

mgr Magdalena Świądro-Piętoń
Zespół Analiz Sądowych i Klinicznych
Zakład Chemii Analitycznej
Wydział Chemii UJ

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Streszczenie w języku angielskim

Title: Evaluation of the levels of psychotropic drugs and selected markers in the group of patients with bipolar disorder, depression, and drug-resistant depression. Clinical tests.

Bipolar disorders (BD) and unipolar disorders (MDD) are classified as diseases of the 21st century. Every year the number of people suffering from them increases. Therefore, it is important to monitor the course of therapy by controlling the concentration of drugs in the blood of patients. Failure to follow your doctor's instructions can result in relapse, economic costs, and even death in the event of drug overdose. Therefore, the most important assumption of this dissertation is the development of new, microinvasive and environmentally friendly methods that can be successfully introduced into routinely used analyzes of biological material collected from patients with bipolar disorder and MDD. Research was divided into two experimental parts. The first stage focused on obtaining answers regarding comprehensive analyzes of psychotropic substances: is it possible to develop microinvasive and effective methods of qualitative and quantitative analysis of a group of drugs used in the pharmacotherapy of affective disorders? In this step, innovative methodologies were developed combining the microinvasive technique of sampling a patient's blood, the dry blood drop method, with various extraction techniques, microwave assisted extraction, as well as microextraction to the stationary phase. The material used in the research is blood taken from the control group, as well as from patients with diagnosed affective disease. The whole analysis was completed by instrumental analysis carried out with the use of liquid chromatography coupled with mass spectrometry and capillary electrophoresis coupled with mass spectrometry. As part of the investigation, a total of four methods were developed, each time subjected to a validation process. The culmination of the work, and thus the first experimental part, was the use of each newly developed method to assess the concentration of drugs in real samples taken from

patients undergoing pharmacotherapy of affective disorders. In addition to monitoring drug levels during therapy, an important aspect is the diagnosis of the disease itself.

In the second stage of the investigation, an attempt was made to answer the question: is it possible to differentiate affective disorder on the basis of the elemental analysis of zinc and copper in the blood? For this purpose, the analysis of the concentration of these elements in the study and control group was carried out, using a modern mass spectrometer with inductively excited plasma ionization with a triple quadrupole. In addition, the second assumed goal, which was clarified during the research, was to answer the question: is it possible to diagnose an affective disorder on the basis of a hair analysis? Using FTIR-ATR spectroscopy, we attempted to discriminate the hair of healthy people and patients with clinically diagnosed affective disease.