of the isotope, the method of radioactive tracers, etc. RD methods are based on the injection of radioactive nuclides into the body, the amount of which predicts the presence of drugs in exact organ. The results of the researches make it possible to analyze the work of the organ or tissue, to study the excretory function, the blood flow velocity, the medications mechanism, etc.

Radioisotope therapy is a combination of methods of treatment with radioactive isotopes. The technique is based on the biological effect of ionizing radiation on living cells and the selective accumulation of isotopes upon their injection into the body. Synthetic radioactive nuclides are used for the treatment of cancer (60Co, 198Au, etc.), blood diseases (32P), skin and eye diseases (32P, 90Sr), digestive and respiratory organs (222Rn). In this case, radiation damage does not occur, due to the fact that half-life of isotopes ranges from several minutes to several days.

The use of ionizing radiation is also relevant for pharmacology in studying the modern radio-ecological state of medicinal raw materials.

Conclusions. Radioactive isotopes are widely used in all fields of science and technology, particularly in biology, medicine and pharmacy for the study of metabolic processes at the cellular level, the enzyme`s and hormone`s mechanism of action, the analysis of drugs and medicinal raw materials, the diagnosis and treatment of many diseases.

DEVELOPMENT AND STUDY OF THE ION-SELECTIVE ELECTRODE FOR GENTAMICIN SULFATE

Popov Yu. M., Rakytianskyi S. Yu.
Scientific supervisor: assoc. prof. Kyzym O.G., assoc. prof. Petukhova I.Yu.
National University of Pharmacy, Kharkiv, Ukraine
Irina.petukhova@ukr.net

Introduction. Gentamicin is an antibiotic of the aminoglycoside group with a broad spectrum of action and is used in severe infectious diseases in the case of resistance of bacteria to less toxic antibiotics. However, with its prolonged use or overdose the following side effects can be observed: nausea, vomiting, hyperbilirubinemia and various allergic reactions, such as rash, itching, Quincke's edema. In this regard, there is a need to develop rapid and simple methods for the analysis of gentamicin sulfate both in dosage forms and in such biological fluids as saliva, blood, and urine.

Aim. To develop and study the analytical characteristics of ion-selective electrode (ISE) suitable for gentamicin sulfate with the ion associates of gentamicin with silicon tungstic acid suggested for its membrane as an electrode active substance.

Materials and methods. For the analysis of gentamicin sulfate the method of ionometry was chosen. This method is the most promising and rapid method of analysis; it also allows to carry out the analysis by a biologically active moiety of a molecule.

Results and discussion. The ISE for gentamicin sulfate has been developed; it is a thick-walled polyvinyl chloride tube filled with the solution of gentamicin sulfate. On the ground end of the tube the cut membrane (using polyvinyl chloride glue) containing activated carbon is pasted. The membrane composition (%) is polyvinylchloride – 26±3, dibutylphthalate – 52±5, gentamicin silicon tungstate – 17±2, activated carbon – 4±1. Our studies have shown that the electrode function of the ISE made is linear in the concentration range of $(1.0\pm0.2)\cdot10^{-2}$ - $(3.0\pm0.2)\cdot10^{-4}$ M with the electrode slope of S =26±1 mV, it corresponds the characteristics of ISE for a divalent ion. The response time of electrodes is 20-30 seconds, the ISE potential drift per week does not exceed 3-5 mV, and their operating resource is not less than 6 months.

Conclusions. The ISE suggested for gentamicin sulfate can be used for ionometric analysis of gentamicin sulfate in dosage forms.