

Sintesis Derivat Amino Naftokuinon menggunakan Katalis Saponin Berbasis Surfaktan Alam dan Uji Antioksidan = Synthesis of Naphthoquinone Amino Derivates using Natural Surfactant-Based Saponin Catalysts and Antioxidant Test

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Abstrak

Senyawa yang mengandung nitrogen banyak ditemukan di alam dan memiliki peran penting dalam obat-obatan. Salah satunya senyawa naftokuinon dan turunannya sering menghasilkan aktivitas antioksidan, antikanker, antibakteri, antiinflamasi dan antijamur. Reaksi Mannich merupakan reaksi multikomponen yang pas untuk sintesis senyawa yang mengandung nitrogen. Reaksi ini menghasilkan produk samping molekuler air sehingga reaksi ini bisa disebut juga dengan reaksi Green Chemistry. Sintesis derivat amino naftokuinon menggunakan katalis saponin yang diisolasi dari seed pods trembesi. Karakterisasi saponin menggunakan FTIR dan UV-Vis. Pengukuran tegangan permukaan menggunakan metode kenaikan pipa kapiler digunakan untuk mengukur nilai CMC pada saponin. Karakterisasi senyawa amino naftokuinon menggunakan FTIR, UV-Vis dan LCMS. Optimasi pelarut, suhu dan waktu reaksi dilakukan untuk mendapatkan yield yang bagus. Kondisi terbaik untuk sintesis derivat amino naftokuinon menggunakan katalis 900 ppm selama 24 jam pada suhu ruang dengan pelarut air. Yield yang didapatkan dari senyawa 1 (68,49 %), senyawa 2 (17,62 %), senyawa 3 (69,41 %) dan senyawa 4 (62,67 %). Senyawa hasil sintesis dikarakterisasi menggunakan FT-IR, UV-Vis dan LC-MS/MS. Senyawa hasil sintesis mampu berfungsi sebagai antioksidan.

.....Nitrogen-containing compounds are found in nature and have an important role in medicine. One of these compounds is naphthoquinone and its derivatives which often produce antioxidant, anticancer, antibacterial, anti-inflammatory, and antifungal activities. Mannich reaction is a multicomponent reaction that is suitable for the synthesis of nitrogen-containing compounds. This reaction produces water molecules byproducts so this reaction can be called a Green Chemistry reaction. The synthesis of the amino derivative naphthoquinone uses a saponin catalyst isolated from seed pods trembesi. Saponin characterization by using FTIR and UV-Vis. Surface tension measurements by using the capillary tube rise method were used to measure the CMC value of saponins. Characterization of amino naphthoquinones is by using FTIR, UV-Vis, and LCMS. Solvent optimization, temperature, and reaction time were carried out to obtain a good yield. The best condition for the synthesis of amino naphthoquinone derivatives is by using a 900 ppm catalyst for 24 hours at room temperature with an aqueous solvent. The yield is obtained from compound 1 (68.49%), compound 2 (17.62%), compound 3 (69.41%), and compound 4 (62.67%). The synthesized compounds were characterized by using FT-IR, UV-Vis, and LC-MS / MS. The synthesized compounds are able to function as antioxidants.