TOXICITY OF MORINGA OLEIFERA SEED EXTRACT TO DANIO RERIO (ZEBRAFISH) LARVAE

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INTRODUCTION: Seeds of Moringa oleifera are rich in bioactive compounds, including a water-soluble lectin (WSMoL). M. oleifera seed extract and WSMoL were larvicidal agents against Aedes aegypti with LC₅₀ of 0.27 and 0.197 g/L of proteins, respectively. The evaluation of ecotoxicity of preparations containing WSMoL is an essential step in the development of formulations to be used in mosquito control. Danio rerio (zebrafish) is considered a good model for ecotoxicological studies. OBJECTIVE: This work evaluated the effect of M. oleifera seed extract on survival of D. rerio newly hatched larvae. METHODOLOGY: The extract was prepared by homogenization of seed flour in distilled water (in proportion of 1:10, w/v), followed by filtration using cotton gauze. The extract was evaluated for protein concentration and hemagglutinating activity. The newly hatched larvae were separated in groups of 10 individuals and exposed in 6-well plates to solutions (10 mL) containing different amounts of the extract diluted in the rearing water to obtain protein concentrations of 0.03, 0.09, 0.27, 0.5 and 0.81 g/L. In control, a group of larvae was maintained in the rearing water. The assay was incubated for 7 days at 23±1°C and photoperiod 12:12 light:dark. RESULTS AND DISCUSSION: The extract, with specific hemagglutinating activity of 15, promoted death of 50% of D. rerio larvae at 0.09 g/L and killed all the individuals at 0.27, 0.5, and 0.81 g/L. These results reveal that the extract was more toxic to D. rerio larvae than to A. aegypti larvae. CONCLUSION: The M. oleifera seed extract containing lectin was toxic to D. rerio larvae. Studies evaluating if the extract ecotoxicity is due to lectin presence or linked to other compounds are in progress.

Keywords: Moringa oleifera, larvicidal extract, ecotoxicity.
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