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Evaluation of antibacterial activity of different solvent extracts of flowers of *Vitex negundo* on the growth of bacterial pathogens

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The objective this study was to demonstrate the antibacterial activity of dichloromethane, ethyl acetate, ethanol and methanol extracts of flower of *Vitex negundo* against *Escherichia coli* and *Staphylococcus aureus in vitro*. Dried flowers were powdered and successively extracted with the above organic solvents. The solvent was completely removed from each extract and working stock was prepared in the mixture of acetone and dimethyl sulfoxide (DMSO). Inhibitive potentiality was detected by agar well diffusion method. Wells (8 mm diameter) were made on nutrient agar plate containing 10^6 cells / mL of respective bacteria and 50 mg / 100 µL of each extract was dispensed into the well. Streptomycin (50 µg / 100 µL) and solvent mixture (DMSO and acetone) were used as standard and control respectively. Plates were incubated at 37°C for 24, 48 and 72 hours and the inhibitive potentiality was recorded by measuring the zone of inhibition. Each experiment was carried out in triplicate and the data were analyzed statistically. All the test extracts showed Inhibitive potential on the growth of both *Escherichia coli* and *Staphylococcus aureus,* and their potential differs significantly ($p < 0.05$). Ethyl acetate extract showed significantly ($p < 0.05$) higher inhibition against both the bacteria. There was no significant ($p > 0.05$) difference between the inhibitory effect of methanol and ethanol extracts on the growth of *Escherichia coli*. But in the case of *Staphylococcus aureus* the inhibitory effect of the ethanol extract was significantly ($p < 0.05$) higher than that of the methanol extract. Further *Staphylococcus aureus* had better sensitivity than *Escherichia coli* against all test extracts. There was no difference in the inhibitive potential of all the tested extracts between 24 hrs and other incubation periods. Furthermore, the diameter of inhibition zones produced by streptomycin (50 µg / 100 µL) against both *Escherichia coli* (14.77 ± 0.55 mm) and *Staphylococcus aureus* (17.87 ± 0.55 mm) were found to be smaller than the diameter of inhibition zones produced by ethyl acetate, ethanol and methanol extract. The control experiment indicated that the solvent used to dissolve the extract did not affect the growth of test organisms.

Keywords: Vitex negundo, antibacterial activity, Escherichia coli, Staphylococcus aureus