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Occurrence of diverse dsRNA mycoviruses in Trichoderma spp. causing green mold disease of shiitake *Lentinula edodes*

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A total of 315 fungal isolates causing green mold disease were collected from contaminated artificial logs and sawdust bags used for cultivating shiitake mushroom *Lentinula edodes* in Korea and were analyzed for the presence of dsRNA. dsRNA, which was purified using dsRNA-specific chromatography and verified by dsRNA-specific RNaseIII digestion, was detected in 32 isolates. The molecular taxonomy of dsRNA-infected isolates based on the ITS region of the rDNA indicated that all isolates belonged to the *Trichoderma spp*. The number and size of dsRNAs varied among isolates and the band patterns could be categorized into 15 groups. Although there were seven dsRNA groups observed in multiple isolates, eight groups were found to occur in single isolates. The most common dsRNA group, group VI, occurred in 10 isolates encompassing three species of *Trichoderma*. Partial cDNA clones were obtained from two selected dsRNA groups and the sequence comparison of the cloned fragments of these dsRNAs revealed a high degree of similarity to sequences of a hypothetical protein and polyprotein genes of other mycoviruses, indicating the occurrence of mycoviruses in *Trichoderma spp*. Northern blot analysis using cloned cDNA showed specific hybridizing patterns in the dsRNA bands for isolates from which the clones were obtained, suggesting that many different mycoviruses, which have not been identified yet, exist in *Trichoderma spp.*

Biography

Dae-Hyuk Kim received his bachelor and science degree in agricultural biology from the Seoul National University in 1985. In 1987, he received a master of science degree in plant pathology from the same university. In 1991 he got Ph.D. from the Texas A&M University in plant pathology and microbiology and did his post-doctoral research associate until 1995. Since then, he returned to the Chonbuk National University where one year later he became a professor at the Division of Biological Sciences. Currently, he was appointed to the director of Institute for the Genetic Engineering at Chonbuk National University. Concurrent with his other appointments, he is director of the Center for the Industrialization of Agricultural Microorganisms, the government supported R&BD center. He established the research program to study heterologous expression using fungi as expression host. Fungi of special interest include Saccharomyces, Aspergillus, and Cryphonectria. His team has coupled molecular and classical techniques to establish an enhanced expression system for target proteins, which used to be known as hard to express. In addition, he performed researches to analyze the fungus-virus interaction. Fungi of special interest include species of Cryphonectria, Lentinula, and Trichoderma. His team identified new fungal viruses and characterized fungal and viral genes for the interaction.

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