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Novel Method for the Preparation of Controlled-Release Theophylline Granules Coated with a Polyelectrolyte Complex of Sodium Polyphosphate-Chitosan.

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A novel method for the preparation of theophylline granules coated with a polyelectrolyte complex of sodium tripolyphosphate and chitosan was developed. The theophylline granules containing sodium tripolyphosphate were stirred in an HCl solution of chitosan. During the mixing, the dissolved sodium tripolyphosphate in the granule moved to the surface and reacted with the chitosan, resulting in the formation of the polyelectrolyte complex film. The factors affecting the drug content, the particle size, and the coating-film thickness of the resultant coated granules were determined.

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Kinetic Studies on an Improved Williamson Ether Synthesis Using a Polymer-Supported Phase-Transfer Catalyst.

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An improved Williamson ether synthesis was conducted under phase-transfer conditions by using a polymer-supported quaternary salt. Benzyl ether was produced from benzyl alcohol and butyl bromide, and it was shown that the rate of reaction was influenced by the concentrations of benzyl alcohol and butyl bromide in the organic phase and the concentration of KOH in the aqueous phase. Based on kinetic studies, the rate-determining step was found to depend on the concentrations of the reactants. The content of water in the organic phase, which increased with the concentration of benzyl alcohol, was found to be closely related to the decrease in the rate of reaction.

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Effects of Alkyl Chains of Thiocarbocyanine as the Sensitizer for the Photoreduction of Methylviologen in Micellar Phase.

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Photoinduced reduction of methylviologen (MV^{2+}) by ethylenediaminetetraacetate was investigated with 3,3'-dialkylthiocarbocyanines as a sensitizer in the micellar solution of a nonionic surfactant, heptaethylene glycol monododecyl ether. The alkyl chains of the dyes were found to have considerable effects on the reaction rate. The fluorescence yield of a dye having two long alkyl chains, 3,3'-dioctadecylthiocarbocyanine (C_{18-18}) in the micellar phase was larger than that of the dye having only one long alkyl chain, 3-methyl-3'-octadecylthiocarbocyanine (C_{1-18}). This result was discussed in terms of the large effective volume associated with the intramolecular twisting motion in the excited state of C_{18-18} .