Allergenic properties of the medicinal preparation (hereinafter referred as MP) for AMGV were studied by the reaction of general anaphylaxis in guinea pigs, as well as immunotoxic properties, including the evaluation of humoral (by hemagglutination reaction, HAR) and T-cell (by the delayed-type hypersensitivity reaction, DTHR) and the immunity of mice-hybrids of the first generation (CBA x C57BL) of both sexes.

Materials and methods: common methods and techniques used at the preclinical stage in assessing the allergenic and immunotoxic properties of MPs.

The reaction of anaphylaxis was assessed by external manifestations: respiratory rate, dyspnea, discoordination of the gait, rumpleness of the coat, nose scratching, convulsions, and death. The evaluation was performed in the early (5-10 minutes after intracardiac administration), distant (2 hours of follow-up) and late (after 18 hours) periods. The intensity of the reaction of anaphylaxis was assessed in Weigle scores.

The study of T-cell immunity was carried out by determining the local inflammatory response, which was assessed by measuring the thickness of the paws (DTHR) 24 hours after the administration of the resolving dose of erythrocytes of the sheep under aponeurosis of the right hind paw of mice.

Evaluation of humoral immunity was carried out by staging of HAR. The results were recorded visually.

During the study of immunotoxic properties of medicinal preparation AMGV we found the following:

- with the administration of medicinal preparation AMGV in a sensitizing dose of 0.013 ml / ind., a moderate shock response was recorded in two males. In females, the signs of manifestation of the reaction of anaphylaxis with the use of this dose were not found. In the groups of animals, with the introduction of a tenfold sensitizing dose (0.13 ml/ind.) in females and males, 2 individuals were detected in each group with a moderate shock reaction intensity, which resulted in an anaphylaxis intensity relative to a positive control of 24.95%;
- intramuscular intravenous administration of medicinal preparation AMGV in therapeutic and 2.5 times higher dose, did not cause a change in the response of cellular immunity in the delayed-type hypersensitivity test;
- the course administration of drugs at a dose of 50 ml / kg did not cause depression of the hemagglutination reaction; the results were within the limits of the values registered in the group of animals of intact control.

In conclusion, the developing infusion medicinal preparation for parenteral nutrition based on amino acids AMGV does not have allergenic and immunotoxic properties.

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THE STUDY OF PHOTO-SWITCHES BASED ON QUANTUM DOT-PHOTOCHROMIC MOLECULE COMPLEXES BY SPECTROPHOTOMETRY METHODS

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Currently, the research in the field of photochromic systems exhibiting modulation of fluorescence is carried out using organic phosphors. The use of quantum dots provides increased work life and image contrast compared to organic phosphors. Photo-switches based on quantum dot-photochromic molecule complexes which providing non-destructive reversible modulation of the fluorescence of quantum dots due to reverse transformations of photochromic compounds can be created.

Keywords: photo-switches, quantum dot, photochromic molecule, diaryletene, absorption spectrum.

Photo-switches based on quantum dot-photochromic molecules complexes which providing non-destructive reversible modulation of the fluorescence of quantum dots due to reverse transformations of photochromic compounds can be created by using the effect of inductive resonance energy transfer. The non-destructivness of reading of the fluorescent signal is achieved by choosing the spectral region of excitation of the quantum dots. This region does not overlap with the absorption bands of both forms of the photochromic compound. At present, the

research in the field of photochromic systems exhibiting modulation of fluorescence is mainly carried out using organic phosphors, which have a limited service life and insufficient image contrast. The particular interest is the study of the efficiency of photo-induced modulation of photochromic systems based on the quantum dots, since the use of quantum dots provides an increased service life and image contrast compared to organic phosphors.

Inductive-resonant energy transfer is a mechanism of energy transfer between two chromophores (from the donor to the acceptor), which occurs without intermediate emission of photons and is the result of the dipole-dipole interaction between the donor and the acceptor. In this study, complexes of initial quantum dots with photochromic compounds were created. The study of these complexes and initial quantum dots was carried out by using the spectrophotometry methods. Of the photochromic compounds, the photochromic diaryletene F-18 was chosen as a donor in the "QD-photochromic molecule" complex.

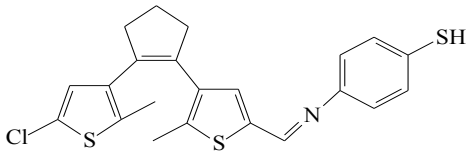

Fig. 1. Compound F-18

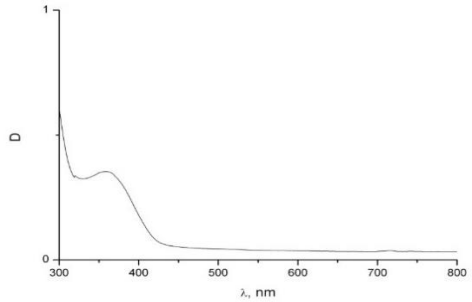

*Fig. 2. Absorption spectrum of the compound F-18 in toluene; C = 7 * 10-5M*

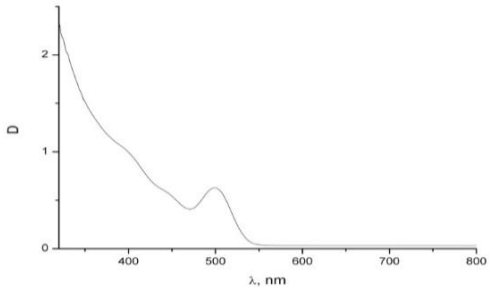

Fig. 3. Absorption spectrum of purified CT in toluene

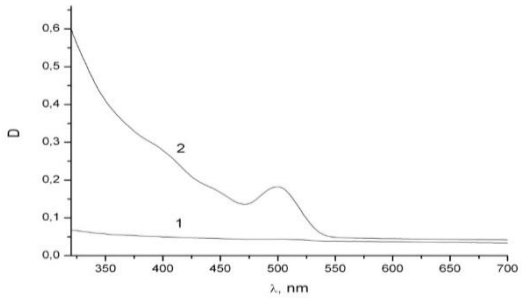

Fig. 4. Absorption spectrum: mixtures of toluene and methanol (1) and the complex "CT-photochromic F-18 molecule" in toluene (2)

MODIFICATION OF POLYELECTROLYTE MICROCAPSULES BY DYE MOLECULES RHODAMINE 6G

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Intensive studies of multilayer polyelectrolyte microcapsules made it possible to introduce various functional properties into these delivery systems. For example, the inclusion of nanoparticles, dye molecules, which react to the external effect in the shell of microcapsules, can provide greater functionality. In this study, the modification of the capsules by the Rhodamine 6G dye molecules from water and ethanol solutions was carried out.

Keywords: microcapsule, Rhodamine 6G, layer-by-layer adsorption, polyelectrolyte, absorption spectrum.

The inclusion of biologically active compounds in order to target them in vivo delivery is a problem for molecular and nanotechnology. Depending on the specific ultimate goal of a diagnostic or therapeutic nature, strategies are developed and the interrelated tasks of encapsulating certain chemical reagents, transporting them in the body and a controlled (sometimes multi-stage) biochemical reaction are solved. Micro and nanocapsules obtained by layer-by-layer adsorption of oppositely charged polyelectrolytes on colloidal particles are promising as a means of drug delivery.