I prefer:

□ ORAL presentation

☑ POSTER presentation

**Evaluating the Efficacy of Cinnamon bark, Clove, and Galangal Essential Oils as Natural Insecticidal and Repellent Agents Against House Flies in Tropical Agricultural Environments**

Kulisara Marupanthron1\*, Thananun Jansiri2, Nisachon Phiraban2, Boonyanuch Jarukrit2, and Peerapol Cheewakriengkrai 2

1\*kulisara\_mar@cmru.ac.th, Division of Organic Agriculture Innovation, Faculty of Agricultural Technology, Chiang Mai Rajabhat University, Thailand

2 Division of Animal Science, Faculty of Agricultural Technology, Chiang Mai Rajabhat University, Thailand

**Abstract:**

**Background/Objective:** In tropical environments, elevated temperatures and humidity contribute to the rapid proliferation of pests such as the house fly (Musca domestica), which are vectors for various pathogens that detrimentally impact poultry health, productivity, and farm biosecurity. Addressing these issues is critical for sustainable animal production. This study investigates the effectiveness of essential oils as natural insecticidal and repellent solutions against house flies under tropical conditions, specifically assessing the properties of 4% cinnamon bark (*Cinnamomum verum*), 4% clove (*Syzygium aromaticum* (L.) Merr. et Perry), and 4% galangal (*Alpinia galanga* (L.) Willd) essential oils.

**Methods:** The study utilized a comparative approach to evaluate the repellent, larvicidal, and insecticidal properties of essential oils from cinnamon, clove, and galangal against *Musca domestica*. Repellency was assessed by measuring the ability of the oils to repel flies within the first 15 minutes of exposure. Larvicidal efficacy was determined based on mortality rates within 4 hours, and insecticidal activity was evaluated through a spray bioassay.

**Results:** Cinnamon bark essential oil was found to be the most effective in repelling house flies, although there was no significant difference compared to the other tested oils. Galangal essential oil demonstrated the highest larvicidal effectiveness, and it was comparably effective to the others in terms of insecticidal activity. The mortality rate for groups treated with cinnamon bark and galangal essential oils was significantly higher than that of the negative control group (92.00 ± 10.95%, P<0.001), and it was comparable to the positive control group.

**Conclusion:** The findings underscore the potential of cinnamon bark and galangal essential oils as effective natural alternatives for pest management in tropical agricultural settings. These essential oils could serve as eco-friendly solutions, adhering to the principles of sustainable agriculture and enhancing environmental health by reducing reliance on chemical pesticides. Further research could explore the scalability of these solutions and their integration into existing pest management programs.

**Keywords:** Cinnamon bark, Clove, Galangal, Essential Oil, House fly