Preparation, Characterization of L-PLA Microspheres Containing 5-Fluorouracil Using Supercritical Carbon Dioxide

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ABSTRACT

The objective of this study was to prepare drug-loaded biodegradable poly(L-lactide) microspheres using supercritical fluid and to evaluate their *in vitro* drug release characteristics. The effects of the drug to polymer ratio and blending with other biodegradable polymers such as poly(D,L-lactide) and poly(D,L-lactide-*co*-glycolide) on microsphere formation and drug release from microspheres were investigated. The particle size was found to decrease with increasing drug to polymer ratio. It was also revealed that the particle size not only increased but the particle also became more agglomerated as the amount of biodegradable polymers blended with L-PLA increased. The highest drug encapsulation efficiency and release rate were obtained to be 91%, and 95% for one month, respectively, when the ratio of drug to L-PLA was 0.2. Furthermore, under the same condition, the release profile was found to follow the zero-order kinetics with a correlation coefficient of 0.987. However, both the drug content and its release rate were observed to decrease with the increase of the blending polymers.

References

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