ABSTRACT

OPTIMIZATION OF CITRAL ISOLATION FROM LEMONGRASS (*Cymbopogon citratus*) OIL USING COLUMN CHROMATOGRAPHY

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This study aimed to develop a good isolation technique of citral from lemon grass (*Cymbopogon citratus*) oil which is relatively simple, low cost, but able to give pure citral in high yield. One method fulfilling all these requirements is column chromatography. Different mixtures of mobile phase used in other experiments were compared, such as mixtures of hexane-ether solvents (Pushpakumari and Vatakencherry, 1986), mixtures of hexane-ethyl acetate solvents (Scott *et al.,* 1989) , and mixtures of hexane-ethanol solvents (Purnamasari *et al.,* 2016) of different ratios to determine which mobile phase mixture at which ratio can produce the best resolution to isolate citral. Silica gel was applied as stationary phase and different sample-to-silica ratios were compared to determine which ratio is most efficient for sample-loading based on the isolate's yield percentage obtained from each ratio. The sample-adsorbant ratio was selected based on guidelines from Reichsstein *et al*. (1960). The isolation results were further tested qualitatively and quantitatively using gas chromatography - mass spectrometry (GC-MS) and compared with commercial citral as a standard.

The optimal separation was produced by the mixture of hexane-ethyl acetate solvent with the price of separation factor (α) of 2.02. The sample-to - adsorbent ratio which yielded the highest was the sample - to - adsorbent ratio of 1:20, with the average yield percentage of 49.61 ± 2.59%. The result of qualitative and quantitative test with GC-MS showed the content of geranial (77,95%) and neral (11,50%), hence, a total of citral purity of 89,45% was acquired.

Keywords: Citral, *Cymbopogon citratus*, isolation, fractionation, column chromatography.