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Analysis of bacterial community structure for evaluating maturation of compost for *Agaricus blazei* Murrill cultivation

Naoto Tada¹⁾, Natsumi Sugawara²⁾, Mitsuo Kawade¹⁾, Akihiro Saito³⁾, Akikazu Ando²⁾

¹⁾Iwade Research Institute of Mycology CO., Ltd, Japan

²⁾Graduate School of Advanced Integration Science, Chiba University, Japan

³⁾Department of Materials and Life Science, Faculty of Science and Technology, Shizuoka Institute of Science and Technology, Japan

Purpose: The maturation of the compost for *Agaricus blazei* Murrill cultivation has been evaluated with sense and experience, conventionally. In this study, we analyzed chemical and microbial properties of the compost during the fermentation process, in order to find an indicator for maturation of the compost.

Methods: Compost was prepared three times independently. During the fermentation process, colony numbers of microorganisms (bacteria, fungi and actinomycetes), bacterial community structure, C/N ratio, and fresh yield of the fruit bodies were investigated. The bacteria, fungi, and actinomycetes were isolated from the compost using YG, Rose Bengal or HV media, respectively. Bacterial community structure was investigated by PCR-DGGE analysis. Effects of the microbial isolates on the growth of *A. blazei* Murrill mycelia was examined by counter culture method.

Results: In the first preparation of compost, the yield of the fresh fruit body became maximum levels after the C/N ratio and bacterial community structure were stabilized. The results were reproductively observed in the following two compost preparations. The bacterial community structures in the matured composts were similar regardless of the preparation batches. Some DNA-bands were specifically observed in the composts with high yields of fruit bodies, indicating the presence of bacteria specific to matured composts. *Acinetobacter* sp. isolated from the matured composts had a positive effect on growth of *A. blazei* Murrill mycelia.

Conclusions: These results suggests that not only C/N ratio but also some bacteria could be used as the indicators for maturation of composts for *A. blazei* Murrill cultivation.