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Investigation of Functional Roles of a Protein Kinase in a Fungal Plant Pathogen, *Magnaporthe oryzae*

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The rice blast disease caused by of *Magnaporthe oryzae* is one of the most destructive diseases of rice. By the microarray analysis, we profiled expression changes of genes during conidiation and found out many putative genes that are up-regulated. Among those, we first selected MGG_06399 encoding a dual-specificity tyrosine-regulated protein kinase (DYRK), homologous to YAK1 in yeast. To investigate functional roles of MoYAK1, We made Δ Moyak1 mutants by homology dependent gene replacement. The deletion mutant showed a remarkable reduction in conidiation and produced abnormally shaped conidia smaller than those of wild type. The conidia form Δ Moyak1 were able to develop a germ tube, but failed to form appressoria on a hydrophobic coverslip. The Δ Moyak1 formed appressoria on a hydrophobic cover slip when exogenous cAMP was induced, but the appressoria shape was abnormal. . The Δ Moyak1 also formed appressoria abberent in shape on onion epidermis and rice sheaths and failed to penetrate the surface of the plants. These data indicate that MoYAK1 is associated with cAMP/PKA pathway and important for conidiation, appressorial formation and pathogenic development in *Magnaporthe oryzae*. Detailed characterization of MoYAK1 will be presented.

Keywords: *Magnaporthe oryzae*, conidiation, rice blast, kinase, pathogenicity