

B-41. Selection of biocontrol agents against cucumber gray mold using epiphytic bacteria. Sang-Yeob Lee, Sang-Bum Lee, and Yong-Ki Kim. Plant Pathology Division, National Institute of Agricultural Science and Technology, Suwon 441-707, Korea.

In order to select antagonists for biological control of gray mold of cucumber, 1,426 epiphytic bacteria were isolated from leaves, stems, fruits and flowers of cucumber collected from several locations in Korea. One hundred thirty five out of 1,426 isolates inhibited spore germination and mycelial growth of *Botrytis cinerea* using in vitro bioassay. Among them, five isolates were selected as potential biocontrol agents of cucumber gray mold using a leaf disc method and a seedling test. The cell suspensions of five selected agents at the concentration of 10^7 cfu/ml were sprayed on cucumber seedlings. Then the plants were inoculated with the spore suspension (10^7 spores/ml) of *Botrytis cinerea* after 10 days of bacterial spray. All plants were incubated in a humid growth chamber to stimulate infections for 24 hr. and placed in a greenhouse for 5 days. Development of gray mold symptom on cucumber leaf was observed with disease incidence index (0-5). Isolate CC178 was the best to control gray mold on cucumber showing disease incidence index by 0.3, whereas that of control was 4.0. The bacterium CC178 was selected as an effective BCA against cucumber gray mold caused by *Botrytis cinerea*.

B-42. Isolation of *Pseudomonas chlororaphis* O6 mutants altered in growth on cucumber root exudates. Han, S. H., Kim, M. J., Kim, K. Y., Cho, B. H., and Kim, Y. C. Agricultural Plant Stress Research Center, Chonnam National University, Gwangju 500-757, Korea

Pseudomonas chlororaphis O6 is a biological control bacterium that induces disease resistance but also produces secondary metabolites. Root colonization can be crucial for the action of microbial inoculants used as biocontrol agents. Root exudates are major carbon and energy source for colonizing microorganism to fully expression of biological activity. We determined the sugar and organic acids compositions of cucumber root exudates and isolated Tn5 mutants altered in growth on the cucumber root exudates. The major organic acids were fumaric acid, malic acid, benzoic acid and succinic acid, and glucose and fructose were major monosaccharides in cucumber root exudates. The total amount of organic acids was ten times higher than the amount of sugars. To determine the genes involved in utilization of cucumber root exudates, we selected four Tn5 mutants showing altered growth on cucumber exudates. The growth of two mutants, H10 and D5, were faster, but one mutants, C2 was slower than growth of wild type. However, D1 mutant did not grow on cucumber root exudates. We are currently under investigation of Tn5 flanking sequence of each mutant. Our works will open opportunities for identification of bacterial traits that are involved in utilization of root exudates and that may be important in expression of biocontrol activity.