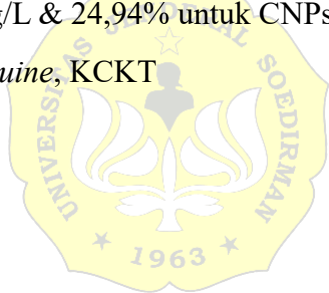


ABSTRAK

Carbon Nanoparticles (CNPs) merupakan salah satu material karbon berukuran nano yang dapat digunakan sebagai adsorben dalam proses adsorpsi senyawa obat, salah satunya *chloroquine*. Penelitian ini bertujuan untuk mensintesis *carbon nanoparticles* (CNPs) menggunakan metode *microwave-assisted synthesis* dengan d-glukosa sebagai sumber karbon, serta (S)-(-)- α -methylbenzylamine dan (R)-(+)- α -methylbenzylamine sebagai sumber ligan untuk modifikasi permukaan. Karakteristik CNPs berdasarkan hasil analisis SEM-EDX menunjukkan ukuran rata-rata partikel dari CNPs/S-MBA sebesar 63 nm dan CNPs/R-MBA sebesar 96 nm, dengan hasil karakterisasi XRD yang menunjukkan bahwa struktur CNPs bersifat amorf. Optimasi kondisi kromatografi cair kinerja tinggi (KCKT) dilakukan untuk menentukan parameter analisis *chloroquine* menggunakan kolom Supercosil LC-8, dan diperoleh kondisi optimum pada perbandingan fase gerak *methanol:aquabidest* (0,25% *diethylamine*) (85:15, v/v); laju alir 0,6 mL/menit, volume injeksi 10 μ L, dan panjang gelombang 343 nm. Uji adsorpsi dilakukan pada konsentrasi 50 ppm, dengan kondisi pH 5, dan waktu kontak 60 menit, menghasilkan kapasitas adsorpsi dan %adsorpsi sebesar 1,91 mg/L & 38,24% untuk CNPs/S-MBA serta 1,25 mg/L & 24,94% untuk CNPs/R-MBA.

Kata kunci: CNPs, *chloroquine*, KCKT



ABSTRACT

Carbon Nanoparticles (CNPs) are one of the nano-sized carbon materials that can be used as an adsorbent in the adsorption process of drug compounds, one of which is chloroquine. This study aims to synthesize carbon nanoparticles (CNPs) using the microwave-assisted synthesis method with D-glucose as a carbon source, and (S)-(-)- α -methylbenzylamine and (R)-(+)- α -methylbenzylamine as a ligand source for surface modification. The characteristics of CNPs based on result SEM-EDX analysis shows that the average particle size of CNPs/S-MBA is 63 nm and CNPs/R-MBA is 96 nm, with the result of XRD characterization showing that the structure of CNPs was amorphous. Optimization of high performance liquid chromatography (HPLC) conditions was carried out to determine the analytical parameters of chloroquine using Supercosil LC-8 (15 cm x 4 mm, 3 μ m) column, and the optimum conditions were obtained at mobile phase ratio of methanol:aqueous (0.25% diethylamine) (85:15, v/v); flow rate of 0.6 mL/min; injection volume of 10 μ L, and wavelength of 343 nm. The adsorption test was carried out at a concentration of 50 ppm, with pH condition of 5, and contact time of 60 minutes, resulting in an average adsorption capacity and %adsorption of 1.73 mg/g & 34.70% for CNPs/S-MBA and 1.23 mg/g & 24.68% for CNPs/R-MBA.

Key word: CNPs, chloroquine, HPLC

