Pengaruh nonidet sf-5 sebagai surfaktan dalam pembuatan mikrosfer dengan polipaduan poli asam laktat dan polikaprolakton = Effect of nonidet sf-5 as surfactant in preparation of microspheres based on polyblend of poly lactic acid and polycaprolactone

Feby Zilvania, author

Abstrak

Mikrosfer polimer biodegradable secara luas diselidiki dalam sistem pengiriman untuk senyawa bioaktif. Pada penelitian ini dilakukan pembuatan mikrosfer dari polipaduan poli asam laktat dan polikaprolakton menggunakan metode penguapan pelarut emulsi air dalam minyak w/o dengan Nonidet SF-5 sebagai surfaktan. Pengaruh dari surfaktan nonidet SF-5 terhadap ukuran mikrosfer dan distribusinya dipelajari dengan memvariasikan volume surfaktan 1 mL; 1,5 mL; dan 2 mL. Variasi tambahan seperti kecepatan pengadukan emulsi 700 rpm, 800 rpm, dan 900 rpm dan waktu pengadukan dispersi 0,5 jam; 1 jam; 1,5 jam; dan 2 jam juga dilakukan. Karakterisasi mikrosfer dilakukan menggunakan Particle Size Analyzer PSA dan FTIR. Bentuk dan permukaan mikrosfer diamati dengan menggunakan mikroskop optik.
Hasil menunjukkan bahwa penambahan volume surfaktan menurunkan ukuran mikrosfer dari 34,58 m ke 28.70 m dengan ukuran mikrosfer yang paling seragam diperoleh pada 1 mL Nonidet SF-5. Sedangkan mikrosfer yang dihasilkan melalui variasi kecepatan pengadukan emulsi menunjukkan ukuran yang sama, yaitu sebesar 31,50 m, serta ukuran mikrosfer yang paling seragam diperoleh pada kecepatan 800 rpm. Kemudian peningkatan waktu pengadukan dispersi juga menurunkan ukuran mikrosfer dari 31.50 m ke 19.76 m, akan tetapi tidak mempengaruhi distribusi ukuran mikrosfer.
<hr>Microspheres of biodegradable polymers have been widely investigated in delivery system for bioactive compounds. In this study, microspheres were prepared from polyblend of poly lactic acid and polycaprolactone using water in oil w o emulsion solvent evaporation method with Nonidet SF 5 as surfactant. The effect of Nonidet SF 5 on the size of microspheres and its distribution was studied by varying the volume of surfactant 1, 1.5, and 2 mL. Additional variations such as emulsion stirring speed 700, 800, and 900 rpm and dispersion stirring time 0.5, 1, 1.5, and 2 h were also conducted. Microspheres were characterized using Particle Size Analyzer PSA and FTIR. The physical form and appearance of microspheres were observed by optical microscope.
The results showed that the addition of surfactant volume decreased the microspheres size from 34.58 m to 28.70 m with the most uniform microspheres size was obtained at 1 mL of Nonidet SF 5. While the microspheres that produced through variations of emulsion stirring speed showed the same size, that was 31.50 m and the most uniform microspheres size was obtained at 800 rpm. Moreover, the increasing of dispersion stirring time also decreased the microspheres size from 31.50 m to 19.76 m, but it did not affect the microspheres size distribution.