

# **EFFECT OF REACTION TIME IN THE CONVERSION OF CITRONELLAL FROM LEMON GRASS OIL INTO ISOPULEGOL BY $\text{ZrO}_2$ / $\text{SiO}_2$ CATALYST**

## **ABSTRACT**

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Research on the effect of reaction time on conversion citronellal from lemon grass oil into Isopulegol using  $\text{ZrO}_2/\text{SiO}_2$  catalyst has been conducted. In this research, the *lemon grass oil* use was a result of exchange isolation with a 43,09% content.

In this research, citronelal separation was carried out by 250 mL of distillation fraksination of citronella oil for 2 hours at a pressure of 10 kpa which produced 3 fractions. The fraction that contains the most citronellal component is the fraction 3 of 63.11% as much 11.3 mL. The citronelal produced was reacted with  $\text{ZrO}_2$  /  $\text{SiO}_2$  catalyst which was regenerated using precursor  $\text{ZrOCl}_2$  which reacted with tetraethylorthosilicate (TOES) and then stirred for 4 hours and calcined at 400 °C. white powder  $\text{ZrO}_2$  /  $\text{SiO}_2$  was produced, then characterized by X-Ray Difrraction, FTIR, and Gas Sorption Analyzer. Citronellal conversion to isopulegol was carried out by conventional methods (reflux) at a temperature of 80 - 90 °C based on time variations of 0.5, 1, 2 and 3 hours of reaction. The reaction results were analyzed with Chromatoghraphy Gas (GC) and produced isopulegol products which reaction time. At reaction time 0.5 hours produced isopulegol product of 98.28%, reaction time of 1 hour was 98.45%, reaction time of 2 hours produced isopulegol of 98.65% and reaction time of 3 hours was 99.69%.

Keyword : *gas chromatography, pressure distilation fraksination, infrared spectrometer, XRD, Gas Sorption Analyzer.*