ABSTRACT

TITLE:	Synthesis of Glycosylated Essential Oils: Potential Protective Agents for Honey Bees
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ABSTRACT: Currently, the most devastating pest to the Western Honeybee (Apis mellifera) is the Varroa Mite (Varroa destructor). This mite attacks honeybees by both extracting the hemolymph from their bodies and by passing hemolymph-based viruses between colonies. The most common methods employed in the treatment of the Varroa Mite are pyrethroid derivatives. However, the Varroa mite is increasingly displaying resistance to these synthetic acaricides, which drastically limits their overall efficacy. Recently, essential oils such as Thymol have been shown to be effective acaricides for pest management in honeybee colonies. Unfortuntely, it is difficult to control dosage of thymol-based treatments as they are currently applied to colonies in a vapor-phase. Preventing resistance to essential oils such as thymol is of the upmost importance to ensure the long term health of the western honeybee. This research focused on controlling the dosage of essential oils by synthetically creating a glycosylated thymol molecule that will be orally administered and will only become activated upon ingestion by the honeybees. This synthetically created molecule will undergo conversion from the inactive to active form within the hemolymph system of the honeybee and potentially make them resistant to the attack of the Varroa mite with a more controlled and effective dosage.