Abstract

This master thesis is focused on determination simvastain by cyclic voltammetry (CV), DC voltammetry (DCV), and differential pulse voltammetry (DPV) at a carbon paste electrode and a silver solid amalgam electrode. The optimum conditions for determination of simvastatin were found and under these conditions, concentration dependences were measured and the limits of detection (LOD) and limits of quantification (LOQ) were calculated for each method.

The optimum conditions for determination simvastatin were BR buffer pH 3,0 for DPV and pH 5,5 for DCV and methanolu (20%). For both DCV and DPV the linear concentration dependences were obtained in contentration ranger from 1 to 100 $\mu mol \cdot l^{-1}$ with LOD 0. 36 $\mu mol \cdot l^{-1}$ and LOQ 1. 2 $\mu mol \cdot l^{-1}$ for DCV and LOD 0. 32 $\mu mol \cdot l^{-1}$ and LOQ. 1. 09 $\mu mol \cdot l^{-1}$for DPV. Optimal conditions were used for determination simvstatin in drug Simvax 20, Simvacard 20 and Simgal 10.

For the determination of simvastatinu in biological fluids a mercury meniscus modified silver solid amalgam electrode was used. Conditions were the same like for measurement conditions for DPV at CPE, but they were modified for reduction region. For ten times diluted urine LOD was 1.83 $\mu mol \cdot l^{-1}$ and LOQ 6. 10 $\mu mol \cdot l^{-1}$. For urine without dilution LOD was 0. 65 $\mu mol \cdot l^{-1}$ and LOQ 2. 15 $\mu mol \cdot l^{-1}$.

The stability of stock solution of simvastatin in methanol was monitored using UV/VIS Spectrometry and CV. Both method gave different results. CV show that simvastatin was degrade during first day. Degradation of simvastatin was not detected by UV spectrometry. The stock solution of simvastatin was stable for one day.