INSECTICIDAL EFFICACY AND ANTIMICROBIAL ACTIVITY OF SELECTED PLANT EXTRACTS AGAINST *Carpophilus* BEETLE AND COMMON PATHOGENS

Fahama F.1*, Haroon M. H.1, Udayakantha W. S.2 and Sujarajini V2

¹Department of Chemical Sciences, ²Department of Biological Sciences Faculty of Applied Science, South Eastern University, Sammanthurai, Sri Lanka *fahamafarook11@gmail.com

The growing concerns over the environmental and health impacts of synthetic pesticides have led to a search for natural alternatives in pest and pathogen management. This study evaluates the antimicrobial and insecticidal properties of selected plant extracts-Vitex negundo, Psidium guajava, Syzygium cumini, Moringa oleifera, and Lantana camara-against common pathogens and Carpophilus beetle. The antimicrobial activity was tested against Bacillus spp., Escherichia coli, Aspergillus spp., and Trichoderma spp. using the paper disc diffusion method, while insecticidal effects were evaluated against *Carpophilus* spp. using a contact toxicity bioassay. Results showed significant antimicrobial activity, with Vitex negundo and Psidium guajava exhibiting inhibition values of 2.4 cm and 1.6 cm, respectively, compared to a standard control of 2.6 cm against Bacillus spp. Lantana camara and Syzygium cumini showed inhibition values of 2.3 cm and 2.1 cm, respectively, compared to a standard control of 2.5 cm against Escherichia coli. Syzygium cumini exhibited strong antifungal effects with a 2.1 cm inhibition zone compared to a standard of 2.4 cm against Aspergillus spp. while Vitex negundo showed a 1.3 cm inhibition zone compared to 1.4 cm for Trichoderma spp. Insecticidal assays revealed that Syzygium cumini and Lantana camara were particularly effective, significantly reducing beetle survival rates. Statistical analysis confirmed the significance of plant species and extract concentration on both antimicrobial and insecticidal activities (p < 0.05). These findings suggest that these plant extracts have potential as sustainable alternatives to synthetic pesticides, though further research is needed to explore practical field applications.

Keywords: Insecticidal assays, Psidium guajava, Survival rates, Synthetic pesticides, Vitex negundo.