



Expression of *Magnaporthe oryzae* genes encoding cysteine-rich proteins secreted during nitrogen starvation and interaction with its host, *Oryza sativa*

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ABSTRACT. Previous studies have shown that the blast fungus, *Magnaporthe oryzae*, may experience nitrogen starvation during infection of its plant host (rice, *Oryza sativa*). Here, we studied the expression of seven genes encoding cysteine-rich proteins with N-terminal signal peptides during nitrogen limitation and throughout the infection process. Some genes were upregulated to a greater extent in weak pathogenic strains than in strong pathogenic strains when they were cultured in complete media, and the expression of some genes was higher in both weak and strong pathogenic strains cultured in 1/10-N and nitrogen starvation media. Furthermore, the expression of these genes was upregulated to different extents in the early stages of *M. oryzae* infection. These data demonstrate that the genes of interest are highly expressed in weak and strong pathogenic strains cultured under nitrogen limitation and at the early stage of the infection process. This indicates that cysteine-rich secreted proteins in the blast fungus might be involved in establishing disease in

the host and that they are sensitive to nitrogen levels. Thus, their role in sensing nitrogen availability within the host is implied, which provides a basis for further functional identification of these genes and their products during plant infection.

Key words: Rice blast fungus; Rice; Small secreted proteins; Interaction; Nitrogen resource