

Inhibitory effect of different solvent extracts of *Vitex negundo* L.

and *Allium sativum* L. on phytopathogenic bacteria

Jeyaseelan, 1E.C, Pathmanathan, 1M.K. And Jeyadevan, 2 J.P

¹Department of Botany, Faculty of Science, University of Jaffna, Sri Lanka

²Department of Chemistry, Faculty of Science, University of Jaffna, Sri Lanka

Abstract

There is a worldwide interest in searching for the safe and effective novel antibacterial compounds of plant origin for the control of plant pathogenic bacteria which is responsible for the great impact on the growth and productivity of agriculture crops. In this study an attempt was made to determine the in vitro antibacterial activity of sequentially extracted different solvent (dichloromethane, ethyl acetate, ethanol, methanol and water) extracts of leaf, flower and fruit of *Vitex negundo* L. and bulb of *Allium sativum* L. (Garlic) against phytopathogens namely *Pseudomonas solanacearum* and *Xanthomonas axonopodis* pv. *citri*. The preliminary antibacterial activity was performed by agar well diffusion method and the minimum inhibitory concentration (MIC) values were determined by agar dilution method. The test samples were also subjected to qualitative phytochemical analysis. One way analysis of variance (ANOVA) followed by least significant difference (LSD) test were done for the statistical analysis of the data. All the test samples showed inhibitory effect on both of the test pathogens and the diameter of inhibition zone ranged from 9.9 ± 0.5 mm to 48.5 ± 1.3 mm and the inhibitory effect differed significantly ($P < 0.05$) among the samples. Ethyl acetate extract of flower of *Vitex negundo* L. showed significantly ($P < 0.05$) higher inhibition on *Pseudomonas solanacearum* and *Xanthomonas axonopodis* pv. *citri*. The MIC values of ethyl acetate extracts of fruit and flower of *Vitex negundo* L. and *Allium sativum* and ethanol extract of flower of *Vitex negundo* L. ranged from 2.5 mg / ml to 40 mg / ml. Phytochemical analysis of above extracts revealed the presence of alkaloids, flavonoids, tannins, cardiac glycosides and terpenoids. Further studies are being carried out to elucidate the active principles responsible for the inhibitory effect of these pathogens and to determine their activity in vivo. This is the first report that

reveals the inhibitory effect of *Vitex negundo* L. on *Pseudomonas solanacearum* and *Xanthomonas axonopodis* pv. *citri*.