

SINTESIS TURUNAN KHALKON BERBAHAN DASAR 4-HIDROKSIASETOFENON DAN UJI AKTIVITASNYA SEBAGAI ANTIOKSIDAN

Ferdhiana Arianie Safira
17/412671/PA/17990

INTISARI

Sintesis senyawa turunan khalkon berbahan dasar 4-hidroksiasetofenon dan uji aktivitasnya sebagai antioksidan telah dilakukan. Senyawa turunan khalkon disintesis melalui reaksi kondensasi *Claisen-Schmidt* menggunakan katalis basa dan pelarut metanol dengan metode konvensional dan sonokimia menghasilkan senyawa 4'-hidroksi-3,4-dimetoksikhalkon (khalkon **1**) dan 4'-hidroksi-3,4-dimetoksi-6-nitrokhalkon (khalkon **2**). Elusidasi struktur senyawa khalkon dilakukan menggunakan spektrometer FTIR, GC-MS, ^1H dan ^{13}C -NMR. Uji aktivitas antioksidan dilakukan dengan metode DPPH (2,2-difenil-1-pikrilhidrazil) dan BHT (*butylated hydroxytoluene*) sebagai kontrol positif.

Hasil penelitian menunjukkan senyawa khalkon **1** berwujud padatan berwarna kuning dengan metode konvensional dan sonokimia dengan waktu reaksi 48 jam dan 90 menit menghasilkan rendemen berturut-turut 31,27% dan 36,93%. Senyawa khalkon **2** berwujud padatan berwarna kuning kunyit dengan metode konvensional dan sonokimia dengan waktu reaksi 48 jam dan 3,5 jam menghasilkan rendemen masing-masing 25,80% dan 22,31%. Hasil uji aktivitas antioksidan senyawa khalkon **1** dan khalkon **2** menghasilkan nilai IC_{50} berturut-turut 50,416 dan 18,809 $\mu\text{g/mL}$ yang dikategorikan sebagai antioksidan kuat dan sangat kuat. BHT sebagai kontrol positif dikategorikan sebagai antioksidan sangat kuat dengan nilai IC_{50} 9,749 $\mu\text{g/mL}$.

Kata kunci: antioksidan, hidroksiasetofenon, khalkon.

SYNTHESIS OF CHALCONE DERIVATIVES FROM 4-HYDROXYACETOPHENONE AND THEIR ACTIVITIES AS ANTIOXIDANT

Ferdhiana Arianie Safira
17/412671/PA/17990

ABSTRACT

Synthesis of chalcone derivatives from 4-hydroxyacetophenone and its activity as antioxidant had been carried out. Chalcone derivatives were synthesized through the Claisen-Schmidt condensation reaction using base catalyst and methanol as solvent with conventional and sonochemical methods to produce 4'-hydroxy-3,4-dimethoxychalcone (chalcone **1**) and 4'-hydroxy-3,4-dimethoxy-6-nitrochalcone (chalcone **2**). The structure elucidation of all products was confirmed by FTIR, GC-MS, ^1H and ^{13}C -NMR spectrometers. Antioxidant activity test was carried out using DPPH method and BHT as positive controls.

The results showed that chalcone **1** was a yellow solid using conventional and sonochemical methods with a reaction time of 48 hours and 90 minutes which yielded 31.27% and 36.93%, respectively. The compound chalcone **2** is a turmeric yellow solid using conventional and sonochemical methods with a reaction time of 48 hours and 3.5 hours, resulted in yields of 25.80% and 22.31%, respectively. The results of the antioxidant activity test of chalcone **1** and chalcone **2** gave IC_{50} values of 50.416 and 18.809 $\mu\text{g/mL}$, which were categorized as strong and very strong antioxidants. BHT as a positive control was categorized as a very strong antioxidant with an IC_{50} value of 9.749 $\mu\text{g/mL}$.

Keywords: antioxidants, chalcone, hydroxyacetophenone.