

SINTESIS 2',6'-DIHIDROKSI-3,4-DIMETOKSIKHALKON DAN UJI AKTIVITASNYA SEBAGAI SENYAWA ANTIOKSIDAN

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INTISARI

Sintesis senyawa 2',6'-dihidroksi-3,4-dimetoksikhalkon dan uji aktivitasnya sebagai antioksidan telah dilakukan. Senyawa 2',6'-dihidroksi-3,4-dimetoksikhalkon disintesis melalui kondensasi Claisen-Schmit dengan katalis NaOH 50% antara 2',6'-dihidrosiasetofenon dan 3,4-dimetoksibenzaldehida menggunakan metode iradiasi gelombang ultrasonik (sonikasi) dengan variasi waktu reaksi yaitu 30, 45, dan 60 menit dan metode konvensional dengan waktu reaksi 24 jam. Senyawa turunan khalkon hasil sintesis dikarakterisasi dengan KLT, FT-IR, dan GC-MS. Uji aktivasi senyawa turunan khalkon sebagai antioksidan dilakukan dengan 2,2-difenil-1-pikrilhidrazil (DPPH). Analisis dilakukan menggunakan spektrofotometer UV-Vis dan nilai % inhibisi dihitung untuk penentuan aktivitas senyawa antioksidan.

Sintesis senyawa 2',6'-dihidroksi-3,4-dimetoksikhalkon menggunakan metode sonikasi dengan waktu reaksi 30, 45, dan 60 menit didapatkan hasil berupa padatan coklat kemerahan dengan rendemen berturut-turut yaitu 0,82%, 3,22% dan 12,29% dengan titik lebur 174-183 °C. Sintesis 2',6'-dihidroksi-3,4-dimetoksikhalkon menggunakan metode konvensional dengan waktu reaksi 24 jam mendapatkan senyawa berupa padatan berwarna coklat kemerahan dengan memiliki rendemen 12,99%. Hasil uji aktivitas antioksidan senyawa khalkon dan BHT memiliki nilai IC₅₀ yaitu 15,129 µg/mL, 3,86 µg/mL yang dapat dikategorikan sebagai antioksidan sangat kuat.

Kata kunci: antioksidan, asetofenon, sonikasi, khalkon.

SYNTHESIS OF 2',6'-DIHIROXY-3,4-DIMETOXYCHALCONE AS ANTIOXIDANT

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ABSTRACT

The synthesis of 2',6'-dihydroxy-3,4-dimethoxychalcone as antioxidants was investigated. Compound 2',6'-dihydroxy-3,4-dimethoxychalcone was synthesized by condensation of Claisen-Schmit with 50% NaOH catalyst between 2',6'-dihydroxyacetophenone and 3,4-dimethoxybenzaldehyde using ultrasonic wave irradiation method (sonication) with variation of reaction time namely 30, 45, and 60 minutes and the conventional method with a reaction time of 24 hours. The synthesized chalcone derivatives were characterized by TLC, FT-IR, and GC-MS. The activation test of chalcone derivatives as an antioxidant was carried out with 2,2-diphenyl-1-picrylhydrazyl (DPPH). The analysis was carried out using a UV-Vis spectrophotometer and the value of % inhibition was calculated to determine the activity of antioxidant compounds.

The synthesis of 2',6'-dihydroxy-3,4-dimethoxychalcone using the sonication method with reaction times of 30, 45, and 60 minutes was obtained in the form of a reddish-brown solid with yields of 0.82%, 3.22% and 12.29% with a melting point of 174-183°C. The synthesis of 2',6'-dihydroxy-3,4-dimethoxychalcone using the conventional method obtained a compound in the form of a reddish brown solid with a yield of 12.99%. The results of the antioxidant activity test of chalcone and BHT compounds have IC_{50} values of 15.129 g/mL, and 3.86 g/mL which can be categorized as very strong antioxidants.

Key word: antioxidant, acetophenone, sonication, chalcone