IMPACT OF BOTANICAL EXTRACTS DERIVED FROM LEAF EXTRACTS Melia azedarach L. (MELIACEAE) AND Amaranthus viridis L. (AMARANTHACEAE) ON POPULATIONS OF Spodoptera exigua (Hübner) (Lepidoptera: Noctuidae) AND DETOXIFICATION ENZYME ACTIVITIES

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ABSTRACT

Spodoptera exigua (Hübner) (Lepidoptera: Noctuidae), an important insect pest of many field crops, has developed resistance to various insecticides, making its control increasingly difficult. This study explored the effects of senescent leaf Melia azedarach L. (Meliaceae) and Amaranthus viridis L. (Amaranthaceae) extract on second instar S. exigua larvae survival by the dipping method. We also analyzed detoxification enzyme activities of carboxylesterase and glutathione-s-transferase in in vitro tests with extract-treated insects. The leaf extract showed strong insecticide activity with a LC₅₀ value of 9.793 mg/ml ($r^2 = 0.965$) and 50.5702 mg/ml ($r^2 = 0.95$) at 24 after exposure for M. azedarach L. and A. viridis L. extract, respectively but no significant increase in toxicity over time. The extract strongly inhibited all enzyme activities. This is the first report of highly effective insecticidal activity of the senescent leaf extract of A. viridis and M. azedarach L. against S. exigua. Both plant materials are a less expensive (0.5 $US per 1 kg leaf), suggesting this extract is a promising alternative tool for the management of this pest.