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Micellization and Interfacial Behavior of the Sodium Salt of Ibuprofen-BRIJ-58 in Aqueous/Brine Solutions

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Abstract

This work deals with the effect of a nonionic surfactant (BRIJ-58) on the physicochemical properties of the sodium salt of ibuprofen, in the absence and presence of salt (NaCl), in order to understand the nature of interactions in IBF-BRIJ-58 aqueous mixtures. Tensiometric measurements were carried out to estimate the critical micelle concentrations (cmc) of drug and surfactant along with their mixtures. A gradual reduction in the surface charge of the micelles was obtained by adding salt followed by the early formation of the micelles; hence, the cmc value of the amphiphiles decreased. Various parameters such as micellar, interfacial, corresponding thermodynamic parameters, etc., have been calculated and are discussed in detail by applying various theoretical models reported in the literature. The theories of Clint, Rubingh, Motomura and Maeda have been applied to investigate interactions among the components. Structural parameters proposed by Tanford have also been also evaluated.

Keywords

Author Keywords: Mixed micelle; Ibuprofen; BRIJ-58; Surface Tension; Synergism

KeyWords Plus: DRUG PROMAZINE HYDROCHLORIDE; TERNARY SURFACTANT MIXTURES; CETYL PYRIDINIUM CHLORIDE; AMPHIPHILIC DRUG; NONIONIC SURFACTANT; PHARMACEUTICAL EXCIPIENTS; MICELLAR PROPERTIES; THEORETICAL APPROACH; CLOUDING PHENOMENON; GEMINI SURFACTANTS

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