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NATIONAL UNIVERSITY OF PHARMACY

## **TOPICAL ISSUES OF NEW DRUGS DEVELOPMENT**

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in the territory of Central Kazakhstan was carried out. There are significant differences between the two chemotypes of *T. serpyllum* grass by the amount and component composition of the essential oil, as well as by the quantitative content of flavonoids, phenol carboxylic acids, tannins, triterpene compounds, water-soluble polysaccharides, pectic substances, amino acids and organic acids.

## LICHENS ARE SOURCES OF BIOLOGICAL ACTIVE COMPOUNDS

Pinkevych V. O.

Scientific supervisors: assoc. prof. Kyslychenko O.A., assoc. prof. Novosel O. M.

National University of Pharmacy, Kharkiv, Ukraine

cnc@nuph.edu.ua

**Introduction.** Lichens are peculiar and relatively poorly understood group of symbiotic organisms which consisting of a fungus and algae. Lichen compounds have the different biological activity, therefore lichens widely applied in medicine and are part of different pharmaceutical drugs. So, on the pharmaceutical market of Ukraine are registered and are successfully used drugs based on extract of thallus of island moss, such as «Herbion syrup of Island moss», pastilles «Isla mint» and «Isla moss».

In Ukraine there are more than one and a half thousand species of lichens, but their potential as sources of biological active substances for today is insufficient.

**Aim.** The aim of work is rationale for the application of lichens as the sources of biological active compounds for creating effective domestic medicines based on lichen raw materials.

**Materials and methods.** Information retrieval was conducted with the help of scientometric databases.

**Results and discussion.** In the world there are about 25 000 species of lichens, which are different from each other by the size, form, coloring and features of growth. They grow in all geographical zones and on the different areas. By the type of thallus, lichens are subdivided on leafy, bushy and scaling, or cortical. Thallus of lichens represents a bunch of intertwined fungus hyphes, between which groups of or singly located cells of green algae, and in some – cyanobacteria. In lichens detected different groups of biological active substances, big part of which are specific and not contained in others living organisms (for example, lichen acids). This stipulates their wide use in official and traditional medicine for treatment of diseases of gastrointestinal tract, respiratory system, infectious and viral diseases, as immunomodulating, antioxidant, antiproliferative, antiinflammatory, painkillers, antipyretic, antineoplastic, hepatoprotective and detoxification agents. Besides that, lichens are used as dyes, for the production of litmus and in the perfume industries.

**Conclusions.** Lichen substances have a wide spectrum of medicinal properties, but their therapeutic potential has not been sufficiently studied. On pharmaceutical market of Ukraine drugs, based on lichen substances, are presented exclusively by foreign representatives. That's why promising and relevant is the study of domestic species of lichens as sources of biological active compounds with purpose of further use in medicine and pharmacies. Using of these substances will expand the range of pharmaceuticals of natural origin, which effectively influencing on human health.

## DEVELOPMENT OF COMPOSITION FOR HARD CAPSULES OF ANTIINFLAMMATORY ACTION FOR JOINTS TREATMENT

Pisarenko O. S.

Scientific supervisor: assoc. prof. Slipchenko G. D.

National University of Pharmacy, Kharkiv, Ukraine

galinaslipchenko@ukr.net

**Introduction.** One of the tasks of domestic pharmacy is the expansion of the range of medicinal products and improvement of therapeutic properties of existing ones. Causes of bones and joints diseases are numerous. They are the lack of proper physical load on the muscular apparatus of the joint, sedentary lifestyle, metabolic disorders, which lead to changes in the composition and properties of synovial fluid, as well as injuries, disorders in the functioning of the immune system and various infections.

In Ukrainian pharmaceutical market there are many domestic manufacturers of this group of medicines. For symptomatic treatment of joints inflammation use both herbal and synthetic drugs. We believe, that development of hard capsules based on plant origin raw for treatment of joints inflammation is an important task of current pharmaceutical technology, as herbal medicines render minimum side effects on human body compared to medicines of synthetic origin.

**Aim.** To choose composition of hard capsules for treatment of joint diseases.

**Materials and methods.** As objects of the study shredded roots of burdock and livestock and flax seeds were selected. In the work used physical, pharmaco-technological methods of logical, graphical and direct tracing: methods of determining the bulk density, flowability, the angle of natural slope for the evaluation of the technological properties of powders and granules, the determination of the average weight and homogeneity of weight, disintegration of capsules to control their quality.

**Results and discussion.** The study of physico-chemical and pharmaco-technological properties of crushed medicinal plant materials and mixture thereof showed poor flow characteristics. Experimental studies conducted have shown the impossibility of using the method of direct compression.

The use of the method of wet granulation has been proposed to increase the flowability. The following moisturizing agents such as 3 -7% starch paste, 1-3.0% methylcellulose (MC) solution and 5-15% polyvinylpyrrolidone (PVP) solution were investigated to study the influence of binding substances on physical and mechanical properties of the granules and the quality indicators of the granules. The study of the granules drying parameters has shown that the optimal conditions of the process using a drying cabinet is the temperature of  $60 \pm 5$  °C, drying time was 1.5 hours, the thickness of the granules layer 0.8-1 cm.

**Conclusions.** Based on the research conducted, an optimal composition and technology for the production of hard herbal capsules for the treatment of inflamed joints have been developed.

## DEVELOPMENT OF ANTIOXIDANT DRUG

Pohrebnyak V. V.

Scientific supervisor: prof. Kovaliov V. N.

National University of Pharmacy, Kharkiv, Ukraine

vika.96@bk.ru

**Introduction.** During the normal human activity, by the action of metabolic prececces, such as respiration and phagocytosis, and the cells produce free radicals. There are antioxidant defense systems in the cells to neutralize the activity of harmful free radicals. Nevertheless, in pathophysiological conditions, antioxidant systems can be not effective enough. To eliminate the harmful radicals, our nature requires antioxidants.

**Aim.** The purpose of this work is development and analysis of the drug, which would have antioxidant activity.

**Materials and methods.** The object of the study was an herbal mixtures, consisting of leaves of *Ribes nigrum*, *Schisandra chinensis*, *Rubus vulgaris*, *Fragaria vesca* and herba *Chamerion angustifolium*. These plants were selected based on according to literature and on the results of the analysis on the integral value of antioxidant activity (extractant - water, standard - gallic acid).

**Results and discussion.** In the herbal mixtures, the basic numerical values were determined (extractives, moisture, ash) and ascorbic acid, flavonoids, tannins, free organic acids and hydroxycinnamic acids were determined quantitatively. For the herbal mixtures, the comprised: ascorbic acid – 0,15%, tannins – 13,54%, flavonoids – 10,68%, hydroxycinnamic acids – 2,4%, free organic acids – 12,6%. From this herbal mixture, a dry extract was obtained. Extraction was performed with water. The dry extract was also transferred to the pharmacology in order to prove the antioxidant activity of the herbal mixtures and to determine appropriate doses that shows antioxidant activity on humans. Experiment was performed on 40 white nonlinear rats with weight 200 – 240 g., which were equally divided into 5 test groups. Ascorbic acid was used as a comparison drug. During the experiment it was found that a significant antioxidant effect was observed at the dose of 200 mg/kg. The herbal mixtures specification was drawn up and quality control methods were compiled.

**Conclusion.** The herbal mixtures is promising future study. In future, it is planned to pick up an appropriate dosage form and its dosage for antioxidant drug.