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TRENDS IN MICROBIAL SOLUTIONS FOR SUSTAINABLE AGRICULTURE

13 – 15 September 2023. Belgrade, SERBIA

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GAPP37

Bacteria from saline soil as promising biocontrol agents against *Fusarium oxysporum*

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The use of microbial inoculants as an alternative to chemical pesticides holds significant value in modern agriculture, addressing the growing demand for sustainable and environmentally friendly pest management strategies. *Fusarium oxysporum* is a plant pathogenic fungus that poses substantial challenges to global agriculture, mostly due to its broad host range and persistence in soil. Therefore, the aim of this research was to find potent bacterial isolate(s) for managing infection caused by this plant pathogen. Twelve bacterial isolates (coded as PAM1.1 – PAM1.12), obtained from saline soil were used in this research. Their ability to produce protease and cellulase, as well as their antifungal potential against *F. oxysporum* were tested *in vitro*. DNA of the most effective isolate was extracted using the CTAB extraction protocol and amplified with primer pair P0/P6 targeting bacterial 16S rRNA gene. For identification, the obtained sequences were compared to those available in the National Center for Biotechnology Information (NCBI) database. Out of twelve tested isolates, PAM1.3 showed the highest proteolytic activity, while the production of cellulase was not detected. This isolate was concurrently the most efficient in suppressing *F. oxysporum*, with an inhibition percentage of 51.7%. Based on the NCBI BLASTn analysis of the 16S rRNA gene sequence, isolate PAM1.3 was identified as *Stenotrophomonas lactitubi*, showing 99.29% identity with *S. lactitubi* strain NR_179509.1. The results of this research indicate that saline soils could be a valuable reservoir of beneficial bacteria with biocontrol properties.

Keywords: *Fusarium oxysporum*; biocontrol; *Stenotrophomonas lactitubi*; saline soil.

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