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Estimation of Critical Micelle Concentrations of Lysolecithins with Fluorescent Probes.

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The estimation of the critical micelle concentration (cmc) of various lysolecithins with 2-p-toluidinylnaphthalene-6-sulfonate (TNS) and 1-anilino-naphthalene-8-sulfonate (ANS) as fluorescent probes was investigated. The fluorescence yield of TNS in palmytoyl lysolecithin micellar phase was found to be somewhat larger than that of ANS. Further, the fluorescence yield of TNS in the aqueous phase is known to be much smaller than that of ANS. Thus, TNS should be useful for estimating very small cmc values of surfactants such as lysolecithins. The cmc values of lysolecithins estimated by using TNS were 0.5 mM for lauroyl lysolecithin, 63 μ M for myristoyl lysolecithin, 8.3 μ M for palmytoyl lysolecithin and 6.6 μ M for oleoyl lysolecithin, in 20 mM Tris-HCl buffer solution (pH 7.0) at 25 °C.

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Microenvironment around Thiocarbocyanine Dyes in Lysolecithin Micelles, Surfactant Micelles and Lecithin Liposomal Membranes.

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The microenvironments provided by lysolecithin micelles, surfactant (heptaethylene glycol dodecyl ether, cetyltrimethylammonium chloride, sodium dodecyl sulfate and dodecyl sulfobetaine) micelles and lecithin liposomal membranes in aqueous solutions were investigated by using dialkylthiocarbocyanine dyes as spectroscopic (absorption and fluorescence) probes. These probes give information concerning effective polarity and effective viscosity in the vicinity (microenvironment) of the probe in liposomal membranes and micelles. The microenvironment of the cyanine dyes in lysolecithin micelles have higher polarity (corresponding to that of ethanol) and lower viscosity (3-10 cP) than those of other surfactant micelles and lecithin liposomal membranes.

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Two Solubilization Sites of Tris (2,2'-bipyridine) ruthenium (II) Dichloride in Water/Oil Nonionic Microemulsion.

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A water/oil (w/o) microemulsion was prepared with nonionic heptakis (ethylene glycol) mono-n-dodecyl ether and 1-hexanol as the surfactant and cosurfactant, respectively, in n-decane. The solubilized states of tris (2,2'-bipyridine) ruthenium (II) dichloride, $[\text{Ru}(\text{bpy})_3] \text{Cl}_2$, in the emulsion were investigated by means of absorption and fluorescence spectral measurements. $[\text{Ru}(\text{bpy})_3] \text{Cl}_2$ was found to be located in both the hydrate poly (ethylene glycol) shell and the central water pool. As the water content was increased, the water pool became dominant as the solubilizing environment.