

(05-1-68)

## Comparative Analysis of Pathogen-Related Genes between *C. baccatum* and *C. annuum*

Hyun Chul Soh, A Ra Ko, Jae-Bok Yoon<sup>1</sup>, Hyo-Guen Park<sup>1</sup>, Young Soon Kim\*

Kumho Life & Environmental Science Lab, Korea Kumho Petrochemical Co., Ltd., Gwangju

<sup>1</sup>Department of Horticultural Science, Seoul National University, Seoul

### Objectives

To get insight on the intrinsic resistance of *Capsicum baccatum* against anthracnose fungus, the sequence and expression pattern of pathogen-related genes were compared between *C. baccatum* and *C. annuum*. Relative functional activities were also compared in PR10 proteins from both species. The results will be ultimately used for enhancing fungal resistance of *C. annuum*, which is susceptible to the anthracnose fungus.

### Materials and Methods

1. Material : *Capsicum annuum* cv. Yeoju, *Capsicum baccatum* cv. PBC80, *Colletotrichum coccodes*
2. Methods : - Cloning of pathogen-related genes by RT-PCR.
  - semiquantitative analysis of transcripts accumulation of PR genes in the fruits infected with anthracnose fungus.
  - expression of PR10 protein in pGEX-6P-1.
  - enzymatic analysis of PR10 protein.

### Results and Discussion

Three pathogen related genes such as PR-1, PR-3, and PR-10 were cloned from the fruits of *C. baccatum*. The sequences of the PR genes were compared with those of *C. annuum*. The nucleotide sequences were almost identical between two species. Comparison of the deduced amino acid sequences of PR1, PR3 and PR10 from *C. baccatum* showed 98%, 99% and 97% identity to that of *C. annuum*, respectively. Among them, PR10 represents significantly higher expression pattern in the fruits of *C. baccatum* after fungal infection. Therefore, CbPR10 gene of *C. baccatum* was further characterized. The recombinant protein exhibits ribonucleolytic activity against pepper total RNA. The results suggest that CbPR-10 gene encoded biologically active protein with ribonucleolytic activity is involved in the defense response in incompatible interaction between *C. baccatum* and anthracnose fungus.