ISOLASI MINYAK NILAM DAN SINTESIS SENYAWA *PATCHOULI* ASETAT MELALUI REAKSI ESTERIFIKASI ALKOHOL DALAM MINYAK NILAM DENGAN KATALIS HOMOGEN DAN HETEROGEN

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INTISARI

Telah dilakukan isolasi minyak nilam dan sintesis senyawa *patchouli* asetat dari alkohol dalam minyak nilam melalui reaksi esterifikasi menggunakan katalis homogen dan heterogen. Isolasi minyak nilam dari daun nilam dilakukan dengan metode hidrodistilasi pada suhu 100 °C selama 6 jam. Pada penelitian ini, reaksi esterifikasi dilakukan dengan metode refluks antara minyak nilam dengan reaktan asam asetat glasial menggunakan katalis H_2SO_4, HCl dan bentonit teraktivasi selama 3 jam pada suhu ±110 °C. Bentonit terlebih dahulu dilakukan aktivasi dengan metode refluks menggunakan HCl 2 M pada suhu ±110 °C selama 3 jam. Elusidasi struktur senyawa produk isolasi dilakukan menggunakan instrumen *Gas Chromatography Mass Spectrometer* (GC-MS) dan ditentukan indeks biasnya dengan alat refraktometer. Produk reaksi esterifikasi dikarakterisasi menggunakan *Fourier Transform Infrared* (FT-IR) dan GC-MS.

Minyak nilam hasil isolasi diperoleh memiliki rendemen 6,6% dengan kadar 71,49% *patchouli* alkohol; 6,85% δ-*guaiene*; 5,48% *seychellene* dan 5,83% β-*caryophyllene*. Minyak nilam hasil isolasi tersebut memiliki indeks bias 1,51 dan densitas 0,94. Reaksi esterifikasi minyak nilam dengan katalis HCl, H_2SO_4 dan bentonit teraktivasi menghasilkan senyawa *patchouli* asetat dengan rendemen berturut-turut 26,79; 15,57; dan 6,19%.

Kata kunci: esterifikasi, minyak nilam, *patchouli* asetat

ISOLATION OF PATCHOULI OIL AND SYNTHESIS OF PATCHOULI ACETATE THROUGH ESTERIFICATION REACTION OF ALCOHOL IN PATCHOULI OIL WITH HOMOGENEOUS AND HETEROGENEOUS CATALYST

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ABSTRACT

Patchouli acetate was isolated from patchouli oil and synthesized from alcohol in patchouli oil through an esterification reaction using a homogeneous and heterogeneous catalyst. Isolation of patchouli oil from patchouli leaves was carried out by hydrodistillation method at 100 °C for 6 hours. In this study, the esterification reaction was carried out using the reflux method between patchouli oil, glacial acetic acid and H_2SO_4, HCl and activated bentonite as a catalyst for 3 hours at a temperature of ±110 °C. Bentonite was first activated by the reflux method using 2 M HCl at a temperature of ±110 °C for 3 hours. Elucidation of the compound structure from the isolation product was carried out using Gas Chromatography Mass Spectrometer (GC-MS) and the refractive index was determined using a refractometer. The esterification reaction products were characterized using Fourier Transform Infrared (FT-IR) and GC-MS.

Patchouli oil isolated from the results obtained has a yield of 6.6% with a content of 71.49% patchouli alcohol, 6.85% δ-guaiene, 5.48% seychellene and 5.83% β-caryophyllene. The isolated patchouli oil has a refractive index of 1.51 and density 0.94. The esterification reaction of patchouli oil with HCl, H_2SO_4 and activated bentonite as catalysts produced patchouli acetate compounds with a yield of 26.79, 15.57, and 6.19%.

Keywords: esterification, patchouli oil, patchouli acetate