

**PESTICIDAL ACTIVITY OF CRUDE SOLVENT EXTRACTS OF PODS AND LEAVES OF *PSOPHOCARPUS TETRAGONOLOBUS* (WINGED BEANS) AGAINST BLACK APHIDS**

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Economically important staple food crops are frequently and heavily infested by hemipteran pests. *Aphis fabae* (black aphids) is one of the most common pests that can cause severe damage to food crops, and controlling these pests has been challenging due to their resistance to commonly used insecticides. Environmentally friendly natural pesticides are one of the best alternatives for chemical pesticides. In this study, pesticidal activity of hot water, cold water and acetone-water (1:1) crude extracts of pods and leaves of *Psophocarpus tetragonolobus* (winged beans) were tested against black aphids. Stock solutions were prepared using each crude extract dissolving in distilled water, and 10000, 5000, 2000, 1000, 500, 250 and 100 ppm concentration series were prepared to investigate the level of toxicity of winged beans on black aphids. Distilled water was used for the control experiment. Percent mortalities of the exposed 25 *Aphis fabae* were observed in 6-hour time intervals until 24 hours. Three replicates were done for each concentration. Lethal dosage, which needs to kill 50% of the pest populations, was calculated using Origin software. Acetone-water extracts showed the highest toxicity, with 100% mortality at 10000 ppm for both pods and leaves of winged beans. The cold water and hot water extracts of pods of *P. tetragonolobus* also showed high toxicity. Cold water extract of leaves of *P. tetragonolobus* showed 80% to 90% respective mortalities after 12 and 24 h exposure to the 10000 ppm concentration, while 75% and 90% mortalities have resulted for hot water extract of leaves. The mortalities were positively correlated with the concentrations of the treatments and the exposure time ( $r = 0.9414, 0.9911, 0.9811, 0.9828, 0.9391, 0.9253$  for hot water, cold water and acetone-water extracts of pods and leaves of *P. tetragonolobus* respectively). The lowest LD<sub>50</sub> values were obtained from acetone-water extract of *P. tetragonolobus* leaves (LD<sub>50</sub> = 162.26 ppm after 24 h exposure) followed by acetone-water extract of *P. tetragonolobus* pods (LD<sub>50</sub> = 202.82 ppm). LD<sub>50</sub> values of cold water extracts of pods and leaves were 2186.86 and 1868.72 ppm, respectively. The hot water extracts of pods and leaves showed LD<sub>50</sub> of 1350.50 and 714.39 ppm, respectively. The results suggest the presence of pesticidal properties in the leaves and the pods of *P. tetragonolobus* for black aphids. The outcomes further suggest that the active components of acetone-water extracts are relatively stronger compared to cold water and hot water extracts.

**Keywords:** Aphids, Pesticidal activity, Pests, Plant extract, Winged bean