Pemanfaatan sinamaldehid dalam sintesis derivat kuinolin dan uji aktivitas antioksidan = Utilization of cinnamaldehydie compounds in the synthesis of quinoline derivatves and the study on its antioxidant activities

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Abstrak

Senyawa derivat kuinolin merupakan senyawa heterosiklik yang memiliki aktivitas biologis yang cukup baik seperti aktivitas antioksidan, antimikroba dan antivirus. Pada penelitian ini menggunakan alumunium klorida sebagai katalis yang dapat mempercepat laju reaksi serta hidrogen peroksida digunakan sebagai agen pengoksidasi yang dapat meningkatkan yield produk yang terbentuk. Hasil massa campuran sintesis derivat 1 menggunakan anilin diperoleh sebesar 48,2 mg dan sintesis derivat 2 dengan 4-nitroanlin sebesar 70,72 mg. Keberhasilan pembentukan senyawa derivat kuinolin dikarakterisasi dengan kromatografi lapis tipis, Uji titik leleh, Fourier Transform Infrared (FTIR) spectrophotometer, Ultraviolet- Visible (UV-Vis) spectrophotometer and Gas Chromatograph/Mass Spectrometer (GC-MS). Hasil sintesis senyawa derivat kuinolin kemudian diklorinasi menggunakan asam trikloroisosianurat dengan asetonitril (CH3CN). Hasil massa campuran derivat 1 terklorinasi diperoleh sebesar 70,1 mg dan derivat 2 terklorinasi sebesar 93,6 mg. Karakterisasi produk senyawa terklorinasi menggunakan gas chromatography mass spectrometry (GC-MS). Pengujian aktivitas antioksidan digunakan metode DPPH yang ditandai dengan perubahan warna ungu menjadi kuning. Hasil IC50 derivat 1 sebesar 311,5779 ppm, derivat 1 terklorinasi sebesar 276,785 ppm, derivat 2 sebesar 268,1427 ppm dan derivat 2 terklorinasi sebesar 192,8858 ppm.
.....Quinoline derivate compounds are heterocyclic compounds that have a good biological activity such as antioxidant, antimicrobial, and antivirus activity. This study use aluminum chloride as a catalyst that can accelerate the reaction rate and hydrogen peroxide as an oxidizing agent that can increase the yield of the final product. The mass of a mixture of derivate 1 synthesis using aniline was 48,2 mg and the synthesis of derivate 2 with 4- nitroanline was 70,72 mg. The successful formation of quinoline derivate compounds was characterized by thin layer chromatography, melting point, Fourier Transform Infrared (FTIR) spectrophotometer, Ultraviolet-Visible (UV-Vis) spectrophotometer and Gas Chromatograph-Mass Spectrometer (GC-MS). The results of the synthesis of quinoline derivatives are then chlorinated using trichloroisocyanuric acid with acetonitrile (CH3CN). The mass of chlorinated derivate 1 mixture was obtained at 70,1 mg and chlorinated derivate 2 was obtained at 93,6 mg. Characterization of chlorinated compound products using Gas Chromatograph-Mass Spectrometer (GC-MS). The DPPH method was used to test for antioxidant activity which was marked by a change in color from purple to yellow. The result of IC50 for derivative 1 was 311.5779 ppm, chlorinated derivate 1 was 276.785 ppm, derivate 2 was 268.1427 ppm and chlorinated derivative 2 was 192.8858 ppm.