# CHARACTERIZATION OF NEW PEPTAIBIOTICS IN MONGOLIAN *TRICHODERMA* ISOLATES

**Nomuun Oyunbat[1,2], Enkh-Amgalan Jigjiddorj[3], Dóra Balázs[1,2], Mónika Varga[1], Csaba Vágvölgyi[1], Tamás Papp[1], Tamás Marik[1*], András Szekeres[1*]**

*[1]Department of Biotechnology and Microbiology, Faculty of Science and Informatics, University of Szeged, Szeged, Hungary*
*[2]Doctoral School of Biology, Faculty of Science and Informatics, University of Szeged, Szeged, Hungary*
*[3]Institute of Biology, Mongolian Academy of Sciences, Enkhtaivan Avenue 54b, Ulaanbaatar 13330, Mongolia*
*[*]These authors contributed equally to this work and shared the last authorship*
*Correspondence: szandras@bio.u-szeged.hu, marik.tamas@szte.hu*

## Abstract

Members of the genus *Trichoderma* are commonly found in soil, promoting plants by enhancing their growth. Many species of *Trichoderma* are considered beneficial for plants and are extensively applied in agriculture as important biological agents. *Trichoderma* species are the main producers of peptaibiotics, a group of bioactive secondary metabolites. This study revealed the peptaibiotic production of *T. citrinoviride* isolates from Mongolian natural litter sources. Using an optimized HPLC coupled with a high-resolution mass spectrometry, we identified 19- and 20-residue peptaibols, as well as 7-residue lipopeptaibols. Certain detected compounds showed strong similarity to previously reported peptaibols, including newly found compounds, while all 19-residue peptaibols appear to represent novel compounds. These were named as brevilongibrachins, differing from longibrachins by a missing Gln residue at the C-terminus. The lipopeptaibols were similar to the previously reported Trichobrachin III B a, however, the masses of N-termini are Δ*m/z* 182, 196, 208, 210, 22, and 224 Da, pointing to branched or hydroxylated acyl chains. This indicates that these lipopeptaibols belong to a new group or subgroup of peptaibiotics. These findings highlight the metabolic potential of Mongolian *Trichoderma* isolates and expand the current knowledge of fungal peptaibiotic diversity. This study also enables future research activities to be conducted for specific bioactivity tests with purified peptaibiotic compounds.

## Acknowledgements

T.M was supported by the Scholarship Program of the Ministry of Culture and Innovation, financed from the National Research, Development and Innovation Fund (EKÖP-570-SZTE). N.O was supported by the Stipendium Hungaricum Scholarship by the Tempus Public Foundation during this research. The authors are also grateful to the Institute of Biology in Mongolia for their support and collaboration.