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Effects of volatile organic compounds of *Morinda citrifolia* L. ("Ahu") leaves on second- stage juveniles of *Meloidogyne javanica*

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Several plant species are known to reduce plant nematode diseases in soil via nematotoxic volatiles. In the present study, the effect of Volatile Organic Compounds (VOCs) emitted by leaves of *Morinda citrifolia* L. ('Ahu") on second-stage juveniles (J_2s) of *Meloidogyne javanica* was determined as an *in vitro* assay. In separate experiments, 30-one-day-old-J_2s in 1 ml of Sterile Distilled Water (SDW) were exposed directly to the VOCs emitted by dry and aqueous filtered leaf macerate (AFLM), and VOCs trapped for 72 h, in a closed glass vial at 30ºC. The juveniles which did not expose to volatiles represented the untreated controls. The effects of the VOCs were assessed 48 h after exposure to the volatiles based on the mobility, immobility and mortality shown by J_2s. The experiment was replicated five times and repeated once. One-way ANOVA was performed for the data analysis using SAS statistical package.

In untreated controls, J_2s showed 100% mobility. VOCs emitted from DLM caused 49% reduction in J_2s mobility, while VOCs from non-accumulated and accumulated AFLM caused 89% and 95% reduction in J_2 mobility, respectively. When J_2s were exposed to the DLM, a significantly higher (P<0.0001) mobility in J_2s (51% ±1.23) was detected compared to immobility (9% ±1.13) and mortality (40±0.99). In contrast, VOCs emitted from AFLM caused a significantly higher (P<0.0001) mortality and immobility in J_2s than mobility. The maximum mortality of 83% (±1.05) was recorded with the accumulated AFLM while maximum immobility (31% ±1.58) was recorded with non-accumulated AFLM. The findings indicated that the VOCs emitted from leaves of *M. citrifolia* had a potential to affect survival and mobility of J_2s of *M. javanica* indicating nematicidal and nemato-static activity. The effect of VOCs varied with the nature of macerate and mode of exposure.

Key words: *Exposure, juveniles, mobility, mortality*

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