ELABORATION OF SPECTROPHOTOMETRIC PROCEDURE OF QUANTIFICATION FOR INOSINE IN MEDICINAL FORM

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Introduction. Inosine is nucleoside, the precursor of ATP. It stimulates the synthesis of adenine nucleotides, increases the activity of some enzymes of the Krebs cycle, stimulates redox processes, intensifies the metabolism of pyruvic acid, normalizes the process of tissue respiration, increases the activity of xanthine dehydrogenase. Inosine is directly involved in glucose metabolism and contributes to the activation of metabolism during hypoxia and in the absence of ATP. It has a positive effect on metabolic processes in the myocardium, increases the energy balance of the myocardium and the power of contractions of the heart, improves coronary circulation. It contributes to a more complete relaxation of the myocardium in diastole (binds calcium ions trapped in the cytoplasm at the time of cell excitation).

The development of modern medicine can prevent and cure many diseases. The number of chronic diseases has increased significantly, the frequency of allergic and toxic events associated with the use of allopathic remedies has increased significantly. Inosine as a naturally occurring purine formed from the breakdown of adenosine can be used in various cases of heart disorders. The development of methods for analysis, which makes it possible to standardize inosine in the medicinal formulations, as well as in the medicinal products containing it has the great interest and importance.

Aim. Study the possibility of inosine quantification in a dosage medicinal formulation by spectrophotometry.

Materials and methods. Spectrophotometric determination of inosine in solution for injection in various solvents (water, 0.1 M hydrochloric acid solution, 0.1 M sodium hydroxide solution).

Results and discussion. It was found that the UV spectrum of a 0.001% aqueous solution of inosine is characterized by the presence of a maximum at a wavelength of 249 nm. When replacing the solvent (water at 0.1 M hydrochloric acid solution), the position and intensity of the maximum does not change. In the case of using 0.1 M sodium hydroxide solution, a bathochromic shift of the maximum occurs. Researches were carried out at a wavelength of 249 nm on a spectrophotometer «Thermo scientific Evolution 60S».

Conclusions. The described technique will be worked out on experimental samples of a new dosage form, in the composition of which it is planned to introduce a inosine as an active compound exhibiting pharmacological action.

QUANTITATIVE DETERMINATION OF HYDROGEN PEROXIDE IN PERACETIC ACID DISINFECTANT BY VOLTAMMETRY

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Introduction. Hydrogen peroxide (HP) has been widely used as a disinfectant and as a bleaching agent in recent years. HP in combination with peracetic acid (PAA) is also used in certain disinfectants such as «Delakson» («Delana», Kyiv, Ukraine), «Nukdez» («Inter Chemical group», Ukraine), «Dezynfektor», «Septacid», «Steridial W» (Impuls, Gdańsk, Poland), «Sterioks», «Sterisyl» (Baltiachemi, Estonia) etc. This desinfectants doesn't form toxic wastes and its decomposition products are environmentally friendly. The HP and PAA mixture shows bactericidal, tuberculocidal, virucidal, sporocidal and fungicidal properties and intended for the final, flow-line and preventive object disinfection in health care institutions and nidus of intestinal and respiratory infections of bacterial and viral etiology, tuberculosis, dermatophytes and Sibirian plague, as well as for the sterilization of medical products (including rigid and flexible endoscopes) and suture

material. The preparation is used in the form of water working solutions and it's prepared straight before the usage. It is allowed to store unused working solution for 5 days after producing in a container with a tightly closed lid at room temperature. The daily necessity of working solution concentration control is evident.

Aim. The aim of the present work is to determine the feasibility of HP quantitative determination in PAA disinfectant «Delakson» by cathodic voltammetry using carbositall rotation electrode (CE) as indicating electrode.

Materials and methods. «Delakson» disinfectant is a sample preparation, which was used for the analysis. A new voltammetric method for the quantitative determination of hydrogen peroxide in peracetic acid disinfectant «Delakson» on the carbositall rotating electrode in the interval of potential +1.0…–1.0 V (the reference electrode Ag, AgCl/KCl [sat]) (E_p = –0.65 V) was proposed.

Results and discussion. It has been experimentally proved that height of HP reduction peak decreases and the reduction peak potential is shifted towards more electronegative values with the background electrolyte pH increasing from 2.15 to 4.78. The maximum peak (I_p) is observed at pH approximately 2.5-3.7 and analytical signal almost disappears at pH about 4.78. The pH effect on the peak potential (E_p) shows the following: when pH value increases in the interval from 3 to 4, E_p remains almost constant, but E_p decreases markedly to the negative value with pH increasing over 4. That is why the optimum pH for analysis is approximately 3.6. The linear relationship has been observed in the HP concentration range $(0.94–3.76)\times10^{-4}$ mol L^{-1}, the calibration curve equation was $I_p = (3.57\pm0.26)\times10^3 c + (0{,}11\pm0{,}07)$ (r = 0.998). Determining HP in the model solution with the concentrations of 1.88×10^{-4}, 2.35×10^{-4} and 2.82×10^{-4} mol L^{-1} the RSDs were 0.028, 0.018 and 0.011 respectively (δ = –0.77…+0.92 %); LOD = 2.15×10^{-5} mol L^{-1}, LOQ = 7.18×10^{-5} mol L^{-1}. Determining HP in the test solution of «Delakson» disinfectant the RSD was 0.012 (δ = +1.69 %).

Conclusions. Thus, new voltammetric method of HP determination in PAA disinfectant "Delakson" on CE has been developed and the possibility of its quantitative determination has been shown.

SYNTHESIS AND DEVELOPMENT OF THE METHOD OF QUALITY CONTROL FOR THE BIOLOGICALLY ACTIVE SUBSTANCE – 3,5-DIBROMO-N-(2'-CARBOXY-4',6'-DIBROMOPHENYL)ANTHRANILIC ACID

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Introduction. Recently, preparations based on anthranilic acids have once again won the pharmaceutical market. Scientists are continuing to search for and create drugs based on them, since this chemical class of compounds has less toxicity, but at the same time high therapeutic efficacy.

Aim. Considering the above, the patented substance 3,5-dibromo-N-(2'-carboxy-4',6'-dibromophenyl)anthranilic acid was chosen as the object for our research. It resynthesis and development of quality control methods.

Materials and methods. Infrared spectra were taken on a «Specord M-80» spectrophotometer in potassium bromide tablets (1% concentration) and the «Testcan Shimadsu FTIR 8000 series» Fourier Transmitter Infrared Spectrophotometer.

UV spectra were measured on a spectrophotometer SF-46. Concentrations of compound $1*10^{-3}$ – $1*10^{-5}$ mol/l.

The PMR spectra were recorded on the «Varian Mercury VX-200» spectrometer. The solvent was dimethylsulfoxide d6.

Chromatomas spectra were recorded on Agilent 1100 LC MSO SL, chemical ionization, Zorbax C18 liquid chromatography column, eluent-acetonitrile-formate buffer (gradient).

Elemental analysis of the synthesized compounds was performed on the «Hewlett Packard» automatic analyzer M-185. Chromatography in a thin layer of sorbent was carried out on the plates «Silufol UV-254», and the manifestations were UV-light or iodine pairs.

It purity test, namely the determination of the accompanying impurities, was carried out using thin-layer chromatography. IR-, UV-, and ^{1}H NMR-spectroscopy were used for identification and qualitative reactions and performed for the corresponding functional groups according to the SPF.