

2 ABSTRACT

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Department of: Pharmaceutical technology

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Title of Thesis: The utilization of the surface tension measurement for the evaluation of critical micelle concentration

The theoretical part of this diploma thesis is focused on the basic characteristics of surfactans and their classification according to the value of hydrophilic-lipophilic balance and their ability to dissociate in water. The thesis further explains the concept of critical micelle concentration closely related to micel formation and deals with surface tension and methods of its measurement.

The experimental part aims to determination of the critical micelle concentration of three different surfactans such as cetyltrimethylammonium bromide, sodium lauryl sulfate and polysorbate 80 in ultrapure water. DuNoüy ring method, Wilhelmy plate method and stalagmometric method were used for determination. The results revealed that the values obtained from the first two methods are comparable, while stalagmometry implies lower sensitivity and hence different results of critical micelle concentration.

The highest critical micelle concentration was measured for the cationic surfactant sodium lauryl sulfate, the second for an anionic cetyltrimethylammonium bromide and the lowest value showed non-ionic surfactant polysorbate 80.