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Molecular Cloning and charaterization of Phosphate Transporter Genes Respond to Phosphorus Deprivation in Rice

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We isolated 2 different Phosphate transporter genes (*OsPT2 · 3*) respond to phosphorus deprivation in rice (*Oryza sativa*). The encoded polypeptides are 89% identical to other plants and show high degree of amino acid sequence similarity with phosphate transporter gene of Zea mays. *OsPT2* is 1626-bp long and encodes a 541 amino acid polypeptide. *OsPT3* is 1587-bp long and contains an open reading frame encoding a 528 amino acid polypeptide. Whereas the 2 clones are 81% similar in their nucleotide sequence within the coding region. The RNA blot analysis showed that expression of OsPTs are various in response to phosphate deficiency. In particular expression of *OsPT2* and *OsPT3* were up-regulated in phosphate deficiency condition. Now we are generating transgenic rice plants over-expressing OsPT genes and also have T-DNA tagging line of *OsPT*2 gene.

Key words: Phosphate transporter, rice, transgenic plants, T-DNA tagging

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ARH genes Negatively Regulate RPM1 Degradation Required for AvrRpt2/RPS2-mediated Gene-for-gene resistance

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The TTSS effecter, AvrRpt2, targets and eliminates RIN4 that is not only a positive regulator for basal defense but also a negative regulator for RPS2-mediated resistance. Therefore, if P. syringae expressing avrRpt2 infects host plant lacking resistance gene RPS2, AvrRpt2-mediated elimination of RIN4 suppresses a basal defense and results in a hospital environment for propagation of pathogen. However, when RPS2 is present in the host plants, the elimination of RIN4 triggers RPS2-mediated effective defenses including hypersensitive response (HR) and lead to resistance against pathogens. Kinetics of RPS2-mediated HR reveals that AvrRpt2-mediated elimination of RIN4 occurs in 3 - 5 hr post infiltration of P. syringae (avrRpt2), which sequentially destabilize RPM1 and eliminate RPM1 in 12 - 20 hrs independent on RPS2. When RPS2 is present, the elimination of RPM1 is tightly linked with RPS2-mediated HR time point. Interestingly enough, RPS2-mediated HR is accelerated in rpm1 mutant, suggesting that RPM1 may function as a negative regulator for AvrRpt2/RPS2-mediated gene-for-gene resistance. We present evidence that ARH genes ecoding F-box proteins involve in AvrRpt2-mediated RPM1 elimination and will discuss what their functions are in the plant defense mechanism.

Key words: ARH, RIN4, AvrRpt2, RPS2