

## Evaluation of Essential Oils Toxicity on Resistant and Susceptible House Fly Strains

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**Abstract :** Housefly, *Musca domestica* L., is a serious urban nuisance and public health/food safety concern. This study evaluated the topical toxicity of 17 essential oil components and 3 plant essential oils against permethrin-resistant adult females and insecticide-susceptible house fly strains. Results show that thymol had the lowest LD<sub>50</sub> values against permethrin-resistant strain (43.77 and 41.10 ug per fly) and permethrin-susceptible strain (35.19 and 29.16 ug per fly) at both 24- and 48-hours post treatments; (+)-Pulegone had the lowest LD<sub>95</sub> values against the permethrin-resistant strain (0.15 and 0.10 mg per fly) at 24- and 48-hours post treatments, whereas plant thyme oil had the lowest LD<sub>95</sub> value of 0.17 mg per fly at post-24h and post-48h against the permethrin-susceptible strain. Additionally, the LD<sub>50</sub>s was slightly but not significantly negatively correlated with the boiling points of the compounds tested; but showed no correlation with the density and LogP. These results indicate that specific essential oils and compounds have topical insecticidal properties against house flies with low dose. They may have the potential for development as botanical insecticides.

**Keywords :** urban pest, public health, pest management, botanical chemical

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