

## PRODUCTION OF PEPTAIBOLS BY *TRICHODERMA* STRAINS BELONGING TO CLADE HARZIANUM AND THEIR BIOACTIVITIES

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Extreme weather conditions and emerging plant pathogenic microorganisms urge the search for new methods of biological plant protection. Peptaibols, secondary metabolites produced by filamentous fungal species of the genus *Trichoderma* have several favourable properties, due to which they may play an important role in biological control in the future. Peptaibols are short peptides containing biologically active, proteinogenic and non-proteinogenic amino acids in an extremely diverse composition. Peptaibols are able to attach and create ion channels in biological membranes, thus exerting cell-destructive effects and providing protection against phytopathogenic microorganisms. During our work, peptaibol production of 8 *Trichoderma* strains belonging to clade Harzianum were determined by HPLC-MS method. Peptaibol extracts were prepared using large-scale extraction and the minimum inhibitory concentration (MIC, mg ml<sup>-1</sup>) values of each extract against Gram-negative and Gram-positive bacterial strains were examined. The effective concentration (EC, mg ml<sup>-1</sup>) values of the extracts were also determined against 4 phytopathogenic fungal strains. Based on our results, the strains produced several new 17- and 18 residue peptaibol sequences belonging to the Trichokindin and Trichorzin peptaibol groups. Furthermore, peptaibol extracts were capable of inhibiting several Gram-negative bacteria in addition to Gram-positive bacterial strains, and also had a growth-slowing effect against plant pathogenic fungal strains. The comprehensive examination of peptaibols can promote a deeper understanding of their background mechanism of action, which can facilitate the rapid selection of strains producing active sequences for their practical application. The research is supported by the ÚNKP-23-4 -SZTE-544 New National Excellence Program of the Ministry for Innovation and Technology from the source of the National Research, Development and Innovation Fund and this study was supported by the Hungary-Serbia IPA Cross-border Cooperation Programme project FERTILEAVES (HUSRB/23S/11/027).