Kumar Bhatt has Ph.D. in Life Sc. with outstanding achievements in academics, R&D, industry and state govt. departments where he has worked for more than 26 years. Exploring unexplored potential of plants is his passion specially useful medicinal plants of high mountain areas with promising potential in human health & nutrition, validation of ITK and their meaningful utilization. He is also member of several professional organizations, editorial board of scientific journals and has more than 40 research papers to his credit published in scientific journals of repute. He has guided/guiding students for Ph.D. degrees in biotechnology/microbiology/life sciences.

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