The Effect of Selected Sri Lankan Herbal Plant Crude Extracts Against Spodoptera frugiperda (Fall Armyworm)

M.N. Ranaweera, A.P. Henegamage*, M.M.S.N. Prematilake and C.M. Peris

Department of Science and Technology, Uva Wellassa University, Badulla, Sri Lanka

The fall armyworm (FAW), *Spodoptera frugiperda* is a recent invasive pest that has successfully established in Sri Lanka where it continues to disrupt agriculture, particularly corn production. Management of fall armyworm using agrochemicals has led to the development of resistance against many insecticides and the accumulation of toxic residues on agricultural products. Therefore, the utilization of plant extracts which are wealthy in bioactive compounds for the control fall armyworm has become a developing pattern. This study was undertaken to screen the effectiveness of *Adathoda vassica*, *Dathura metal*, and *Tagetes erecta* crude extracts against fall armyworm. Shade dried leaves were used for the extraction which was done by the Soxhlet method using methanol and ethyl acetate as solvents. Bioefficacy of crude extracts was studied against third instar larvae of *S. frugiperda* using 4000, 2000 and 1000 ppm concentrations to test the contact toxicity by topical application method, antifeedant activity by leaf disc no choice assay and repellency effect from the dual choice method. Commercially available insecticide, collagen was used as a positive control. The crude extracts from *T. erecta* (LD_{50} - 186.63µg/g) and *D. metel* (LD_{50} - 256.44µg/g) showed significantly ($p < 0.05$) high mortality (100%) rate within twelve hours even compared with the positive control. The results revealed that the methanolic extract of *T. erecta* showed the highest significant ($p < 0.05$) antifeedant activity (92.09%) at 4000 ppm compared with other plant extracts. All plant extracts provoked a notable decrease in feeding with the increment of their concentration. Methanolic extract of *T. erecta* showed the highest significant repellency (66.65%). Therefore, it can be concluded that methanolic extracts of *D. metel* and *T. erecta* have the power of damaging fall armyworm and are suitable candidates for the development of bio-insecticide for the local use.

Keywords: Fall armyworm, *Adathoda vassica, Dathura metel, Tagetes erecta*

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