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Antibacterial activity of *Allium sativum* on *Xanthomonas axonopodis* and *Pseudomonas solanacearum*

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The aim of the study was to test the antibacterial activity of different organic solvent extracts of *Allium sativum* (garlic) on plant pathogenic bacteria like *Xanthomonas axonopodis* and *Pseudomonas solanacearum*. Garlic bulbs were dried in an oven at 40 ^{o}C and powdered. This powder was successively extracted in soxhelt apparatus using dichloromethane, ethyl acetate and ethanol. Solvent from each extract was completely evaporated. Working stock was prepared using the mixture of acetone and DMSO. Antibacterial activity of these extracts was assessed by agar well diffusion method. Nutrient agar plate containing $_{10}^{6}$ cells / 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 extracts was inoculated into the well. Streptomycin was used as standard and the solvent mixture DMSO and acetone was used as control. The antibacterial activity was recorded by measuring the zone of inhibition after 24 hours of incubation at 37 ^{o}C. Each experiment was carried out in triplicates and the mean value was taken. The result reveled that all the test samples had the ability to inhibit both *Xanthomonas axonopodis* and *Pseudomonas solanacearum* at 50 mg / 100 µl concentration and the degree of zone of inhibition varied in the range of 11.0 mm to 31.0 mm. *Pseudomonas solanacearum* was found to be more sensitive to ethyl acetate extract of garlic. Dichloromethane extract showed comparatively lesser inhibitory effect on *Xanthomonas axonopodis* (11.0 mm) and moderate inhibition on *Pseudomonas solanacearum* (15.0 mm). Ethyl acetate extract on *Xanthomonas axonopodis* and ethanol extract on both *Xanthomonas axonopodis,* and *Pseudomonas solanacearum* showed better Inhibitory effect producing zone of inhibition ranging from 22.0 mm to 25.0 mm. The standard experiment revealed that the diameter of zone resulted by 50 µg of streptomycin in *Xanthomonas axonopodis* and *Pseudomonas solanacearum* were found to be 22.0 mm and 24.0 mm respectively. Although
50 mg / 100µl of ethyl acetate and ethanol extract showed better inhibitory effect on test pathogens further bioassay should be done with 50 µg of purified compounds to compare these effects with the standard.

Fianancial assistance by the Faculty of Graduate studies, University of Jaffna is acknowledged.

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