

## ABSTRAK

### **Suria Bersinar Siahaan, NIM 4193210014 (2023). Sintesis Metil Dan Etil Sinamat Dari Asam Sinamat Pada Getah Kemenyan Toba (*Styrax Paralleoncomud PERK*) Melalui Reaksi Esterifikasi**

Pada penelitian ini dilakukan sintesis metil dan etil sinamat dari asam sinamat getah kemenyan Toba. Asam sinamat di ekstrak dari getah kemenyan toba kemudian dianalisis dengan FTIR. Ekstrak asam sinamat diperoleh sebesar 82,6% ditransformasi menjadi metil dan etil sinamat melalui reaksi esterifikasi dengan katalis yang berbeda yaitu HCl dan H<sub>2</sub>SO<sub>4</sub>. Kedua produk hasil sintesis dianalisis dengan instrumen FTIR dan GC-MS. Hasil analisis FTIR asam sinamat menunjukkan ikatan O-H, C-H, C=C, C-O (asam karboksilat) dan C=O sesuai dengan vibrasi gugus asam sinamat. Analisis FTIR metil dan etil sinamat menunjukkan bahwa produk merupakan senyawa ester dengan adanya ikatan C-O dan C=O ester juga didukung oleh aroma harum produk seperti bau minuman fermentasi anggur. Hasil analisis GC-MS etil sinamat menunjukkan kadar etil sinamat sebesar 84,42% dengan nilai m/z 176 sesuai dengan m/z etil sinamat sedangkan hasil analisis GC-MS metil sinamat menunjukkan kadar yang rendah yaitu 34,4% dengan nilai m/z metil sinamat 162. Kadar metil sinamat rendah disebabkan reaksi esterifikasi tidak mencapai kesetimbangan reaksi yang diprediksi disebabkan katalis HCl yang kurang kuat dan reaktif.

**Kata Kunci :** Asam sinamat, metil sinamat, etil sinamat, esterifikasi fischer

## ABSTRACT

**Suria Bersinar Siahaan, NIM 4193210014 (2023). Sintesis Metil Dan Etil Sinamat Dari Asam Sinamat Pada Getah Kemenyan Toba (*Styrax Paralleoncomud* PERK) Melalui Reaksi Esterifikasi**

*In this research, the synthesis of methyl and ethyl cinnamate was carried out from Toba frankincense cinnamic acid. Cinnamic acid was extracted from Toba frankincense resin and then analyzed by FTIR. 82.6% of the cinnamic acid extract was transformed into methyl and ethyl cinnamate through an esterification reaction with different catalysts, namely HCl and H<sub>2</sub>SO<sub>4</sub>. The two synthetic products were analyzed using FTIR and GC-MS instruments. The results of FTIR analysis of cinnamic acid show that the O-H, C-H, C=C, C-O (carboxylic acid) and C=O bonds are in accordance with the vibration of the cinnamic acid group. FTIR analysis of methyl and ethyl cinnamate shows that the product is an ester compound with the presence of C-O and C=O ester bonds and is also supported by the fragrant aroma of the product, such as the smell of fermented wine. The results of GC-MS analysis of ethyl cinnamate showed an ethyl cinnamate content of 84.42% with an m/z value of 176 in accordance with the m/z of ethyl cinnamate, while the results of GC-MS analysis of methyl cinnamate showed a low content of 34.4% with a value of m/z methyl cinnamate 162. The low methyl cinnamate content was caused by the esterification reaction not reaching the predicted reaction equilibrium due to the HCl catalyst being less strong and reactive.*

**Keywords** : Cinnamic acid, methyl cinnamate, ethyl cinnamate, Fischer esterification

THE  
Character Building  
UNIVERSITY