

COMPUTER ANALYSIS OF THE CONDUCTIVITY OF BIOMATERIALS IN BIOACTIVE POINTS WHICH EXPOSED BY LINEARLY VARYING VOLTAGE

Y.B. Muhataev, S.E. Surzhikova, S.A. Filist, O.V. Shatalova,
R.A. Tomakova, E.G. Emelyanov*
Southwest State University, Kursk, Russia;
*E-mail: davidb46@rambler.ru

In this paper we propose a model of bioimpedance in anomalous zones of conductivity (BAZC). We considered two conductivity control loops of biomaterial. The first loop is connected to the reversible dielectric breakdown caused by an external electric field, and is determined only by the physical properties of the biomaterial. The second control loop is determined by the biological reaction of the object to external influence on the level of the regulatory systems of the body and determines the hysteresis properties of the biomaterial. The functional model of conductivity of biomaterial has been proposed.

In the diagnosis of many diseases of considerable interest are the parameters of the composition of the tissues of some regions that have a significant impact on their electrical characteristics. Of particular interest are the electrical conductivity studies in anomalous zones - BAZC [1, 2]. However, the electrical conductivity of the biological material in the BACZ influenced by many varying factors, so to measure those indicators appropriate to use statistical methods and fuzzy inference techniques [3, 4].

One way to study the diagnostic value of a study conductivity BACZ it's voltage-current characteristic with the subsequent reception of characteristic points whose coordinates can be used to construct space informative features in classifying models. To determine these characteristic points, followed by the construction of the space of informative signs on their basis, the model requires the current-voltage characteristics of the BACZ. To construct the current-voltage characteristics of BACZ used two polar current pulses with amplitudes ranging from zero to the limiting value determined by the pain and heat thresholds.

Model of current-voltage characteristics can be built either on the basis of the phenomenological approach, which is based on a mathematical or homeostatic model for describing the experimentally obtained about the object of research data, or based on a heuristic approach as the basis for constructing the model used knowledge (observation) an expert on the functioning of the object of study. Thus, it is possible to construct two types of parametric models in which as a parameter - the independent variables are the informative signs, and as dependent variables - the experimentally obtained data characterizing the biomaterial properties under certain conditions. Given the fact that the nature of the data resulting from experimental studies, depends on a sufficiently small group of factors - latent variables, the successful construction of the model will significantly simplify the classification task - building a classifying model.

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