Azithromycin oxidation mechanism on screen printed carbon electrode

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Abstract

Azithromycin (AZT) is part of the antibiotics called macrolides [1,2], it is widely used medicament, whereby it is expected to be found as a pollutant in environmental waters. Since it is a common medicament, it is important also its analysis in body fluids. Electrochemical methods, although restricted by the fact of the molecules being electrochemically active, are very convenient due to the simplicity of the analysis setup and low cost. Thus the investigation of the electrochemical properties of the molecules of interest becomes very important, both for their analysis and their electrochemical removal from waters [2,3]. In this work the electrochemical behaviour of AZT is presented along with an elaboration on electrochemical active site of the molecule on screen printed carbon electrode (SPCE). A potentiostat Palmsens4 was used for the measurements. To shed more light on the mechanism of AZT oxidation mechanism, cyclic voltammograms of some similar atomic group baring simpler molecules were recorded. It was further elaborated the nitrogen as centre of activity by comparing the vltammograms of AZT with other the molecules. The electrochemical oxidation was controlled partly by electron transfer and diffusion. The pH value influenced greatly the peak current and it was the highest at pH 10.

Keywords: Carbon, electrochemical oxidation, Azithromycin, voltammetry, mechanism.

References

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Figures

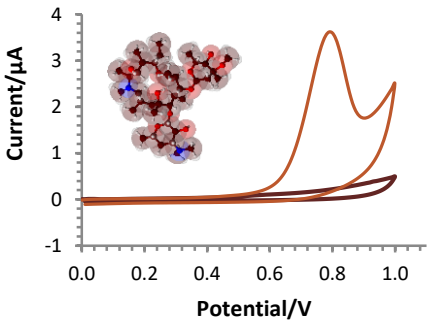

Figure 1: Cyclic voltammogram of [AZT] = 50 ppm on SPCE, pH = 8.5, scan rate = 0.05 V/s.