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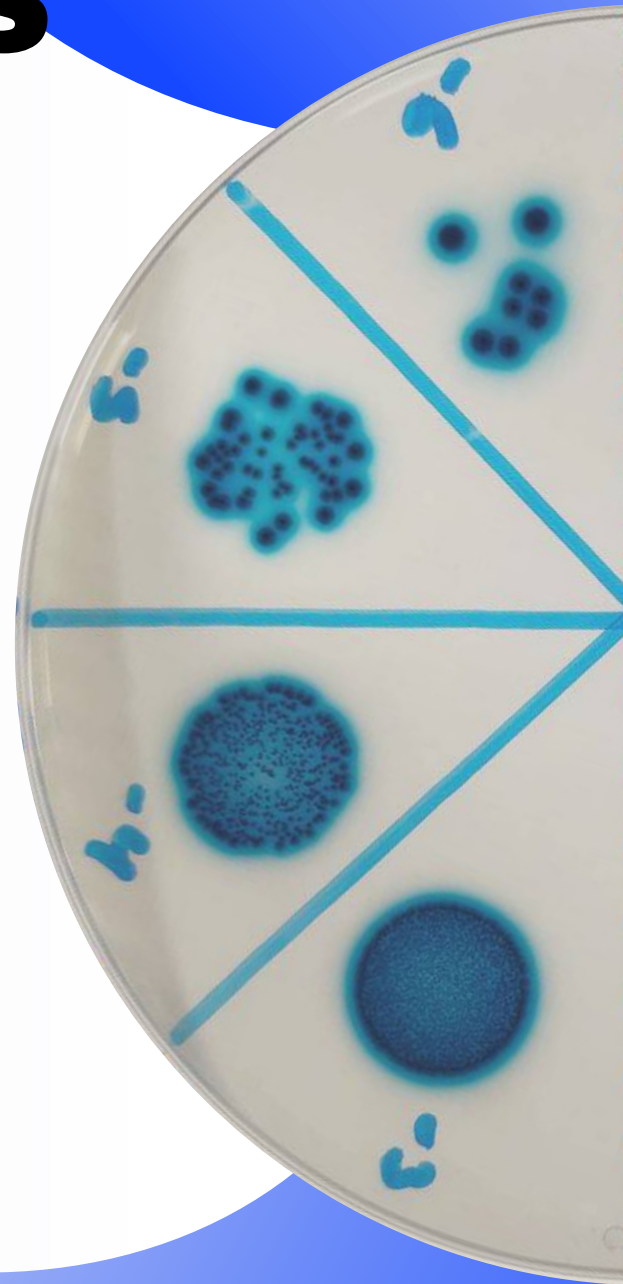
# CONFERENCE MATERIALS

The International Scientific and  
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**"MODERN ASPECTS OF  
MICROBIOLOGY, VIROLOGY, AND  
BIOTECHNOLOGY IN WARTIME  
AND POST-WAR PERIOD"**

November 15-16, 2023

Kyiv, Ukraine



D.K. Zabolotny Institute of Microbiology and Virology  
of the National Academy of Sciences of Ukraine

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*Fusarium tricinctum*, *Botrytis cinerea* and *Sclerotinia sclerotiorum* according to the modified method of microbial antagonism analysis. *B. subtilis* (strain BSQ2-PSTQR-0920) was less active against phytopathogenic microspecies. Other isolates were inactive [9].

Thus, the study of microbial antagonists, such as endophytic bacteria, as biocontrol agents is promising and relevant, as their use can be one of the elements of seedling protection in nurseries and increase plant resistance to pathogens. Thus, the isolation of natural endophytes of the PGPB class from the reproductive organs of certain plant species to create balanced plant-microbial systems within a genus or species has broad prospects, as it is based on the co-adaptation of a plant organism and a bacterial complex that has undergone a long natural selection.

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#### MENINGOCOCCAL INFECTION: RELEVANCE AND AWARENESS

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**Relevance:** According to the World Health Organization, there are 500,000 cases of meningococcal infection (MI) reported worldwide every year, including up to 50,000 fatal cases. In Ukraine, the statistics are even worse: a mortality rate from MI reaches 11-17% which means that 50-70 children die of this disease every year. For every person with the general form of MI, there are 20-50 thousand carriers. According to the WHO, MI occurs in almost 150 countries with the highest incidence in Africa in the southern from Sahara and from Senegal to Ethiopia. In Ukraine, for example, 299 cases of meningococcal infection were reported in 2019, including 50 infants. In the United States, most cases are sporadic, usually in children under 2 years old, but outbreaks can occur, usually in semi-enclosed communities (such as military camps, dormitories, childcare facilities), often affecting people aged 16 to 23 [1].

This is especially relevant for our country which is in a state of war. Large gatherings of people, the inability to receive timely treatment and prevention can contribute to outbreaks of MI.

**Research Objective:** to investigate the relevance of this topic, assess the level of public awareness about the problem of MI and conduct a statistical analysis and summarize the survey results.

**Materials and Research Methods:** to achieve the objective, an analysis of open information about MI incidence and a survey were conducted. The survey was created using the Google Forms platform with the participation of 70 respondents. The obtained results were processed using MS Excel software.

**Research Results and Discussion.** Meningococcal infection is an acute infectious disease caused by the Gram-negative aerobic diplococcus *Neisseria meningitidis*. The microorganism is transmitted by droplets in the air. People have a high natural resistance to infection, but the consequences of the disease depend on its of the pathogen like as the virulence and resistance. Post-infection immunity can persist for a long time. The main goal in treating MI is to eliminate the causes of its development. The main measures for MI prevention include early detection and isolation of patients, sanitation of bacterial carriers, personal hygiene practices and health education among the population. During periods of increased incidence, it is necessary to limit visits to places with large gatherings of people. Special prevention of MI is most relevant in countries with a high level of incidence.

During the analysis of the data, in some countries, the incidence of meningitis during epidemic outbreaks reaches 200-500 cases per 100,000 population. In Ukraine, there were 91 cases of meningitis with an incidence rate of 0.22 per 100,000 population in 2021. In 2022, there were 98 cases of meningitis with an incidence rate of 0.24 per 100,000 population. For the first quarter of 2023, the incidence rate is 0.11 per 100,000 population.

The prevalence of meningitis is decreasing due to vaccination. Vaccination against this infection is included in the national immunization schedules in countries such as Belgium, the United Kingdom, Ireland, Iceland, Spain, the Netherlands, Germany and others [2]. As of August 2020, there are five licensed meningococcal vaccines in the United States: quadrivalent meningococcal conjugate vaccines (Menactra, Menevo, MenQuadfi) and serogroup B meningococcal vaccines (Trumenba, Bexsero) [3, 4].

In our country vaccination is recommended for the prevention of the disease and vaccines such as Nimenrix, Menactra, and for children vaccine Bexsero are used in accordance with the order of the Ministry of Health of Ukraine dated August 11, 2014, No. 551, "On Improving the Conduct of Preventive Vaccination in Ukraine" [5].

Based on the information obtained, an assessment of the population's awareness regarding MI was conducted through a survey. A total of 70 people participated in the survey with 75% being female and 25% male and only 56% had a medical education. The majority of respondents were aged 17-20 years – 34.4%, 21-30 years – 28.1%, 31-40 years – 21.9%, 41-50 years – 12.5%, 51 and older – 3.1%.

After the analysis of conducted research, 55 individuals (78.5%) were found to be aware of what meningococcal infection was. Most respondents believe that children are more susceptible to this disease. Among the mentioned transmission methods of MI, 74.4% of respondents said that this disease is transmitted through droplets in the air. When asked about the source of MI, all respondents correctly answered (100%) that it comes from sick people and bacterial carriers.

We also inquired about the clinical symptoms of this disease and 49 (70%) people know that this disease includes meningitis and meningococemia. 61.3% of respondents answered that complications include acute kidney failure, joint ankyloses and myocardiosclerosis.

A total of 47 (67.1%) respondents know that etiotropic therapy is used to treat meningococcal infection.

Regarding knowledge of preventive measures to prevent the spread of this disease, 97.1% (68 people) gave positive responses. All respondents believe that there is specific prevention (vaccination) against meningococcal infection. 62.5% of people are aware of meningococcal conjugate vaccines like Nimenrix and Menactra.

Respondents learnt about the infection from acquaintances, scientific sources, the Internet, during their studies and medical practice.

**Conclusions.** After analysis of the information obtained, it was established that overall, the incidence of MI was low, but it was gradually increasing, and mortality rates could reach high levels. Therefore, there is a significant part of the population that does not have a sufficient understanding of what MI is, its consequences, and the measures required for prevention. To solve this problem, it is necessary to actively conduct educational work aimed at reducing the risk of MI outbreaks.

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#### PRODUCTION TECHNOLOGY OF GRAIN SEED MYCELIUM OF COMMON MUSHROOM VALIEIEVA Y.A.

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**Introduction.** The mushroom *Pleurotus ostreatus*, known as the common or abalone mushroom, is one of the most common edible mushrooms in the world. Its importance in the food and pharmaceutical industry is undeniable. Common mushroom has a high nutritional value, rich in proteins, vitamins and minerals. It is widely used in cooking, dietetics and pharmaceuticals, where it is used for the production of pharmaceuticals and biologically active additives [1].

The purpose of this work is to develop a technology for the production of seed mycelium of the common mushroom. The main tasks are to study the optimal conditions for the growth and development of mycelium, to determine the factors affecting its productivity, and to improve the cultivation process [2]. The development of an effective technology for the production of grain seed mycelium of the common mushroom has the potential to improve the availability of this valuable product, ensure supply stability and contribute to the development of agriculture.

**Materials and methods.** Various grain substrates such as wheat, barley, maize and rice were used in the study. They were pre-treated and prepared for the cultivation of mycelium of common mushroom [3].

Cultivation was carried out in specially equipped chambers or containers with controlled parameters. Temperature, humidity, lighting, and ventilation were adjusted to ensure optimal conditions for mycelial growth and development.

To grow mycelium, a technique was used, which involves seeding a grain substrate with fungal mycelium and its subsequent cultivation for a certain period of time [1].

After the cultivation was completed, the obtained mycelium samples were analyzed. Measurements were made to determine the quality and productivity of the mycelium, such as weight, size, content of biologically active compounds, etc.