

[Inter. J. Pharmaceutics, 72, 65-77 (1991)]

[Lab. of Pharm. Engineering]

**Rheological study of w/o/w emulsion by a cone-and-plate viscometer:
Negative thixotropy and shear-induced phase inversion.**

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The rheological behavior of a w/o/w emulsion was examined by a cone- and -plate viscometer. Negative thixotropic flow patterns were observed at lower shear rates. This negative thixotropic behavior was more pronounced and apparent viscosity increased under increased shear rate, prolonged shearing time, or repeated shear. Further shearing, by raising the shear rate or prolonging the shearing time, rapidly increased the shear stress of the emulsion and induced phase inversion. This phase-inverted emulsion was of the w/o type and in a semi-solid state.

[J. Controlled Release, 16, 279-290 (1991)]

[Lab. of Pharm. Engineering]

**Preparation of multiple unit hollow microspheres (microballoons) with
acrylic resin containing tranilast and their drug release characteristics
(in vitro) and floating behavior (in vivo).**

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Microballoons with hollow structure were prepared as a novel multi-unit floating device for use in the stomach by the emulsion-solvent diffusion method. As a model drug, tranilast, an oral anti-allergic agent, was embedded in the shell of the microballoon. Tranilast and acrylic polymer, dissolved in an ethanol-dichloromethane mixture, were poured into an aqueous solution of polyvinyl alcohol with stirring to form emulsion droplets.

[Yakugaku Zasshi, 111, 451-462 (1991)]

[Lab. of Pharm. Engineering]

**Agglomeration Behaviour and Modification of Spherical
Crystallization Process of Pharmaceuticals by the Emulsion-Solvent-
Diffusion Method and Proposed Closed-Circuit Batch System.**

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Agglomeration mechanism of the spherical crystallization of a water soluble drug by the emulsion solvent diffusion method was investigated with a mixed system of two or three partially miscible solvents, *i.e.*, bridging liquid-poor solvent system or good solvent-bridging liquid-poor solvent system. When bridging liquid (or plus good solvent) solution of the drug was poured into poor solvent (=dispersing medium) under agitation, quasi emulsion droplets of bridging liquid or good solvent were produced.