

## Abstract

This bachelor thesis was devoted to the study of the electrochemical behaviour of the drug nitrofurantoin and finding the optimal conditions for its voltammetric determination on a working electrode made of ultra pure graphite (UTGE) in a three-electrode setup, using DC voltammetry (DCV) and differential pulse voltammetry (DPV).

The optimum conditions for the determination of nitrofurantoin were studied as a function of the pH of the aqueous Britton-Robinson buffer (BRP) solution. The pH 2 and 3 were selected as the most suitable media for the voltammetric determination of nitrofurantoin, in which the repeatability of the determination and calibration dependencies in the range of  $1 \cdot 10^{-7}$  to  $1 \cdot 10^{-4}$  mol/L were further investigated. The achieved limits of quantification (*LOQ*) and limits of detection (*LOD*) of nitrofurantoin on the UTGE were 0.11  $\mu\text{mol/L}$  and 0.034  $\mu\text{mol/L}$  for the DCV method and 0.10  $\mu\text{mol/L}$  and 0.031  $\mu\text{mol/L}$  for the DPV method at pH 2; at pH 3, they were 0.11  $\mu\text{mol/L}$  and 0.034  $\mu\text{mol/L}$  for the DCV method and 0.13  $\mu\text{mol/L}$  and 0.039  $\mu\text{mol/L}$  for the DPV method.

The voltammetric methods were used for the determination of the drug nitrofurantoin in the dosage form Furolin 100mg/tablet. The voltammetric methods were then compared with the analytical method UV–VIS absorption spectroscopy.

## Key words

Electrochemistry

Analysis of Pharmaceuticals

DC Voltammetry

Differential Pulse Voltammetry

Nitrofurantoin

Electrode of Ultrapure Graphite