

the active substance by increasing solubility and dissolution rate; slow down or modify the release of the active substance.

**Aim of the research** to develop a solid dispersion to create a gel with nitrofurantoin at a concentration of 0.02 %.

**Materials and methods.** In the analysis of the literature data, it was found that to improve the biopharmaceutical properties in the creation of a solid dispersion, polyvinylpyrrolidone and polyethylene glycol with different molecular weights are most often used as carrier polymers.

**Obtained results.** In the proposed technology of obtaining gels of the active substance with the polymer is introduced into the soft dosage form in the form of an aqueous or water–alcohol solution (in the case of polyvinylpyrrolidone–10000 ± 2000) or in the form of a solution in polyethylene glycol–400. The peculiarity of the developed technology is the lack of solid dispersion as an intermediate product, which requires the introduction of additional methods of quality control at the intermediate technological stage of production.

The concentration of nitrofurantoin in the drugs presented on the modern pharmaceutical market based on nitrofurantoin is primarily due to its low solubility in water (1: 4200). Aqueous solutions of nitrofurantoin 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 formulations with a solid dispersion of nitrofurantoin with an active substance concentration of 0.02 % was developed using different combinations of excipients. The low solubility of nitrofurantoin 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 %.

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

## **STUDY OF ULTRASONIC EXTRACTION OF CORN COLUMNS WITH STIGMAS**

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**Introduction.** Herbal extracts are commonly used both directly in both medicines and to create new medicines. Extracting of biologically active substances from plant materials into the extractant is the main stage of obtaining extracts. One of the promising methods is the use of ultrasound. This is a modern, highly efficient, cost–

effective, highly productive, environmentally friendly technological process. Ultrasound – elastic oscillations and waves whose frequency exceeds 15 – 20 kHz. Ultrasonic waves have a high energy and are able to propagate in solid, liquid and gaseous media.

**Aim of the research** is to study dependence of the yield of extractives on the factors of ultrasonic extraction of corn columns with stigmas.

**Materials and methods.** The object of study – corn columns with stigmas. We used generally accepted standard, described in the literature methods and devices, and new methods of research of drugs that allow to objectively assess their quality, based on the obtained statistically processed results in conducting research. Alcohol–aqueous extraction was obtained by the following method: 1.0 g (exact portion) of raw material was placed in the flask, 30 ml of extractant was added to a certain particle size and extracted for 30 min at a temperature of 60 °C in an ultrasonic bath. In each series of experiments, the values of only one of the factors were changed, leaving the values of the others unchanged.

**Obtained results.** Ethanol was used as an extractant of the following concentrations: 30, 70, 85, 96 %. To study the effect of the degree of grinding of plant material on the yield of the amount of flavonoids, the raw material was subjected to grinding into particles passing through a sieve with a hole diameter of 0.5; 1.0 and 2.0 mm. The dependence of flavonoid yield on the ratio of raw material and extractant with hydromodule 1:10, 1:20, 1:30 was studied. To intensify the processes of transition of biologically active substances from plant raw materials, it is necessary to take into account the temperature factor and the extraction time. The ultrasound extraction time was 10, 20 and 30 minutes. The content of flavonoids in terms of luteolin was determined in the extractions. It is established that the most effective extraction of flavonoids occurs at the following extraction modes: extractant – 70 % ethanol; degree of grinding of raw materials – 1 mm, ultrasonic time – 30 minutes, the ratio of raw materials and extractant – 1:20, the temperature of the ultrasonic bath – 60°C.

**Conclusions.** Factors and conditions of ultrasonic extraction of corn columns with stigmas are established and will be used in further research in the manufacture of dry extract.

## USE OF ACHYRANTHES IN THE TREATMENT OF UROLITHIASIS

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**Introduction.** Treatment of kidney and urinary tract diseases, especially their chronic forms, is often a long, laborious and complex process, in which both underestimation and overestimation of both drug therapy with synthetic drugs and herbal medicine are quite important. Of course, first and foremost, especially in the acute process, should be prescribed a variety of drugs, defined by treatment standards. Withdrawal from the use of drugs in some cases can lead to chronic disease,