Sintesis Senyawa Turunan Camphor Quinoline Hidrazida-hidrazon melalui Reaksi Pfitzinger dengan Katalis Nanopartikel La2O3 serta Uji Aktivitas Antibakteri dan Antioksidan = Synthesis Derivatives of Camphor Quinoline Hydrazide-hydrazone via Pfitzinger Reaction with La2O3 Nanoparticles Catalyst and its Antibacterial and Antioxidant Activities

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Abstrak

Pada penelitian ini, senyawa dengan kerangka quinoline dan camphor akan digabungkan melalui linker hidrazida-hidrazon. Senyawa asam quinoline-4-karboksilat menjadi struktur awal sebelum direaksikan dengan camphor. Senyawa ini disintesis melalui reaksi Pfitzinger dengan bantuan katalis nanopartikel La2O3. Penggunaan katalis La2O3 pada reaksi menunjukkan yield yang relatif baik. Katalis La2O3 disintesis melalui metode sol gel menggunakan polietilena glikol (PEG) sebagai capping agent sehingga diperoleh katalis berukuran 40–50 nm. Senyawa asam quinoline-4-karboksilat kemudian melalui tahapan esterifikasi dengan etanol, reaksi dengan hidrazin hidrat, dan reaksi dengan camphor sehingga terbentuk senyawa turunan camphor hidrazida-hidrazon. Selanjutnya, aktivitas antioksidan dari produk target diuji dengan metode DPPH, sedangkan aktivitas antibakteri diuji dengan metode difusi cakram terhadap bakteri Eschericia coli (bakteri gram negatif) dan Staphylococcus Aureus (bakteri gram positif).
.....In this study, compounds with a quinoline and camphor framework will be combined through a hydrazide-hydrazone linker. Quinoline-4-carboxylic acid compounds become the key structure before being reacted with camphor. This compound was synthesized through the Pfitzinger reaction with a La2O-3 nanoparticle catalyst. The use of La2O-3 catalyst in the reaction showed a relatively good yield. La2O-3 catalyst was synthesized through the sol gel method using polyethylene glycol (PEG) as a capping agent to obtain a catalyst with a size of 40–50 nm. The quinoline-4-carboxylic acid compound then went through the stages of esterification with ethanol, reaction with hydrazine hydrate, and reaction with camphor to form a derivative compound of camphor hydrazide-hydrazone. Furthermore, the antioxidant activity of the target product was tested by the DPPH method, while the antibacterial activity was tested by the agar disc diffusion method against Eschericia coli (gram-negative bacteria) and Staphylococcus Aureus (gram-positive bacteria).