The materials of the study are the normative document regulating the provision of medical care to patients with multiple sclerosis. It is a clinical protocol approved by the Order of the Ministry of Health on August 17, 2007 N 487 "On approval of clinical protocols for the provision of medical care in the specialty Neurology". Also we used State register of drugs.

Methods of research. For marketing analysis, we analyzed the registration of interferon preparations, which are included in the protocol for the treatment of patients with multiple sclerosis.

Research results. According to the State registration of medicines of Ukraine, as of 12.12.2018 46 preparations of Interferon group (L03AB) were registered on the domestic pharmaceutical market. Among the foreign manufacturers of manufacturers are: F. Hoffmann-La Roche AG, Switzerland - 4 trade names of drugs, or 40% of the total number of registered foreign drugs; Biosidus S.A., Argentina, Merck Serono, Italy and Boehringer Ingelheim, Germany. An analysis of the domestic manufacturers of preparations of the interferon group, found that the following are the leaders of the pharmaceutical industry. the company: "VALARTIN PHARMA Ltd." - 22 trade names of pharmaceutical products, LLC "FZ" BIOFARMA -13 products of medicinal products, "Valartin Pharma Ltd." - 11 trade names, LLC "Scientific and production company" Interfarmbiotek "- 10 names of drugs. An analysis of interferon drugs was conducted, for medicinal forms. It was established that the main part consists of drugs in the form of tablets of 19 drugs (or 41%). Solutions, suspensions and powders cover up to 20%.

Conclusions. Analysis of the data of the State registration of medicines of Ukraine established that 46 preparations of the Interferon group (L03AB) were registered on the domestic pharmaceutical market. Analysis by manufacturers, found that preparations of the interferon group consist of 88.9 % from the domestic drug production.

ANTIOXIDANT POWER ASSAY FOR SCREENING OF ANTIOXIDANTS IN CRANBERRY FRUITS AND ONION PEELS

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Introduction. Oxidative stress to the aim balance between free radicals and their stabilizing agent`s antioxidant enzymes in the body. The reactive oxygen species are the product of cellular metabolism in also normal condition and readily they are important for cellular signaling pathways. But in some extreme condition,

the accumulation of reactive oxygen species up to a limit can cause pathological condition responsible for various diseases. The reactive oxygen species generated through the process of oxidative stress are superoxide radical, hydroxyl radical and hydrogen peroxide. Oxidative DNA damage is mostly indirect and adduction of radicals to the DNA can cause mutation so that the cell may become cancerous.

Research methods. HPLC analysis was conducted with a Waters 2695 chromatographer (Waters Corporation, Milford, CT, USA) and a Waters 996 PDA photodiode matrix detector (Waters Corporation).

Chromatographic separation was carried out using an ACE C18 column (250 mm × 4.6 mm, 5.0 μm; Pennsylvania, USA). Elution was performed at a flow rate of 1 ml/min. The binary solvent system of the mobile phase consists of solvent A (0.1% TFA in water) and solvent B (acetonitrile). All solvents were filtered through a 0.23 μm membrane filter after ultrasonic degassing. A linear gradient program was applied as follows: 0–8 min, 5–15% B; 8–30 min, 15–20% B; 30–48 min, 20–40% B; 48–58 min, 40–50% B; 58–65 min, 50%; 65–66 min, 50–95% B. The column temperature was constant 25 °C. The injection volume of sample solution was 10 μL.

The powdered materials of plant (Cranberry fruits and Onion peels variety Mars) about 0.3 g were weighed into a volumetric flask and extracted with methanol (10 mL) in an ultrasonic bath at room temperature (20 ± 2 °C) for 20 min. The solutions were filtered through a membrane filter (0.45 μm) prior to use. After applying the HPLC-PDA detection system, the mobile phase containing the analytes was entered into a reaction coil through a mixing tee where the reagent ABTS were supplied (split ratio, 1:1) at the same time by a Gilson pump 305 (Middleton, WI, USA). Reaction coil made of TFE (Teflon) of 3 m length, 0.25 mm i.d. and 1.58 mm o.d. was used (Waters PCR module, Milford, CT, USA). The system with ABTS solutions was monitored as follows: temperature range set at 50˚C and the flow rate of the reagent was set at 0.5 mL/min. The ABTS solution were prepared following the methods described by Raudonis et al. The reaction of the antioxidant compounds with the ABTS reagent resulted in a colour change that was detected using an additional Waters 2487 UV/VIS detector (Waters Corporation). The detection of ABTS in solution was recorded at 650 nm wave lengthy. The signal strength, which is sensitivity related and reflected by the height of the negative peaks of the active compounds was chosen as the indicator for selecting analysis conditions. The post-column antioxidant activity of the extract compounds was assessed by comparing their activity to the standard, Trolox. Calibration curves were prepared from a Trolox ethanol solution at eight dilutions in the range of 0.625 –80mg/mL. The calibration curve that formed was equivalent to standard Trolox and was expressed by following quadratic equation: R2 (ABTS)=0.9991 (Y=-1.54*102x2+4.16*4.16*104x-2.08*104).

Research results. Methanolic extracts of Onion peels and Cranberry fruits were analyzed in order to evaluate the efficacy of antioxidant determination using ABTS assays. In Onion peels extract four phenolic compounds –quercetin, kaempferol, chlorogenic and neochlorogenic acids were identified (Fig. 2). In Cranberry fruits extract also four phenolic compounds – gallic, chlorogenic, neochlorogenic and p-coumaric acids were identified (Fig. 1). Onion peels extract (11260,44 μg/g) was more active than Cranberry fruits extract (886, 80μg/g). The calculated Trolox equivalent antioxidant capacity values of biologically active compounds in Onion peels extract confirmed that quercetin was the predominant radical scavenger. Gallic acid was the predominant radical scavenger in Cranberry fruits extract.

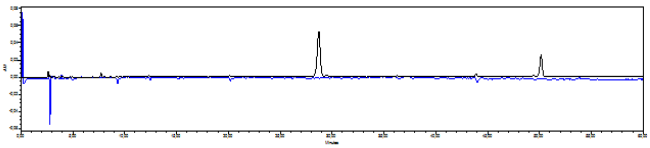

Fig 1. **Combined chromatograms of Cranberry fruits extract: chromatographic elution and post-column reaction with ABTS**

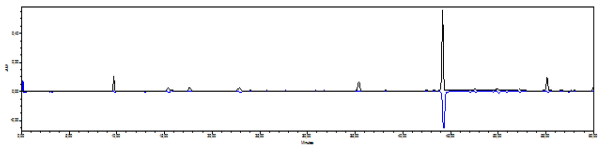

Fig 2. **Combined chromatograms of Onion peels extract: chromatographic elution and post-column reaction with ABTS**

Conclusions. The obtained results confirm the reliability of ABTS post-column assays for screening of antioxidants in complex mixtures and the determination of radical scavenging.

Referenses

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STUDY OF THE DYNAMICS OF PROBLEMS IN THE DEVELOPMENT OF THE RETAIL SEGMENT OF THE PHARMACEUTICAL MARKET OF UKRAINE

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