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Evaluation of Lemongrass (Cymbopogon citratus) as Mosquito Repellent Extracted by Supercritical Carbon Dioxide Assisted Process

Authors : Chia-Yu Lin, Chun-Ying Lee, Chih-Jer Lin

Abstract : Lemongrass (Cymbopogon citratus), grown in tropical and subtropical regions over the world, has many potential uses in pharmaceutical, cosmetics, food and flavor, and agriculture industries. In this study, because of its affinity to human body and friendliness to the environment, lemongrass extract was prepared from different processes to evaluate its effectiveness as mosquito repellent. Moreover, the supercritical fluid extraction method has been widely used as an effective and environmental friendly process in the preparation of a variety of compounds. Thus, both the extracts from lemongrass by the conventional hydrodistillation method and the supercritical CO_2 assisted method were compared. The effects of pressure, temperature and time duration on the supercritical CO_2 extraction were also investigated. The compositions of different extracts were examined using mass spectrometer. As for the experiment of mosquito repellence, the extract was placed inside a mosquito trap along with syrup. The mosquito counts in each trap with extracts prepared from different processes were employed in the quantitative evaluation. It was found that the extract from the supercritical CO_2 assisted process contained higher citronellol content than the conventional hydrodistillation method. The extract with higher citronellol content also demonstrated more effective as a mosquito repellent.

Keywords : lemongrass (Cymbopogon citratus), hydrodistillation, supercritical fluid extraction, mosquito repellent
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