# ABSTRACT&REFERENCES

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**DEVELOPMENT OF METHODICAL APPROACHES TO THE ASSORTMENT MANAGEMENT OF PHARMACY NETWORKS BY PRINCIPLES OF CATEGORYCAL MANAGEMENT**

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*The most responsible business is determining the correct strategic course of the pharmaceutical organization and the directions of increasing its competitiveness, as it forms the priorities of its activities in the relatively long-term perspective. Management of assortment is one of the most important functions of any pharmacy. The modern markets characterized as "the market of buyers" actively demands the introduction of pharmacy networks of modern tools and technology management of product assortment.*

***The aim of the work** is to develop methodological approaches to managing the assortment of pharmacy networks on the principles of categorical management.*

***Methods**. Systematic and logical analysis, methods of comparative, documentary, structural-functional and economic-statistical analysis were used in this work.*

***Results of the research**. The algorithm for managing the product assortment in pharmacy networks was developed for efficient management of the assortment of pharmacy networks, which is based on the principles of categorical management, and involves: definition of product categories, their internal structure and signs, upon which the medicines will be grouped (according to ATC classification (first level)); analysis of the main financial and economic indicators by the selected product categories; determining the role of each product category in accordance with its influence on the achievement of pharmacy network's goals; studying the demand for each product category and its internal content; assessment of the current state of commodity categories, its structure and determination of possible changes in the work with its assortment content in the future; optimization for each product category of the entire chain of movement of goods from the purchase and formation of inventory to direct sales; substantiation of assortment policy on selected criteria and evaluation its efficiency; implementation assortment policy. The proposed methodological approaches were worked out on the example of one of the investigated pharmacy networks.*

***Conclusions**. It was proved that categorical management is an instrument of management assortment policy of pharmacy networks, which allows to allocate groups of pharmaceutical products, which will be aimed at fulfilling certain goals of pharmacy networks, which respectively will promote implementation of the strategy of pharmacy networks development*

***Keywords**: management assortment, categorical management, pharmacy networks, strategic goals, product categories*

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**DESIGN OF THE TECHNIQUE OF QUANTITATIVE DETERMINATION OF THE BIOLOGICAL ACTIVE SUBSTANCES IN THE EXTRACT OF A BUPLEURUM AUREUM IN THE COMPOSITION OF A COMBINED DOSAGE FORM**

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*Nowadays, combined medicines are becoming more and more widespread. The combination of active pharmaceutical ingredients is necessary to increase the therapeutic effect or shorten the treatment period, or prevent possible complications.*

***The aim of the work** is to develop a method for the quantitative determination of biologically active compounds of dry extract of Bupleurum aureum as part of a combined dosage form in the form of a syrup in a mixture with loratadine.*

***Methods.** Identification of flavonoids in the extract was carried out by HPLC. To determine the quantitative content of flavonoid substances, the method of absorption spectrophotometry in the visible spectral range was used, based on the formation of colored complexes of flavonoids with a solution of aluminum chloride in an acidic medium.*

***Results of the research.** As a result of the research, a spectrophotometric method was developed to quantify the amount of flavonoids in the combined syrup with loratadine and Bupleurum aureum dry extract. The HPLC method establishes the flavonoids contained in the extract.*

*The resulting colored complexes of alcoholic extracts from the syrup after the reaction of interaction with a solution of aluminum chloride in an acetic acid medium were characterized by the presence of absorption maxima at a wavelength of 412 nm. The effect of background absorption is insignificant noise δ=0.25 %, max δ=0.51 %. The studied validation characteristics of the technique, which indicate a linear dependence of the amount of flavonoids in terms of rutin in the range of concentration of Bupleurum aureum extract in syrup from 80 % to 120 %, since the value of the correlation coefficient (r) is 0.9999≥0.9981; the angular coefficient of the linear dependence (b) is 0.9947, the free term of the linear dependence (a) is 0.52≤1.60. The technique is precise, since the value of the relative confidence interval is less than the critical value for the convergence of the results: Δ %=0.37≤2.60 and the criterion of insignificance of systematic error is fulfilled δ=0.01.*

*Conclusions. The HPLC method established the presence in the dry extract of the aerial part of the Bupleurum aureum substance of the flavonoid structure, which became a prerequisite for the standardization of the active substance in the syrup in the sum of these biologically active compounds. A spectrophotometric method of quantitative determination in the visible region of the sum of flavonoids in terms of rutin in the combined dosage form in the form of a syrup in the presence of another active ingredient loratadine has been developed*

*Keywords: Bupleurum aureum, syrup, chemical composition, flavonoids, visible spectrophotometric method, HPLC*

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**STANDARDIZATION PARAMETERS OF MODIFIED EXTRACTS FROM LEONURUS CARDIACA HERB**

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*To date, in Ukraine there are 8 combined herbal medicines of Leonurus cardiaca registered in Ukraine, 10 national enterprises produce tincture of it and 3 national manufactures pack it herb. Tincture of Leonurus cardiaca has certain disadvantages: the instability of the chemical composition, and, accordingly, pharmacodynamics; contains ethyl alcohol, therefore it is contraindicated for children, pregnant women, persons whose activities require increased attention, etc. In this regard, the development of standardized drugs based on the tincture of herb of dog nettle, which would not contain ethanol in its composition, is an urgent task*

***Aim.*** *Determine the parameters of standardization of modified dry extract from tincture of Leonurus cardiaca and develop a draft quality control methodology for this substance.*

***Methods of the research.*** *The object of the study was dry extracts based on Leonurus cardiaca tinctures (Manufacturer: OAO "Lubnifarm", series 062021), which was modified with lysine. For analysis, three series of extracts were used.*

*In determining the parameters of standardization of the obtained dry extract of Leonurus cardiaca herbs used standard pharmacopoeial techniques. The basis of development of quality control methods for dry extract of Leonurus cardiaca was taken SPHU monographs "Leonurus cardiaca grass", "Leonurus cardiaca tincture" and "Lysine hydrochloride".*

***Results of the research.*** *Parameters of standardization of modified dry extract of Leonurus cardiaca herbs are determined. It is proposed to control the quality of the obtained extract according to the following parameters: description, solubility, identification of the extract with TLC by the content of flavonoids, iridoids and lysine, mass loss during drying, residual organic solvents (ethanol), microbiological purity, heavy metal content, quantitative standardization conducted according to the content of flavonoids (not less than 2 %) and iridoids (not less than 0,5 %). Three series of extract were analyzed in accordance with the proposed MQC project, which fully met all the indicators.*

***Conclusions.*** *The parameters of standardization of modified dried extract of tincture of Leonurus cardiaca, which was obtained using lysine, were determined, and a draft quality control methodology was developed for this substance. Three series of extract were analyzed in accordance with the proposed MQC project, which fully met all the indicators*

***Keywords:*** *Leonurus cardiaca, grass, tincture, modification, lysine, dry extract, biologically active substances, parameters, standardization*

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**STUDY OF MEDICAL KITS FROM PASSENGER TRAINS**

**p. 23-31**

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***Aim*** *of the article is to study the composition of the medical first aid kit, which should be equipped with trains.*

***Materials and methods.*** *The study used methods such as content analysis, analytical, comparative and logical, expert surveys. The study applied the expert survey, which was attended by the heads of the trains, and conductors, a total of 453 people. The survey involved specialists of the regional branches of the Ukrainian Railway, namely, Lviv, South-Western, Southern, Odessa, Prydniprovska Railways. Conclusions of the respondents are reasonable and convergent, which is confirmed by the concordance coefficient and Pearson criterion based on the number of freedom, with regard to the number of freedoms that exceed the normative values. Content analysis was used to study the regulatory framework for the staffing of trains with medical kits.*

***Results.*** *The questionnaire determined that all respondents were convinced of the need for a medical kit in the train, but a significant part of the respondents are not aware of its presence and location in the train. 75.70 % of respondents believe that there should be two types of first-aid kits in the train – from the train manager and the conductor. Only 53.70 % of the respondents are well-known for the medical first-aid kit, many of whom consider it necessary to improve the composition of the first-aid kit and regular attendance of the respective courses for the first medical aid and obtaining certificates.*

*Based on the content analysis, it was determined that a carriage should be equipped with one medical first aid kit and one additional first aid kit train in case of an accident. When staffing first-aid kits, it is recommended to orient the first-aid kits for automobiles.*

***Conclusions.*** *The composition of first-aid kits for medical personnel, which are equipped with trains of Ukraine, Russia, the Republic of Kazakhstan and the Republic of Belarus, has been investigated. The advantages and disadvantages of these first-aid kits are determined. The directions of perfection of the medical first-aid kits, which are equipped with the trains of Ukraralizytsia, are also offered*

***Keywords****: first-aid kit, medical, train, accident, railway, head of train, injured, drug, medical product, conductor, first aid*

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**METHODOLOGICAL APPROACHES TO THE DESIGN OF SOLID DOSAGE FORMS OF NOOTROPIC ACTION ON THE BASIS OF PLANT RAW MATERIALS**

**p. 32-38**

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*The general methodology of design of solid dosage forms from plant raw materials on the example of dry extract and shredded roots with rhizomes of the Scutellaria baicalensis and their stability in the process of storage has been substantiated.*

***Aim.*** *To find out general methodological approaches for the development of solid dosage forms with plant material of Scutellaria baicalensis.*

***Materials and Methods.*** *We have offered to develop two dosage forms containing medicinal plant material and a dry extract of the Scutellaria baicalensis – tablets and capsules. The stability of the developed formulations was studied by the method of prolonged storage at a temperature (25±2) °C, and relative humidity of air 60±5 %. Quality indices were monitored during (0, 3, 6, 9, 12, 18, 22, 24, 27 months).*

***Results.*** *In accordance with the proposed methodological approach, the first stage of the research was the study of the current state of phytopreparations with nootropic and sedative effects creation.*
*Factors which can affect both the substance itself and the quality of the finished dosage form have been established. Natural sources of mineral complexes (macro- and microelements (ME)) have been investigated. Moisture absorption and its impact on physical and chemical stability and technological behavior during preparation of the medicinal product were studied. A group of biorelevant media that allow simulating the behavior, dissolution and adsorption of drugs in the gastrointestinal tract of the patient was applied.*

***Conclusions.*** *The methodological approach to the preparation of drugs on the basis of native vegetable raw material and dry extract (Scutellaria baicalensis) has been developed. The shelf life of tablets and capsules has been studied and it was determined that tablets and capsules are stable for 2 years of storage at a storage temperature of 15–25 °C; optimal packaging materials – polyvinyl chloride film and aluminum foil printed lacquered*

***Keywords****: Scutellaria baicalensis, methodological, approaches, plants, biorelevant, nootropic, technology, pharmaco-technological, tablets, capsules*

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**STUDY OF THE STABILITY OF ORGANOLEPTIC AND STRUCTURAL-MECHANICAL INDICATORS OF SEMI-SOLID PREPARATIONS WITH METAL NANOPARTICLES**

**p. 39-44**

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***Aim.*** *Research of the stability of organoleptic and rheological properties of semi-solid preparations with silver and gold nanoparticles.*

***Methods.*** *For the study of organoleptic parameters, a classic method for determining the stability with periodic control of dosage forms in two temperature regimens was used: 8–15 °C (cool place) and 15–25 °C (room temperature). To study the rheological characteristics of semi-solid preparations, a rotary viscometer with a system of coaxial cylinders was used.*

***Results.*** *We studied three medicinal forms based on silver nanoparticles – ointment, cream and gel, which can be promising for the use in dermatology, as well as two dosage forms based on nanoparticles of silver and gold for the use in dentistry and surgery for the treatment of infectious, purulent-inflammatory diseases of skin and mucous membranes of the oral cavity. Within 24 month of storage of dosage forms in a dark place in dark glass containers every 6 months the following parameters: homogeneity, odour, colour and pH were monitored. Rheological parameters were investigated after the preparation of dosage forms and after 24 months of storage. According to the rheological indicators rheograms of stream semi-solid preparations were constructed, and also indicators of mechanical stability were calculated. It was found that all samples are coagulation systems with a*

*pseudoplastic flow type. The obtained rheograms contain loops of hysteresis, which characterize their certain degree of thixotropy.*

***Conclusion.*** *According to the results of studies the stability of organoleptic characteristics of semi-solid preparations at a storage temperature 8–15 °C in a place protected from light is established. According to the rheological properties, samples of studied semi-solid preparations have a good ability to apply on the skin and extrusion from tubes*

***Keywords:*** *silver nanoparticles, gold nanoparticles, ointments, creams, gels, stability, rheological properties*

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**PHARMACOTECHNOLOGICAL STUDIES OF MODEL SAMPLES IN THE DEVELOPMENT OF A COMPOSITION OF SOLID GASTROSOLUBLE CAPSULES**

**p. 45-48**

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***Aim****: the aim of our work was to experimentally substantiate the choice of auxiliary substances in the development of the composition of solid gastro-soluble capsules for the treatment of diseases of the gastrointestinal tract*

***Methods:*** *pharmacotechnological research methods were used*

***Results.*** *Conducted research on the development of the composition and technology of hard gelatin gastro-soluble capsules with a dry extract under the conventional name urocholum. The effect of a number of auxiliary substances and dry extract on the pharmacotechnological properties of the powder mass for filling capsules by the parameters of moisture absorption, fluidity and bulk density is studied. The optimal ratio of fillers and lubricants relative to the active pharmaceutical substance. The optimal composition of capsules that contain 50 mg of dry extract of urocholum and excipients in the amount of 0.210 g (lactose in the amount of 0.2048 g and magnesium stearate – 0.026 g) has been developed.*

*Analysis of the technological parameters of the capsules made on the basis of the developed composition showed that they meet the requirements of the State Pharmacopoeia of Ukraine.*

***Conclusions:*** *it has been experimentally proved that it is expedient to use in the composition of capsules with a dry extract of the urocholum with complex of excipients – lactose in the amount of 0.2048 g and magnesium stearate – 0.026 g (per capsule)*

***Keywords:*** *gelatin capsules, composition, dry extract, excipients, technology, gastrointestinal diseases*

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