UNIVERSITI TEKNOLOGI MARA

REPELLENCY POTENTIAL OF LEMONGRASS (*CYMBOPOGON CITRATUS*) AND PEPPERMINT (*MENTHA PIPERITA*) AGAINST HOUSE FLY, *MUSCA DOMESTICA*

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In the name of Allah, The Most Gracious, The Most Merciful.

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ABSTRACT

House fly is a major concern regarding to health. It is a pest and a vector that can carry different types of harmful pathogens which might infect human and cause diseases. House fly is responsible for carrying diarrheal diseases caused by *Staphylococcus* and *Bacillus* species. House fly feed on from waste and feces where they get the harmful pathogens on their feet and mouth parts. There are multiple ways of controlling house flies and one of them is by biological control. There are several natural plants that are proven to repel house flies such as lemongrass and peppermint. Lemongrass is a plant native to Southeast Asia and India. It contains citral, geraniol, and limonene which are a few of its essential oils. Peppermint is a plant indigenous to Europe. It contains menthol which is one of the monoterpenes which is proven to have strong repellency against house fly. Essential oils of lemongrass (*Cymbopogon citratus*) and peppermint (*Mentha piperita*) were evaluated for repellency potential against house fly, *Musca domestica* in a designed chamber. The results showed that *Mentha piperita* has a higher repellency percentage against house fly compared to *Cymbopogon citratus*. At 100% concentration of pure essential oil, *Mentha piperita* repelled 97.3% of the house flies while *Cymbopogon citratus* repelled 95.3%. The RC_{50} for lemongrass essential oil is at 1.00 log (C%) and the RC_{50} for peppermint essential oil is at 0.978 log (C%).

Keywords: *Musca domestica, Cymbopogon citratus, Mentha piperita, repellency test, bioassay*

CHAPTER 1

INTRODUCTION

1.1 Background of study

The house fly, or *Musca domestica* L. (Diptera: Muscidae), is a significant domestic, medical, and veterinary nuisance that irritates people, ruins food and serves as a carrier for numerous harmful pathogens (Malik, Singh, & Satya, 2007). The widespread insect species *Musca domestica*, generally known as the common housefly, is renowned for its capacity to flourish in areas where people live. The common housefly is one of the most successful invasive species in the world, with a global range that almost covers every continent (Clements et al., 2020). The common housefly is a prevalent nuisance in residences, eateries, and other indoor locations. It has a propensity for feeding on faeces and other decaying organic materials, which has been linked to the transmission of a number of diseases, including *Salmonella* and *E. coli* (Clements et al., 2020). Houseflies are not only a health risk but also an annoyance because they are drawn to food and can be challenging to manage. *Musca domestica*, also known as the housefly, is a member of the Diptera, or "two wings," order of insects. The housefly's head, thorax, and abdomen make up its distinctive body form. Compound eyes, antennae, and mouthparts make form the head. The fly has a broad range of vision thanks to its big, faceted compound eyes. Short antennae with sensory receptors for smells and vibrations are present. The fly's mouthparts are designed for biting and licking, which allows it to consume both liquids and solids (Smith, 2018). The common housefly's capacity to reproduce swiftly and effectively is one of the main elements in its success. A single female housefly can lay up to 500 eggs in her lifetime, and the eggs can hatch into adults in just a few days (Kamal et al., 2019). The housefly population can expand quickly and adapt to new surroundings thanks to its rapid reproduction rate. The common housefly's capacity to endure a variety