Property and release behavior of ibuprofen-loaded poly(D,L-lactide-co-glycolide) nanoparticles prepared by the emulsification-diffusion method

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Polymer nanoparticles have shown much promise in controlled release and targeted drug delivery. Among them, biodegradable polymer nanoparticles, such as PLGA(poly(D,L-lactide-co-glycolide)), were more preferable candidate for drug delivery system (DDS).
In this study, PLGA nanoparticles containing drugs were prepared by the emulsification-diffusion method and ibuprofen was used as a model drug. The emulsification-diffusion method has been used successfully to prepare naanoparticles from preformed polymers in an efficient and reproducible manner. It involves the formation of a conventional oil-in-water emulsion within a partially water-soluble solvent. The subsequent addition of water to the system makes the organic solvent diffuse into the external phase, resulting in the formation of nanoparticles. The size distribution of ibuprofen-loaded PLGA nanoparticles was measured by particle size analyzer. Also, the drug encapsulation efficiency and the release behavior were analyzed by UV-Visible spectrometer.