

**VOLTAMMETRIC BEHAVIOR OF PROPRANOLOL ENANTIOMERS  
ON MODIFIED FILM ELECTRODES**Maksyutova E. I., Tikhonova A. A., Sidelnikov A. V.The Bashkir State University  
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One of the actual problems of electroanalytical chemistry is the creation of highly sensitive sensors which able to provide information about the composition and properties of the sample solution without the chemical separation of analytes. The practical significance of these studies is associated with the need of sensors creating for quality control of substances on a large scale used in industry and everyday life. Among these objects of electrochemical analysis medicines including in their composition biologically active compounds, the pharmacological activity of which is related with the presence of asymmetric (chiral) carbon atoms have a special place.

It is known that many synthetic medicines exist in a mixture of two and often a larger number of stereoisomers characterized their different biological effects. The effects of these differences are not always safe.

Identification of pharmacokinetic and pharmacodynamic characteristics of individual enantiomers opens perspective directions of improvement of known medicines. Only 15 % of synthetic medicines which are in the European markets, are made in the form of individual stereoisomers, the remaining 85 % represent a mixture of isomers.

At the same time, modern methods allow to obtain specific pure isomers and choose from those which have the most pronounced effects and (or) the least toxicity. The successful solution of these problems is inextricably bound up with the analytical method which is used for detecting and determining the enantiomeric medicines.

In this work voltammetric sensors that are sensitive to the enantiomers of propranolol – a substance that is widely used in the treatment of cardiovascular diseases are first proposed. Problem solving of simultaneous determination of enantiomers with the joint presence and identification of medicines on their base is an important task for life-saving safety of patients while taking medicines.

The paper presents the results of voltammetric behavior of S(–)- and R(+)- isomers of propranolol on glassy carbon electrodes modified by composites based polyarylenephthalide films, melamine and cyanuric acid. It was shown that the modification of film sensors by melamine or cyanuric acid leads to different cross-sensitivity of the sensors to optically active isomers of propranolol.

The difference in the voltammetric behavior of enantiomers is reflected in a change of voltammograms both in changing of Faraday current magnitude at the oxidation peak of propranolol isomers, and the displacement range of potential peaks of oxidation. Results of voltammograms modeling of S(–)- and R(+)-propranolol by principal component analysis allowed to make a positive conclusion about the possibility of using sensors in a multisensor system of "electronic tongue" type to identification of the medicines based in the propranolol.

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