

24, 48 And 72 Hour Contact Toxicity Test Of Peppermint (*Mentha piperita*), Garlic (*Allium sativum L.*) And Lemon (*Citrus limon L.*) Essential Oil On The Long-Tailed Mealybug (*Pseudococcus longispinus*)

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POSTER

The long-tailed mealybug (*Pseudococcus longispinus*) is a major agricultural pest to over 26 different plant species. They proliferate both sexually and parthenogenetically, taking approximately 4-6 weeks to reach reproductive maturity. Each adult female can produce 75 to 200 live-young over an average 88 day lifespan. Without effective intervention to counteract proliferation, profits may be lost, entire crops depleted and/or other plants in close proximity affected. Essential oils are a promising means of control as they interfere with the mealybug's octopaminergic nervous systems, which act as a neurotransmitter, neuromodulator, and neuro-hormone. However, in mammals and fish octopamine is only a trace amine, therefore, essential oils are designated as a reduced-risk pesticide under Health Canada's Guidelines. There are pest control alternatives such as pesticides, but, these can cause deleterious effects on non-target species and the environment. This research tested the 24, 48 and 72 hour effects of peppermint (*Mentha piperita*), garlic (*Allium sativum l.*) and lemon (*Citrus limon l.*) essential oil on the long-tailed mealybug. Research shows that there is a significant difference between each oil after 24 (ANOVA: $F(2,6)=2.76$, $p=0.007$), 48 (ANOVA: $F(2,6)=3.45$, $p=0.001$), and 72 (ANOVA: $F(2,6)=5.26$, $p<0.001$) hours. Garlic essential oil (LC50 = 1.65%) had the greatest effect on the long-tailed mealybug in comparison to peppermint (LC50 = 19.0 %) and lemon (LC50 = 48.0%) essential oil.