[Int. J. Pharm., **121**, 45-54 (1995)] [Lab. Of Pharm. Engineering]

Biodegradable submicron carriers for peptide drugs: Preparation of DL-lactide/glycolide copolymer (PLGA) nanospheres with nafarelin acetate by a novel emulsion-phase separation method in an oil system.

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PLGA nanospheres, biodegradable polymeric carriers for peptide drugs, were prepared by a novel emulsion-phase separation method. The preparation was carried out in an oil phase system in order to improve the entrapment efficiency of water-soluble peptide. An LH-RH analogue (nafarelin acetate (NA)) was employed as a model peptide drug to investigate the encapsulation efficiency. The presence of surfactant significantly reduced the size of the aqueous droplets, resulting in submicron-sized PLGA spheres (500-800 nm). The recovery of drug entrapped in the nanospheres was markedly increased compared with our previous preparation technique in a water system.

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Improved Static Compression Behaviors and Tablettabilities of Spherically Agglomerated Crystals Produced by the Spherical Crystallization Technique with a Two-Solvent System.

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Poorly compressible crystals of acebutolol hydrochloride were agglomerated by the spherical crystallization technique with a two-solvent system to improve the compressibility for direct tabletting. The mechanism of improvements in static compression behaviors and tablettabilities of the spherically agglomerated crystals were investigated. The compressibility and tablettability of the spherically agglomerated crystals were much improved due to their increased plastic property and reduced adhesive property compared to the original crystals.

[YAKUGAKU ZASSHI, **115**, 732-741 (1995)] [Lab. Of Pharm. Engineering]

Aerosolization of Lactide/Glycolide Copolymer (PLGA) Nanospheres for Pulmonary Delivery of Peptide-drugs.

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Lactide/glycolide copolymer nanospheres with a model peptide-drug have been developed by the emulsion-phase separation method in an oil phase. In the present study, the aerosolization of nanospheres in dry and wet dispersion methods was investigated in vitro to evaluate their applications to pulmonary delivery of peptide drug. It was found that the freeze-drying of nanospheres with a hydrophilic surface active agent effectively improved the inhalation behavior. It was supposed that the mists of nanospheresuspension generated from a jet nebulizer might be inhaled into the lower bronchus and alveolus, because their respirable fraction (RF) value reached a maximum of over 50%