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Antiviral resistance genes from abaca (*Musa textilis nee*) Bc2 hybrid: transcriptome responses that mediate innate Immunity against *Abaca bunchy* top virus (abtv)

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Abaca (*Musa textilis Nee*) is susceptible to abaca bunchy top virus (ABTV). An abaca BC2 hybrid derived from a cross between abaca variety Abuab and the ABTV resistant donor parent Pacol (M. balbisiana), was observed to be resistant to ABTV. The molecular mechanism underlying ABTV disease resistance in the hybrid has not been elucidated. Currently, transcriptomic data are available to understand the molecular mechanism of resistance of the abaca BC2 hybrid to ABTV. RNA Seq transcriptome data were obtained from the inner whorl of the pseudostems of Abuab, Pacol, BC2-A2 non-inoculated, BC2-A2 two weeks post inoculated and BC2-A2 four weeks post inoculated with ABTV. Transcriptome were assembled using CLC Bio Genomics Workbench based on reference-guided assembly with CDS of M. acuminate and M. balbisiana. There are 349 differentially expressed (DEGs), eighty-seven of which were putatively classified as defense response genes. These include: four pattern triggered immunity (PTI); signal receptor genes/pattern recognition receptors (PRRs); 35 effector triggered immunity (ETI)-based effector genes or R genes; four photosynthetic genes; two ER resident chaperones involved in unfolded protein response (UPR) and ER-mediated program cell death; two genes involved in molecular Ubiquitin Proteasome System (UPS); four regulatory receptors and thirty-one ABTV responsive transcription factors. It was also observed that some genes have similar patterns of expression in the BC2 hybrid and the donor parent, Pacol. Quantitative real-time PCR analysis validated the RNA-Seq expression results for six genes which include germin-like protein (GLP3), glutathione S-transferase F11 (GST), heat shock coat protein 70-1 (HSCP 70-1), lipid transfer protein (LTP3), senescence associated gene (SAG20) and thioredoxin superfamily protein (TXN). This is the first report on the possible complex molecular mechanisms involved in antiviral defense response in Musa textilis Nee.

Biography

Geraldine P. Muncada holds a MS and PhD degree in Molecular Biology and Biotechnology with a cognate in Biochemistry both from the University of the Philippines Los Banos, Philippines with a full-time scholarship privilege under the Faculty Development Program Phase II of the Commission on Higher Education (CHED-FDPII).

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