

Sintesis (E)-1(2-hidroksifenil)-3-(3-metoksifenil) prop-2-en-1-on dan derivatnya dengan katalis natrium terimpregnasi pada cangkang telur ayam teraktivasi (Na-ACE) serta aplikasinya sebagai zat antioksidan =
syntheses of (E)-1(2-hidroksifenil)-3-(3-metoksifenil) prop-2-en-1-on and its derivative using sodium impregnated on activated chicken eggshell and its application as antioxidative

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Abstrak

Katalis basa heterogen logam natrium terimpregnasi pada kulit telur ayam teraktivasi (Na-ACE) telah berhasil disintesis dan digunakan sebagai katalis dalam reaksi kondensasi aldol. Katalis Na-ACE hasil sintesis dikarakterisasi dengan instrumen FTIR, XRD, serta uji kebasaaan. Optimasi sintesis analog chalcone yaitu [1-(2-hidroksifenil)-3-(3-metoksifenil) prop-2-en-1-on] memperoleh kondisi reaksi optimum dengan 30% berat katalis, suhu reaksi 60oC, waktu reaksi 180 menit dengan pelarut etanol. Yield terbesar yang diperoleh adalah 57,22% dengan kemurnian kristal 99,85% menggunakan TLC Scanner. Chalcone hasil sintesis dikarakterisasi dengan FTIR, UV-VIS, LC-MS. Derivat Senyawa chalcone yaitu pirazolin berhasil disintesis dengan penambahan hidrazin hidrat pada kondisi refluks, suhu 70oC, reaksi selama 24 jam dan penambahan katalis Na-ACE 30%. Hasil sintesis dikarakterisasi dengan instrumen FTIR, UV-VIS, LC-MS dan H-NMR. Uji aktivitas antioksidan secara in-vitro dilakukan pada analog chalcone dan pirazolin hasil sintesis dengan metode radikal DPPH. IC50 senyawa analog chalcone sebesar 966,41 µg/ml, sedangkan IC50 senyawa pirazolin sebesar 26,84 µg/ml.

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Heterogeneous base catalyst sodium impregnated on activated chicken eggshell (Na-ACE) has been prepared and used for the aldol condensation reaction. Na-ACE was characterized by FTIR, XRD, and basicity test. The variables used for the syntheses of chalcone analogue were % catalyst mass, reaction temperature, reaction time and solvent. The highest yield (57,22% with 99,85% of purity) has been obtained under 30% catalyst mass were added, reaction temperature of 60oC, reaction time of 180 minutes with ethanol as a solvent. Pyrazoline as a chalcone derivative was synthesized by reacting chalcone with hydrazine hydrate and Na-ACE under reflux condition for 24 hour, reaction temperature of 70oC in ethanol. The structures and exact mass of the product were confirmed by spectral data FTIR, UV-VIS, LC-MS and H-NMR. Analogue chalcone and pyrazoline have been tested for their antioxidant activities (1,1-biphenyl-2-picrylhydrazyl free radical scavenging method). Both of the them showed activity with IC50 at 966,41 µg/ml and 26,84 µg/ml for the analogues chalcone and pyrazoline respectively.