ANTAGONISTIC ACTIVITY OF DOMINANT STRAINS OF BACTERIA OF SPRING BARLEY RHIZOSPHERE AGAINST PHYTOPATHOGENIC MICROMYCETES

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The purpose of the work. The aim of the study was to conduct research on the manifestation of the dominant representatives of the bacterial biome of the rhizosphere of spring barley antagonistic activity against phytopathogenic micromycetes.

When studying the peculiarities of the formation of the microbial complex of chernozem typical in the agrophytocenosis of spring barley, a comparative characterization of the number of major physiological and taxonomic groups of microorganisms, analyzed the qualitative composition, structure and diversity of the microbial complex formed in the ontogenesis of spring barley in different farming systems.

With the help of Shannon biodiversity indices and Simpson's dominance in different phases of spring barley ontogenesis, the formation of microbiota was analyzed and strains of microorganisms dominating in spring barley rhizosphere were isolated. Laboratory molecular biological methods have identified the dominant bacteria - *Bacillus methylotrophicus 10* and *Phyllobacterium ifriqiyense 1* (registered in the database GenBank MK947056, MK947049; https://www.ncbi.nlcc./ MK947056; https://www.ncbi.nlm.nih.gov/nuccore/MK947049.

Research methods. The standard diffusion method of double culture in Petri dishes was used to study the antagonistic properties of the dominant strains of rhizosphere bacteria. The level of antagonistic activity of microorganisms was assessed by the indicator (%) of inhibition of growth and development of the mycelium of micromycetes

Fusarium sporotrichioides Sherb. 23.2, *Alternaria alternata (Fr.) Keissl*. 3.45, *Nigrospora oryzae (Berk. & Broome) Petch*. 18.77.

The diameter of the colony was measured in radially opposite directions twice, and the arithmetic mean was calculated.

The degree of antagonistic activity of the tested strains of dominant rhizosphere bacteria was determined according to the size of the zone of inhibition of growth of the test strain around the agar block. Zones of growth retardation were taken into account after 3 and 10 days of cultivation.

Statistical processing was performed using Microsoft Excel.

Results and scope of their application. Studies have shown that *Bacillus methylotrophicus 10* and *Phyllobacterium ifriqiyense 1* inhibited the growth of phytopathogenic micromycetes *Fusarium sporotrichioides Sherb. 23.2* - 45.1% and 77.4%, respectively, test cultures of *Alternaria alternata (Fr.) Keissl. 3.45* - 63.1% and 66.6%, *Nigrospora oryzae (Berk. & Broome) Petch. 18.77* - 65.2% and 86.7%.

Studies of antagonistic activity show that the isolated rhizosphere bacterial agents Bacillus methylotrophicus 10 and Phyllobacterium ifriqiyense 1 inhibit the development of micromycetes, which is evidence of their antifungal activity.

Bacteria *Phyllobacterium ifriqiyense 1* populate the substrate more quickly and use nutrients accordingly, at the same time micromycetes lose the ability to grow and are not able to further populate the substrate, there is a tendency to die. Thus, it is clear that the antagonistic activity detected is related to competition. Under natural conditions, antagonism of this type is most often observed in the soil environment of the rhizosphere of plants, where there is competition between microorganisms for food sources (root exudates).

According to the results of studies of the bacterium *Bacillus methylotrophicus 10* and *Phyllobacterium ifriqiyense 1* on the 3rd day of the experiment inhibited the growth and development of phytopathogenic micromycetes, in particular the zones of growth retardation of micromycetes were as follows: *Fusarium sporotrichioides Sherb. 23.2* - 3 mm, *Alternaria alternata (Fr.) Keissl. 3.45* - 11 mm and *Nigrospora oryzae (Berk. & Broome) Petch. 18.77* - 5 and 9, 13 and 11 mm respectively.

Thus, the antagonistic activity of the studied strains of dominant rhizosphere bacteria was manifested on the third day of the experiment and enhanced its effect on the growth and development of phytopathogenic micromycetes during the experiment.

Conclusions. Thus, the studied rhizosphere bacteria Bacillus methylotrophicus 10 and Phyllobacterium ifriqiyense 1, which dominate, have antagonistic activity against phytopathogenic micromycetes, and also have an inhibitory effect on the growth and development of phytopathogenic micromycetes. .

So, further research of these bacteria and the search for new effective multifunctional ones are promising for the development of biotechnologies for their use as preparative forms for crop production (alternative environmental technological means to chemical plant protection and mineral fertilizers).

Key words: *Bacillus methylotrophicus 10, Phyllobacterium ifriqiyense 1, antagonistic properties, phytopathogenic micromycetes.*