membranes to prevent infectious and inflammatory diseases of the genitourinary system and increase the clinical efficacy of personified treatment of these patients as an alternative therapy or in combination with other drugs, including antibiotics [Donders, 2017]. In this regard, the purpose of the work was to determine the effect of the original probiotic lactobacilli strains – *Lactobacillus casei* IMV B-7412, *L. acidophilus* IMV B-7279, *L. casei* IMV B-7280 individually and in different compositions on the vaginal microbiota spectrum of mice in the cases of urogenital tract infection.

The *in vivo* studies were conducted on female BALB/c line mice. Infection of the urogenital tract was modeled using intravaginal injection with a daily culture of *Staphylococcus aureus* 8325-4 (containing a plasmid of resistance to gentamicin) at a dose of 5 x 10^7 cells per animal, and *Candida albicans* U 2681 in a dose of 5 x 10^7 cells per animal. 24 hours after infecting, mice started to receive intravaginally 1 x 10^6 cells of lyophilized probiotic strains: *L. casei* IMV B-7280, *L. acidophilus* IMV B-7279 (deposited in the Ukrainian collection of microorganisms by the authors from D. K. Zabolotny Institute of Microbiology and Virology of NAS of Ukraine) and *L. casei* IMV B-7412 (deposited in the Ukrainian collection of microorganisms by the authors from Uzhhorod State University) individually and in different compositions, once a day for 7 days. To determine the spectrum of vaginal microbiota, vaginal discharges were plated on nine selective nutrient media (Merck, Germany; HiMedia, India). It was determined that probiotic strains *L. casei* IMV B-7412, *L. acidophilus* IMV B-7279 and *L. casei* IMV B-7280, as well as *L. casei* IMV B-7280 /*L. casei* IMV B-7412; *L. casei* IMV B-7280 / *L. acidophilus* IMV B-7279; *L. casei* IMV B-7280 / *L. casei* IMV B-7412 / *L. acidophilus* IMV B-7279 compositions caused normalization of microbiocenosis of infected mice vagina at different observation periods: there was an increase in the number of lactobacilli and bifidobacteria and a decrease in the number of coliform bacteria. These probiotic strains and compositions also effectively reduced the number of *S. aureus* 8325-4 and microscopic fungi in the vagina of infected mice. It should also be noted that *L. acidophilus* IMV B-7279 and *L. casei* IMV B-7412/ *L. acidophilus* IMV B-7279 and *L. casei* IMV B-7280 / *L. casei* IMV B-7412/ *L. acidophilus* IMV B-7279 compositions was less effective.

So, *L. casei* IMV B-7280, *L. casei* IMV B-7412 probiotic strain and *L. casei* IMV B-7280 / *L. casei* IMV B-7412 composition are promising for the creation of highly effective immunobiotics for the prevention of infectious and inflammatory diseases of the genitourinary system caused by pathogenic and opportunistic microorganisms, as well as for treatment of patients. But to confirm this, more studies are needed.

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PHYSIOLOGICAL CHARACTERISTICS OF *FUSARIUM* RATS DETACHED FROM OZIMIA'S WHEAT SORT

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Caused by *Fusarium sp*., fusariosis of various plants, such as cereals, primarily results in a decrease in the quantity and quality of the crop. As follows, the quality of the produce is also affected [Shukla, 2015]. It is associated with fungal ability to produce toxins which may be accumulated and stored in agricultural products, even after prolonged heat treatment [Lugauskas et al., 2007]. Nowadays, many dangerous, toxin-synthesizing species of Fusarium are described. Among those, there are *F. oxysporum* and *F. graminearum*. They possess the ability to produce zearalenone, fusaric acid and trichothecenes [Sapsai, 2016]. Therefore, the study aimed to study the correlation of total toxicity of *Fusarium* fungi with other physiological features.

The radial growth is an important feature that allows analyzing the ability of micellar fungi to spread in agroecosystems rapidly; for that, the growth of such isolates *F. oxysporum* and *F. graminearum* was studied. The investigation of the radial growth coefficient [Chulkina, 2006] has

shown the highest ratio of radial growth in *F. graminearum* KMA 8 (0,104 mm/h). It exceeds such index found in *F. graminearum* KMA 5 and KMA 6 as well as *F. oxysporum* KMA 7 in 1.07 times. For them, this indicator was respectively 0.097 mm/h. Additionally, *F. graminearum* KMA 5 and KMA 6 would differ from the KMA 8 isolates by their morphological and cultural characteristics. The spread of pathogens in agriculture also depends on the number of spores which are formed during vegetation. Therefore the intensity of conidia formation of isolates of both species was investigated. Due to the method of [Parfenyuk, 2014], it has been estimated that *F. oxysporum* KMA 7 more intensively formed a more significant number of conidia.

Thus, the intensity of spore formation was 3.9 times higher in *F. oxysporum* KMA 7 compared with such of *F. graminearum* KMA 8 isolate. Instead, both *F. graminearum* KMA 5 and KMA 6 were characterized either with an insignificant number of conidia (KMA 6 - 0,27*103 cells/ml) or not formed them at all (KMA 5). One of the quantitative indicators of pathogenicity is also the aggressiveness of fungi to plants. As a result of the determination of the aggressiveness of the micromycetes by the method described in [Lemsez, 2008], it was found that the highest index of seedlings defeat (ISD) would refer to Kharkiv sunflower and was caused by of *F. oxysporum* KMA 7 (ISD = 24.53). This indicator was lower in *F. graminearum* KMA 8 (ISD = 22,67). Due to the values of the index of defeat, according to the degree of aggressiveness, these isolates were assigned to group 2 – which is one of the moderately aggressive phytopathogens. The lowest rates were recorded in *F. graminearum* KMA 5 and KMA 6. Thus, in KMA 5's ISD was 4.53 and for KMA 6 – 9.87. Therefore, these isolates were classified in group 1 of the poorly aggressive phytopathogens.

In the study, the overall phytotoxicity of the isolated isolates was compared. It was established that the isolate *F. graminearum* KMA 8 suppressed the seed germination, namely, the growth of the roots by 11.64 %, compared with the control. Instead, other isolates would stimulate this process. Thus, *F. graminearum* KMA 5 isolate resulted in an increase in germination by 1.66 %, and *F. oxysporum* KMA 7 – by 10.41 %. The highest germination values, as compared to control, were detected in case of the influence of *F. graminearum* KMA 6 – 22.75 %. Since crops are only considered toxic if there is at least a 30 % decrease in seed germination or inhibition of root growth, the investigated isolates cannot be considered toxic.

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ISOLATION AND CHARACTERIZATION OF *XANTHOPHYLLOMYCES DENDRORHOUS* (*PHAFFIA RHODOZYMA*) MUTANTS WITH INCREASED CAROTENOID CONTENT

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Carotenoids are organic lipophilic yellow to red pigments of terpenoid nature. Carotenoids contain polyene chain, long conjugated double bonds, which carry out antioxidant activities by quenching singlet oxygen and scavenging radicals to terminate chain reactions. One of the most useful and widespread carotenoids is astaxanthin. Astaxanthin is a xanthophyll carotenoid, chemically known as 3,3'-dihydroxy-β, β'-carotene-4,4'-dione, with molecular formula $C_{40}H_{52}O_4$. It is found in various microorganisms, such as *Haematococcus pluvialis, Chlorella zofingiensis, Chlorococcum sp.,* and also in marine animals. The natural sources of astaxanthin are algae, yeast, salmon, trout, krill, shrimp and crayfish. *Xanthophyllomyces dendrorhous* is one of the microorganisms able to synthesize carotenoids and is mainly used for the production of astaxanthin. Antioxidant activity of astaxanthin is 10 times more than zeaxanthin, lutein, canthaxanthin, β-carotene and 100 times higher than α-tocopherol. Astaxanthin prevents diabetes, cardiovascular diseases, carcinogenic and neurodegenerative disorders, and also stimulates immunization, so it is used as a nutritional supplement, antioxidant, anti-inflammatory, anti-aging, sun proofing and