

ABSTRACT

This thesis deals with electrochemical behaviour of tauroursodeoxycholic acid (TUDCA) at silver solid amalgam electrode modified by mercury meniscus (m-AgSAE), polished silver solid amalgam electrode (p-AgSAE) and hanging mercury dropping electrode (HMDE). This thesis is a part of a bigger scientific research that deals with synthesis and characterization of supramolecular systems based on natural steroid compounds and its conjugates.

TUDCA offers one reduction peak at m-AgSAE in the environment of Britton – Robinson buffer in range of pH 6.0 – 13.0. The potential of this peak is around -1200 mV. Using cyclic voltammetry was determined that the process on the electrode surface is quasireversible, the reduction is controlled by diffusion and the anodic process is controlled by adsorption.

Concentration dependence measured at HMDE by direct current voltammetry in 0.04 mol·l⁻¹ borat buffer (pH 9.1) is linear in two concentration intervals - $1 \cdot 10^{-3} - 2 \cdot 10^{-4}$ mol·l⁻¹ and $1 \cdot 10^{-4} - 8 \cdot 10^{-6}$ mol·l⁻¹ of TUDCA. There was no linear dependence between the increase of concentration of TUDCA and the height of the peak obtained on amalgam electrodes by methods DC, DP, cyclic and “square-wave” voltammetry. On HMDE was in several short concentration intervals measured by a CV method a linear dependence of cathodic and anodic peak height on TUDCA concentration during scanning speed 320, 640 and 1280 mV·s⁻¹.

Electrolysis on mercury bottom was thought to be a method for calculation of the number of exchanged electrons involved in the reduction of TUDCA but it turned out to be an unsuitable method.