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Growth suppression of Gram negative and Gram positive bacteria by Dichloromethane (DCM) extract of fruits and flowers of *Vitex negundo*

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The aim of the study was to test the *in vitro* antibacterial activity of dichloromethane (DCM) extracts of fruits and flowers of *Vitex negundo* against Gram negative bacteria, *Pseudomonas aeruginosa* and *Klebsiella* sp. and Gram positive bacteria *Bacillus cereus* and *Staphylococcus aureus*. Dried fruits and flowers of *Vitex negundo* were separately ground into a fine powder. These were then extracted with DCM. The solvent was completely removed from each extract and working stock was prepared in the mixture of acetone and dimethyl sulfoxide (DMSO). Inhibitory effect 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 then 50 mg / 100 µL of extract was dispensed into the well. Streptomycin (50 µg / 100 µL) and solvent mixture (DMSO and acetone) were used as the standard and control respectively. Plates were incubated at 37 °C for 24, 48 and 72 hrs and the inhibitive potential was recorded by measuring the zone of inhibition. Each experiment was carried out in triplicate and the data were analyzed statistically. Of the tested bacteria DCM extract of fruit of *Vitex negundo* showed an inhibitory effect only against *Bacillus cereus* and *Staphylococcus aureus* but failed to inhibit the growth of *Pseudomonas aeruginosa* and *Klebsiella* sp. and no significant difference was observed in the inhibitory effect between *Bacillus cereus* and *Staphylococcus aureus*. DCM extract of flower of *Vitex negundo* showed inhibitory effect against all tested bacteria except *Klebsiella* sp. The sensitivity of *Bacillus cereus* and *Staphylococcus aureus* to DCM extract of flowers was found to be significantly higher than *Pseudomonas aeruginosa* and there was no significant difference was observed between the sensitivity of *Bacillus cereus* and *Staphylococcus aureus* against the same extract. The growth of *Klebsiella* sp. was not affected by both extracts. There was no difference in the zone of inhibition after 24 hrs of incubation. The diameter of inhibition zones produced by streptomycin (50 µg / 100 µL) against all test organisms were higher than the diameter of inhibition zones produced by DCM extracts of both fruits and flowers. The control experiment indicated that the solvent used to dissolve the extract did not affect the growth of test organisms. In conclusion the growth of *Bacillus cereus* and *Staphylococcus aureus* were highly inhibited by DCM extracts of both fruit and flower of *Vitex negundo.*

Keywords: *Vitex negundo*, Gram negative bacteria, Gram positive bacteria