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VARIATION OF EXPRESSION PROFILES OF A DEFENSE-RELATED GENE TRANSCRIPT (GAMMA GLUTAMYL TRANSFERASE) AMONG DESSERT- AND COOKING-TYPE BANANA VARIETIES IN RESPONSE TO INFECTION BY *Colletrotrichum musae*

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Anthracnose, caused by *Colletotrichum musae* is an economically significant postharvest disease of banana. A variation in the degree of anthracnose development among varieties of banana grown in Sri Lanka has been identified by previous studies conducted in our laboratory. The objective of the present study was to compare the level of expression of a selected gene transcript (homologous to Gamma glutamyl transferase, GGT), identified as an up-regulated gene due to *C. musae* infection in six varieties of banana, using the relative Reverse Transcriptase Polymerase Chain Reaction (RT-PCR).

Mature unripe banana fruits were selected to represent resistant (i.e. *Alukesel*), moderately resistant (i.e. *Seenikesel*), moderately susceptible (i.e. *Embul* and *Embun*) and susceptible (i.e. *Kolikuttu* and *Suwandel*) varieties with respect to postharvest anthracnose development. A set of banana fruits from all six varieties were inoculated with *C. musae* and another set of fruits were maintained as a control treatment, without inoculating with *C. musae*. Total RNA was isolated separately from inoculated and non-inoculated fruit peels of the six varieties, one hour after inoculation (1hr AI) and 48 hours after inoculation (48 hr AI)). The RNA extracted from all combinations (banana varieties x treatments x time intervals) were subjected to cDNA synthesis and RT-PCR was performed separately using specific primers for GGT and Actin. Expression of the Actin gene was used as the reference gene for normalization of data when calculating the relative gene expression. Forward and reverse primers for the reference gene were 5'-GAG AAG ATA CAG TGT CTG GA-3' and 5'-ATT ACC ATC GAA ATA TTA AAA G-3'respectively. Primers for the GGT transcript were designed based on the sequence information of the cDNA clone harbouring the GGT transcript (i.e. Ma SINI 185) using Primer 3 software. The primer sequences were 5'-TAT GGA AGA CCC TTG GAT-3' and 5'-CAC TTT CTT CCA TGG CAC CT-3. The PCR products obtained for different banana varieties at the two time intervals after inoculation were electrophoresed on 2% agarose gels and signal intensities of PCR products were analyzed by US Scan IT-gel software. Relative RT-PCR of each sample (i.e. variety x time interval combination) was calculated by dividing the expression of gene of interest (GGT transcript) by the expression of the reference gene (Actin).

Relative expression of GGT showed considerable variation among different varieties of banana. Based on relative RT-PCR analysis, the rate of GGT expression increased rapidly at the early phase of infection by *C. musae* (1 hr AI) in varieties *Seenikesel*, *Suwandel* and *Kolikuttu* in comparison to the other three varieties. In contrast, varieties *Embun*, *Embul* and *Alukesel* showed comparatively higher levels of GGT gene expression at a later stage of infection (48 hr AI). Elucidation of expression profiles of a range of defense-related genes would be useful to understand the genetic background of resistance possessed by different varieties of banana.

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