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NPR1 mediated the cross talk between salicylate- and jasmonate- mediated pathways in *Carica papaya* in response to *Phytophthora palmivora*

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Shortage of mobility, plant must endure a variety of biotic stress beside abiotic stress such as pathogens infection, insects bites etc. Plants possess two distinct, but complementary defense mechanisms against pathogen attack (1). The first mechanism is passive, consisting of preformed barriers such as the cuticle and cell walls. The second defense mechanism, also known as an active defense response, involves coordination of diverse genetic and physiological reactions, analogous to a counterattack (2), of which systemic defense including: systemic acquired resistance (SAR), induced systemic resistance (ISR), and wound induced resistance (WIR) (3). Analogous to innate immune system of animal, plant processes SAR response following exposure to a pathogen. Three small molecular: jasmonate acid (JA), salicylate acid (SA), and ethylene (ET) play key roles in the regulation of signaling network. A greater understanding of the JA, SA, and ET signaling pathway cross talk provide insight of mechanism of plant-pathogen interaction. Salicylic acid (SA) and jasmonic acid (JA) are known to play key roles in plants in the regulation of signaling pathways that are involved in induced defense response against biotrophic- /necrotrophic- pathogens and insect herbivores. Investigation via proteomic study on two papaya cultivar 'Kamiya' (resistance), 'SunUp'(susceptible) against to biotrophic pathogen *Phytophthroa palmivora* revealed that monooxygenase (MON) and lipoxygenease (LOX) related to JA and SA biosynthesis protein upregulated in 'Kamiya', these gene expressed comfirmed with qPCR along with PR1 and PDF genes, the JA and SA pathway marker genes respectively. The key regulator of systemic acquired resistance (SAR), non-expresser of pathogenesesis-related gene 1 (NPR1), were overexpressed into papaya. By trigging with *P. palmivora*, a functional analog of SA, benzo (1, 2, 3) thiadiazole-7-carbothioic acid S-metholy ester (BTH), and an elicitor from cell wall of *Phytophthora*, Pep-13 polypeptides, our results confirmed that NPR1 gene play a synergistic fashion between the SA- and JA- signaling pathway. A modified defense signaling pathway was proposed as that regulatory interaction of SA- and JA-pathway were complementary, but not additive nor anatogentic in papaya against to *P. palmivora*.

Biography

Rui Zong Jia is an Assistant Professor in the Department of Plant Pathology and Plant-Micro-Biology at Institute of Tropical Bioscience and Biotechnology.He has published numerous research papers and articles in reputed journals and has various other achievements in the related studies. He has extended his valuable service towards the scientific community with his extensive research work

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