APPLICABILITY OF BIOEFFECTOR *BACILLUS* STRAINS FROM THE RECOMPOSTING PROCESS OF SPENT MUSHROOM COMPOST

Allaga Henrietta[1], **Horkics Dóra**[1], **Bordé Ádám**[1], **Kovács Terézia**[2], **Csutorás Csaba**[3], **Bajzát Judit**[3], **Bakos-Barczi Nóra**[3], **Misz András**[3], **Vágvölgyi Csaba**[1], **Kredics László**[1],

[1]Department of Microbiology, Faculty of Science and Informatics, University of Szeged 6726 Szeged, Közép fasor 52.
[2]Biological Research Centre, Institute of Plant Biology, H-6701 Szeged, Hungary
[3]Új Champignons Ltd., 1224 Budapest, Bartók Béla út 162.

Good quality casing layer is influenced by the composition of its microbiota. Microorganisms present in spent *Agaricus* compost include bacteria from the genera *Bacillus*, *Alcaligenes*, *Pseudomonas*, and *Microbacterium*. Many representatives of *Bacillus* and *Pseudomonas* are considered as beneficial.
Our aim is to develop healthy casing layer alternatives from spent mushroom compost. Microorganisms are isolated from spent mushroom compost samples taken during the natural recomposting process. A total of 15 *Bacillus* strains were isolated from the samples and identified. The resulting *B. licheniformis* (4), *B. velezensis* (4), *B. subtilis* (4), *B. cereus* (2) and *B. paralicheniformis* (1) strains were tested for their temperature-, pH- and water activity-dependence, extracellular enzyme activities, and indole acetic acid production. *In vitro* confrontation assays showed 3 *B. velezensis* and 1 *B. licheniformis* strains having good antagonistic potential against both mushroom-pathogenic (*Trichoderma, Lecanicillium, Hypomyces*) and plant pathogenic fungi (*Fusarium, Gaeumannomyces*). A selected *B. velezensis* strain was studied in spent mushroom compost and plant growth experiments. The dry matter content of treated tomato plants ranged from 8.94 to 10.0 %, while that of untreated plants ranged from 5.41 to 14.56 %. Total chlorophyll content of plants grown in media prepared from treated and untreated compost varied from 2027.32 to 1730.53 μg/g for treated, and from 1388.44 to 590.01 μg/g for untreated samples. We also determined the photosynthetic parameters of the plants such as Fv/Fm and YII.

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