



EVALUATION OF THE INSECTICIDAL PROPERTY OF *Lansium domesticum* Correa FRUIT PEEL AND SEED EXTRACTS AGAINST ARMY WORM (*Spodoptera frugiperda* J.E. Smith) AND ASSESSMENT OF THE CYTOGENOTOXIC EFFECTS ON *Allium cepa* L.

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ABSTRACT – The present study evaluated the insecticidal property of *Lansium domesticum* fruit peel and seed extracts against army worm (a known pest of onion) using susceptibility test at 24 and 48 hours of incubation. In addition, the LC₅₀ values were determined using Probit's analysis. Cytogenotoxic effects of *Lansium domesticum* seed and fruit peel aqueous extracts on *Allium cepa* root tip cells were assessed by determining the mitotic cell index and chromosomal aberrations. Lastly, phytochemical analysis of *L. domesticum* extracts was performed. Susceptibility test showed the insecticidal property of *L. domesticum* fruit peel (2.5x10⁴ ppm) and seed extracts (2.5x10⁴ and 1.75x10⁴ ppm) against army worm. After 48 hrs of incubation, army worm treated with *L. domesticum* seed and fruit peel extracts (2.5x10⁴ ppm) registered mortality of 80.95% and 66.67%, respectively. The computed LC₅₀ value of *L. domesticum* seed extract was at 1.5x10⁴ ppm and 3.2x10⁴ ppm for *L. domesticum* fruit peel extract. Results also revealed the cytotoxic and genotoxic effects of *L. domesticum* on *A. cepa* root tips cells. The mitotic cell index of onion root tip cells of 76.40% (control) was reduced to 62.66% and 60.40% when treated with 2.5x10⁴ ppm of *L. domesticum* fruit peel and seed extracts, respectively. In terms of genotoxicity, chromosomal aberrations such as nuclear lesions, vagrant, laggard, polyploidy, and binucleated cells were observed in onion root tip cells treated with *L. domesticum* extracts with the percentage incidence of chromosomal abnormalities of 12.74% (cells treated with seed extracts) and 7.53% (cells treated with fruit peel extracts). Phytochemical analysis showed that *L. domesticum* fruit peel and seed extracts contain essential oils, steroids, phenols, tannins, and flavonoids, while alkaloid was only detected in seed extracts. Thus, *L. domesticum* seed and fruit peel extracts are potential botanical insecticides against army worm with negligible cytogenotoxic effects on *Allium cepa*.

Keywords: cytotoxicity, genotoxicity, insecticide



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