Sintesis derivat senyawa bioaktif camphor hidrazon menggunakan katalis cairan ionik [Et3NH][HSO4] = Synthesis of camphor hydrazone bioactive compound derivatives Using [Et3NH][HSO4] ionic liquid catalyst

Tyani Gita Cahyani, author

Abstrak

Senyawa 1,7,7-trimetilbisiklo[2.2.1]-2-heptanon atau camphor merupakan salah satu senyawa yang terkandung dalam pohon kapur barus (Cinnamomum camphora). Derivat senyawa camphor memiliki potensi aktivitas biologis yang baik seperti sifat antivirus, antimikroba, antitusif, agen analgesik, dll. Pada penelitian ini telah dilakukan sintesis derivat senyawa camphor hidrazon menggunakan senyawa camphor, hidrazin hidrat, dan variasi aldehid aromatik sebagai prekursornya. Sintesis derivat senyawa camphor hidrazon dapat ditingkatkan efisiensi waktu pembentukan produknya dengan penambahan katalis cairan ionik trietilamonium hidrogen sulfat atau [Et3NH][HSO4]. Berdasarkan hasil optimasi reaksi diperoleh kondisi optimum dengan jumlah katalis sebesar 10% mol. Besar yield yang dihasilkan dari derivat senyawa 1 sebesar 84,1%, derivat senyawa 2 sebesar 86,7%, dan derivat senyawa 3 sebesar 45,7%. Keberhasilan pembentukan derivat senyawa camphor hidrazon dikarakterisasi dengan menggunakan, kromatografi lapis tipis (KLT), FTIR, UV-Visible, uji titik leleh dan GC-MS. Penelitian ini juga menguji potensi bioaktivitas derivat senyawa camphor hidrazon sebagai antioksidan menggunakan metode DPPH. Kekuatan aktivitas antioksidan yang diekspresikan sebagai nilai IC50 telah dievaluasi. Nilai IC50 dari derivat senyawa 1 sebesar 96,181 ppm, derivat senyawa 2 sebesar 102,247 ppm, dan derivat senyawa 3 sebesar 306,476 ppm.
.....1,7,7-trimethylbicyclo[2.2.1]-heptan-2-one or camphor compound is one of the compounds contained in the camphor tree (Cinnamomum camphora). Camphor compound derivatives have the potential for good biological activity such as antiviral, antimicrobial, antitussive, analgesic agents, etc. In this research, the derivative of camphor hydrazone has been synthesized using camphor, hydrazine hydrate, and variations of aromatic aldehydes as precursors. The synthesis of camphor hydrazone compound derivatives can be increased the efficiency of its product formation time by adding a triethylammonium hydrogen sulfate or [Et3NH][HSO4] ionic liquid catalyst. Based on the results of reaction optimization, the optimum conditions were obtained with the amount of catalyst 10% mol. The yield obtained from derivative compound 1 was 84,1%, derivative compound 2 was 86,7%, and derivative compound 3 was 45,7%. The success of the formation of camphor hydrazone derivatives were characterized using thin-layer chromatography (TLC), FTIR, UV-Visible, melting point test, and GC-MS. This study also tested the potential bioactivity of the camphor hydrazone derivatives as antioxidants using the DPPH method. The strength of antioxidant activity expressed as IC50 values were evaluated. The IC50 values of derivative of compound 1 was 96,181 ppm, the derivative of compound 2 was 102,247 ppm, and the derivative of compound 3 was 306,476 ppm.