



Evaluation of the Bio-insecticidal Activity of *Myrtus communis* Against *Tribolium castaneum*

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Abstract

The use of synthetic insecticides to control insects of stored-product raises environmental and health concerns, driving the search for eco-friendly, plant-based alternatives. This study investigated the insecticidal and allelopathic properties of leaf powder from *Myrtus communis* against the red flour beetle, *Tribolium castaneum*. After collecting, drying, and grinding the aerial parts of *M. communis*, three doses (0.5, 1.0, and 1.5 g per 10 g of durum wheat) were tested under laboratory conditions. Key parameters included insect mortality, grain consumption, damage severity, nymphal deformities, and seed germination. The leaf powder of *M. communis* at the highest dose reduced consumption rates to 0.46% for adults and 0.89% for larvae after 10 days of exposure. Grain damage was significantly reduced at all tested doses for both insect stages, compared to the control. At a dose of 1 g of *M. communis*, adult and larval mortality reached 96.66% and 86.66%, respectively, after 30 days. *Myrtus communis* induced malformations in 11% of newly emerged adults. However, the powder did not affect grain germination, and 100% of the tested grains germinated after 4 days. These results suggest that leaf powder from *M. communis* is an effective biopesticide for protecting stored grains without affecting seed germination.

Keywords: *Myrtus communis*, damage, toxicity, germination, leaf powder, malformation

