

Pengaruh nonidet rk-18 sebagai surfaktan dalam pembuatan mikrosfer dari polipaduan poli asam laktat dan polikaprolakton = Effect of nonidet rk 18 as a surfactant in preparation of microsphere based on blend of poly lactic acid and polycaprolactone

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Abstrak

Mikrosfer dari campuran poli asam laktat PLA dan poli ϵ -kaprolakton PCL disiapkan menggunakan metode penguapan pelarut emulsi air dalam minyak w / o . Campuran PLA / PCL dirumuskan dengan komposisi 60:40 b / b dan Nonidet RK-18 digunakan sebagai emulsifier. Penelitian ini mengamati distribusi ukuran partikel mikrosfer dengan memvariasikan Nonidet RK-18 volume 0,5 ml, 1,0 ml, 1,5 ml, 2,0 ml, dan 2,5 ml , kecepatan pengadukan emulsi 700 rpm, 800 rpm, dan 900 rpm , dan waktu pengadukan dispersi 30 menit, 90 menit, dan 120 menit. Mikrosfer dikarakterisasi menggunakan FTIR dan PSA. Bentuk fisik mikrosfer diamati menggunakan mikroskop optik juga.

Spektra IR campuran PLA / PCL menunjukkan bahwa hanya interaksi fisik yang terjadi di antara mereka. Selain itu, hasil penelitian ini menunjukkan bahwa ketika 2,0 ml Nonidet RK-18 ditambahkan, distribusi ukuran seragam dari mikrosfer yang terbentuk diamati pada 31,50 μ m. Selanjutnya, mikrosfer yang terbentuk melalui kecepatan pengadukan emulsi pada 900 rpm mengungkapkan bahwa mikrosfer yang terbentuk memiliki distribusi ukuran seragam pada 31,50 μ m, sedangkan distribusi ukuran seragam pada 34,58 μ m diamati pada mikrosfer yang terbentuk selama waktu pengadukan dispersi pada 90 menit.

Microspheres of poly lactic acid PLA and poly caprolactone PCL blend were prepared using the water in oil w o emulsion solvent evaporation method. The PLA PCL blend was formulated with the composition of 60 40 w w and Nonidet RK 18 was utilized as an emulsifier. This study observed the distribution of the microspheres particle size by varying the Nonidet RK 18 volumes 0.5 ml, 1.0 ml, 1.5 ml, 2.0 ml, and 2.5 ml , emulsion stirring speed 700 rpm, 800 rpm, and 900 rpm, and dispersion stirring time 30 minutes, 90 minutes, and 120 minutes . The microsphere were characterized using FTIR and PSA. Physical forms of microspheres were observed using an optical microscope as well.

The IR spectra of PLA PCL blend showed that only physical interaction was occurred between them. Moreover, the result of this study showed that when 2.0 ml Nonidet RK 18 was added, the uniform size distribution of the formed microspheres was observed at 31.50 μ m. Furthermore, the microspheres that formed through emulsion stirring speed at 900 rpm revealed that the formed microspheres have uniform size distribution at 31.50 μ m, while the uniform size distribution at 34.58 μ m was observed in the microspheres that formed during the dispersion stirring time at 90 minutes.