[J. Microencapsulation, **10**, 329-340 (1993)] [Lab. of Pharm. Engineering]

Role of the solvent-diffusion-rate modifier in a new emulsion solvent diffusion method for preparation of ketoprofen microspheres.

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A new emulsion solvent diffusion method to prepare the microspheres of ketoprofen with an acrylic polymer was developed by utilizing sugar esters as solvent diffusion modifiers. The microspheres were produced via transient o/w emulsion droplets of the polymer, which was formed by the interaction of drug and water-miscible organic solvent, e.g. ethanol. The solvent consisting in oil droplets diffused into the outer aqueous medium. In the droplets, ethanol interacted with ketoprofen via hydrogen bonding between -OH group of ethanol and both -COOH and =CO groups of ketoprofen. These hydrogen bonds made ethanol solution strongly hydrophobic.

[J. Control. Release, **25**, 89-98 (1993)] [Lab. of Pharm. Engineering]

Preparations of biodegradable nanospheres of water-soluble and insoluble drugs with D,L-lactide/glycolide copolymer by a novel spontaneous emulsification solvent diffusion method, and the drug release behavior.

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Nanospheres with D,L-lactide/glycolide copolymer (PLGA) were prepared as a biodegradable polymeric carrier for both water-soluble and insoluble drugs by a novel spontaneous emulsification solvent diffusion method. Indomethacin and 5-fluorouracil (5-FU) were employed as poorly water-soluble and water-soluble model drugs, respectively, to investigate the encapsulation efficiency.

[Chem. Pharm. Bull., **41**, 191-195 (1993)] [Lab. of Pharm. Engineering]

Size Control of Ibuprofen Microspheres with an Acrylic Polymer by Changing the pH in an Aqueous Dispersion Medium and Its Mechanism.

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The size of ibuprofen microspheres fabricated by the o/w emulsion solvent diffusion method was controlled by adjusting the pH (1.0-5.0) in an aqueous dispersion phase. As the pH decreased, the diameter of the microspheres decreased, while drug entrapment efficiency and yield of microspheres remained unchanged. In the present system, the size of microspheres increased *via* coalescence and fusion of the oil emulsion droplets before solidification of the droplets occurred.