

## **RATIONALE CHOICE OF THE CONCENTRATION OF THE ACTIVE SUBSTANCE NITROFURAL FOR THE DEVELOPMENT OF GEL TECHNOLOGY**

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**Introduction.** The concentration of the active substance in the drugs presented on the modern pharmaceutical market based on nitrofurans is primarily due to its low solubility in water (1 : 4200). Aqueous solutions of nitrofurans for external use are used in a concentration of 0.02 %. Analysis of the literature indicates that the active substance in this concentration shows the required therapeutic efficacy. Based on this, a series of gel compositions with solid dispersions of nitrofurans with an active substance concentration of 0.02 % was developed using different combinations of excipients. The low solubility of nitrofurans limits its use in the form of an aqueous solution and the introduction of soft water-soluble dosage forms by type of solution in a concentration of more than 0.02 %.

Analysis of the literature has shown that to date, many attempts have been made to increase the effectiveness of the active substance by increasing the concentration. Known works in which the active substance was introduced into hydrophobic and hydrophilic dosage forms in higher concentrations (0.06–0.2 %) by type of suspension.

**The aim of the study** was to conduct research on the selection of the concentration of nitrofurans in the developed gel base.

**Materials and research methods.** Derivative of nitrofurans – nitrofurans, excipients – polyvinylpyrrolidone and polyethylene glycol.

**Results.** To enhance the pharmacological action due to the introduction of nitrofurans at a concentration of 0.2 % in industrially produced ointment of the suspension type. It is known that this method of administration of the active substance is not favorable for the distribution of the active substance in the base, the release and completeness of the pharmacological action. At the same time, the solubility of nitrofurans in ethanol is higher, registered and widely used for external use alcohol solution with a higher concentration of 0.067 %.

Reception of solid dispersions – allows to increase solubility in water, and, consequently, to increase concentration of the dissolved active substance, in particular and in water-soluble soft dosage forms. Thus, the use of the technological method of obtaining solid dispersions of nitrofurans with polyvinylpyrrolidone and polyethylene glycol allows to increase the solubility of nitrofurans in 2 times, which makes it possible to obtain solutions of nitrofurans with a concentration of 0.04 %.

**Conclusions.** Based on these results, it was decided to develop the composition and technology of the gel with solid dispersions of nitrofurans with a concentration of active substance in the dosage form of 0.02 %. The use of nitrofurans dispersions allows increasing the concentration of the active substance in the gels to 0.02 %, which increases the therapeutic effect of the drug.