F308 Cloning and Sequencing of the Genomic DNA Encoding Putative Mitogen-Activated Protein Kinase from a Phytopathogenic Fungus *Colletotrichum gloeosporioides*

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경제적으로 유용한 벼, 채소 등의 작물에 가장 많은 손실을 끼치는 것은 *Magnaporthe grisea* 등과 같은 식물병원성 곰팡이들이다. 이와 같은 병원성곰팡이에 의한 식물의 감염에 MAP kinase를 이용하는 신호전달계가 근본적으로 필요한 것으로 밝혀졌다. 그러므로 MAP kinase가 제거된 돌연변이주는 식물질병을 유발하지 않은 것으로 보고되었다. *Colletotrichum gloeosporioides*의 MAP kinase 유전자를 클로닝하기 위해 yeast MAP kinase인 *FUS3, KSS1, HOG1*과 *Magnaporthe grisea*의 MAP kinase인 *PMK, Fusarium solani*의 *FsMAPK*의 conserved amino acid로 degenerated primer를 제작하여 PCR cloning에 이용하였다. 약 500 bp의 MAP kinase의 단편을 cloning하였으며 이는 *M. grisea*와 염기 서열상 93%, 아미노산 서열상 93%를 *F. solani*의 *FsMAPK*와 82%, 68% 상동성을 보였다. 또한 genomic library를 작성 colony hybridization을 시행한 결과 약 5.0 - 5.5 kb의 유전자를 가진 candidates를 얻었다. 이 candidates로부터 PCR를 행하여 sequencing한 결과 위의 MAP kinase 유전자 500 bp DNA fragment를 포함하고 있었다.

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F309 A Gene Responsible for Paraquat-Sensitivity of *Streptomyces coelicolor* Encodes a DNA-Binding Protein Similar to NfxB of *Pseudomonas aeruginosa*

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Differentiation of *Streptomyces coelicolor* A3(2) was arrested by moderate amount of paraquat (methyl viologen), a superoxide-generating agent, with no apparent inhibition of cell growth. We isolated three mutants whose sporulation and antibiotic production was not affected by paraquat. These mutations were mapped to a single locus near *argA1* at about 1 o'clock on the genetic map. We isolated a novel gene (*pqr*; *p*araquat-*r*esistant) required for paraquat-resistant differentiation from one *pqr* mutant as a dominant allele to the wild type allele. The *pqr* gene consists of two genes (*pqrA* and *pqrB*). The *pqrA* gene specifies a protein containing a DNA-binding motif and the *pqr* mutation was located within its gene product, which generates an amino acid substitution (arginine to glutamine). The *pqrB* gene encodes a putative membrane protein probably involved in membrane associated energy-driven efflux of drugs including paraquat. Both wild type and mutant PqrA proteins specifically bind to an inverted repeat structure (PRE) overlapping with the putative *pqrAB* promoter as demonstrated by gel retardation. These results suggested that *pqrA* encodes a DNA-binding protein which might be involved in regulating the expression of *pqrAB* operon.