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## ANTAGONISTIC ACTIVITY OF SOME BACTERIAL AND FUNGAL ISOLATES AGAINST WHEAT ROOT PATHOGENS

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One of the most significant diseases of winter wheat (*Triticum aestivum* L.) in Kazakhstan is root rot. This study aimed to isolate and identify some rhizosphere microorganisms associated with winter wheat and evaluate their antagonistic activity against root rot pathogens in the southeast region of Kazakhstan. More than 6 bacterial and 4 fungal isolates belonging to the genera *Bacillus*, *Lysinibacillus*, *Fusarium*, *Alternaria*, and *Cladosporium* were identified. Identified as Strain K-C- 24 *Bacillus mojavensis* and collection strains *Trichoderma asperellum* strains GL and 101 showed the highest antagonistic activity against *Bipolaris sorokiniana* and *Fusarium oxysporum* with inhibition zones of  $23.5 \pm 0.5$  mm, and  $42 \pm 0.5$  mm, respectively. Similar activity was not detected in other isolates. In the

field, the best antagonistic inhibition rates of these wheat root rot pathogens were found when treated with a consortium of bacteria of the genera *Bacillus* and *Lysinibacillus* (Mix bac) and a strain of *T. asperellum* GL. The secondary metabolites contained in the culture filtrates of *Bacillus* and *Trichoderma* strains that inhibit the growth of test pathogens confirm the nature of their antagonism. The results obtained demonstrate the potential of using these antagonist strains, such as *T. asperellum*, *B. mojavensis* and a consortium of *Bacillus* and *Lysinibacillus* bacteria (a mixture of bac strains), in order to develop safe biological preparations against root rot of spring and winter wheat in the southeastern region of the country.