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Inhibition of bacterial growth by different solvent extracts of *Emblica officinalis*

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Since ancient time human has used plants to cure infectious diseases in various traditional systems. In the recent decade research interest in plants has increased to find out the novel active compounds for the treatment of various ailments. The aim of the study was to evaluate the effect of different solvent extracts of dried fruit of *Emblica officinalis* on some gram negative bacteria. Dried fruit powder of *Emblica officinalis* was soaked with Hexane for 72 hours and filtered with No.1 Whatman filter paper. This procedure was repeated for three times and all the extracts were pooled together. The residue was dried and successively extracted with other solvents namely DCM, ethyl acetate, ethanol, methanol and water. The solvent from each set was removed using rotary evaporator and later these extracts were kept in the desiccater. Antibacterial activity of these samples was evaluated against gram negative bacteria, *Pseudomonas aeruginosa, Klebsiella* sp*,* and *Escherichia coli* by agar well diffusion method. Nutrient agar plate containing 10^6cells / ml of bacterium was prepared and allowed to set. The well of 8.0 mm of diameter was made on it and 50 mg / 100 µl of each extract was inoculated into the well. Streptomycin (50 µg/ 100 µl) was used as standard and the mixture of DMSO and acetone was used as control. Plates were incubated at 37^0C for 24 hours and the activity was recorded by measuring the diameter of zone of inhibition. All experiments were repeated in triplicate and the results are expressed as mean value. The results showed that ethyl acetate, ethanol and methanol extracts exhibited higher antibacterial activity against *Pseudomonas aeruginosa, E.coli* and *Klebsiella* sp and the diameter of the zone varied from 22.0 ± 0.36 mm – 26.0 ± 0.26 mm. Inhibitory effect of water extract of the entire sample on test bacteria was found to be less compared to the effect of ethyl acetate, ethanol and methanol. Further hexane extract inhibited none of the test pathogens while DCM extract showed very less effect on all the pathogens. The result of the standard experiment indicated that the diameter of the zone resulted by ethyl acetate, ethanol and methanol extracts was higher than the used concentration of streptomycin on test organisms. The bioactive compound / compounds present in these active solvent extracts could be a useful source for reporting a new antimicrobial agent / agents.

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