

The formation of complexes of iron(III) with salicylic acid in the presence of cationic and nonionic surfactants

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Abstract

The effect of dodecylpyridinium bromide (DPB) and ethoxylated sorbitan palmitate (Tween 40) on the formation equilibrium of the complex of iron(III) with salicylic acid (H₂L) in aqueous solutions was studied at 298 K by the spectrophotometry and NMR-relaxation techniques. It was found that an apparent decrease in the stability of [FeL]⁺ complex was associated with the solubilization of the ligand in its molecular form within simple and mixed micelles. Based on a mathematical description of the effect of surfactants within the frame-work of the model proposed, the binding constants of salicylic acid with micelles of cationic ($\log K = 2.0 \pm 0.1$) and anionic ($\log K = 2.4 \pm 0.1$) surfactants were determined. It was concluded that salicylic acid is solubilized in the boundary layer between the hydrocarbon core of micelles and head groups of surfactants. © 1998 MAK Haya/Interperiodica Publishing.
