

Abstract

Charles University, Faculty of Pharmacy in Hradec Králové

Department of: Pharmaceutical Technology
Consultant: PharmDr. Barbora Vraníková, Ph.D.
Student: Oláhová Kristýna
Title of Thesis: The utilization of the surface tension measurement for
the evaluation of critical micelle concentration of
cationic surfactants

The theoretical part of this diploma thesis gives an overview of surfactants properties and their classification based on the ability to dissociate and value of hydrophilic-lipophilic balance. This thesis also describes methods used to determinate critical micelle concentration such as surface tension or molar conductivity measurements, and factors that can affect it.

The experimental part deals with the evaluation of the critical micelle concentration of the new synthesized cationic surfactant (ILA-3) that has a potential use as a chiral selector in capillary electrophoresis. The surface tension measurement by du Noüy ring method was used to determinate critical micelle concentration. The value of this concentration was measured in ultrapure water and acetate buffer of pH 5.5. The obtained values of critical micelle concentration of ILA-3 were established to 118.37 mg/l (0.32 mM) and 12.73 mg/l (0.04 mM) for ultrapure water and acetate buffer, respectively. For comparison, the critical micelle concentration of the chiral selector used as well as cationic surfactant cetyltrimethylammonium bromide (CTAB) was also measured in ultrapure water. The final value of critical micelle concentration of CTAB was 326.49 mg/l (0.89 mM).