

Toward understanding of rice innate immunity against *Magnaporthe oryzae*

ABSTRACT

The blast fungus, *Magnaporthe oryzae*, causes serious disease on a wide variety of grasses including rice, wheat and barley. The recognition of pathogens is an amazing ability of plants including strategies for displacing virulence effectors through the adaption of both conserved and variable pathogen elicitors. The pathogen-associated molecular pattern (PAMP)-triggered immunity (PTI) and effector-triggered immunity (ETI) were reported as two main innate immune responses in plants, where PTI gives basal resistance and ETI confers durable resistance. The PTI consists of extracellular surface receptors that are able to recognize PAMPs. PAMPs detect microbial features such as fungal chitin that complete a vital function during the organism's life. In contrast, ETI is mediated by intracellular receptor molecules containing nucleotide-binding (NB) and leucine rich repeat (LRR) domains that specifically recognize effector proteins produced by the pathogen. To enhance crop resistance, understanding the host resistance mechanisms against pathogen infection strategies and having a deeper knowledge of innate immunity system are essential. This review summarizes the recent advances on the molecular mechanism of innate immunity systems of rice against *M. oryzae*. The discussion will be centered on the latest success reported in plant-pathogen interactions and integrated defense responses in rice.

Keyword: Basal resistance; Effector-triggered immunity; Pathogen; Pathogen-associated molecular pattern-triggered immunity; Resistance mechanisms