

INTISARI

Asam sinamat diketahui mempunyai aktivitas sebagai pengawet dan pewangi serta penghambat pertumbuhan sel *caco-2* yang menyebabkan tumor. Adanya aktivitas yang dimiliki oleh asam sinamat sehingga asam sinamat merupakan senyawa yang penting untuk disintesis. Tujuan penelitian ini adalah untuk mensintesis asam sinamat menggunakan asam malonat dan benzaldehid dengan katalis etilendiamin dan mengetahui jumlah rendemen yang dihasilkan.

Penelitian ini merupakan penelitian non eksperimental yang dilakukan dengan mereaksikan benzaldehid 30 mmol dan asam malonat 30 mmol menggunakan katalis etilendiamin selama 2,5 jam pada suhu 80° C. Analisis secara kualitatif meliputi uji organoleptis, uji kelarutan, pemeriksaan titik lebur, kromatografi gas, elusidasi struktur senyawa hasil sintesis dengan spektrofotometri ultraviolet, spektrofotometri inframerah (IR), spektrometri resonansi magnetik inti proton (¹H-NMR) dan spektrometri massa. Sedangkan analisis hasil penelitian secara kuantitatif dilakukan dengan perhitungan rendemen.

Sintesis asam sinamat menghasilkan rendemen sebesar 50,4%. Senyawa hasil sintesis berupa serbuk kristal halus berwarna putih dan berbau khas. Larut dalam etanol, metanol, kloroform, dimetil sulfoksida, air panas dan aseton; sangat sukar larut dalam air dingin. Titik lebur senyawa hasil sintesis 130-131° C. Kromatografi gas menunjukkan satu puncak dengan waktu retensi 13,27 menit. Elusidasi struktur dengan spektrofotometri ultraviolet, spektrofotometri inframerah, spektrometri ¹H-NMR, dan spektrometri massa menunjukkan bahwa senyawa hasil sintesis adalah asam sinamat.

Kata kunci: Sintesis, asam sinamat, rendemen

ABSTRACT

Cinnamic acid has known to have activity as preservative, flavor and inhibited growth of Caco-2 cell in tumor diseases. With that activity, cinnamic acid is very important to be synthesized. The purpose of this research is to synthesis cinnamic acid from malonic acid with ethylenediamine as catalyst and to know the rendement of synthetic product.

The research could be classified as the non experimental research with succeeded of synthesizing of cinnamic acid as the parameter. The research was done by reacting benzaldehyde 30 mmol and malonic acid 30 mmol with ethylenediamine as catalyst. The qualitative analysis was done by organoleptic test, solubility test, melting point estimation, gas chromatography, elucidation of synthesized compound with ultraviolet (UV) spectrophotometry, infrared (IR) spectrophotometry, proton nuclear magnetic ($^1\text{H-NMR}$) spectrophotometry and mass spectrometry. The quantitative analysis was done by estimating the yield of synthesized compound.

The rendement of cinnamic acid synthetic was 50,4% with white small crystal and specified odor. The synthetic product was soluble in ethanol, methanol, chloroform, dimethyl sulfoxide, hot water and acetone; very slightly soluble in cold water. The melting point of synthesized compound was between 130-131 °C. The gas chromatography showed that the synthesized compound has one peak with retention time was 13,27 minute. Structure elucidation by ultraviolet spectrophotometry, infrared spectrophotometry, $^1\text{H-NMR}$ spectrometry, and mass spectrometry showed that synthetic product was cinnamic acid.

Key words : synthesis, cinnamic acid, rendement