

EXPRESSION OF CHITINASE GENE IN LOCAL DESSERT BANANA CULTIVARS DUE TO EXOGENOUS APPLICATION OF JASMONIC ACID AND A MICROBIAL ANTAGONIST (*BURKHOLDERIA SPINOSA*)

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Banana (*Musa* spp.) is a perishable fruit subjected to postharvest anthracnose caused by *Colletotricum musae*. Degree of anthracnose development varies among local banana cultivars. The objective of the study was to identify a non-fungicidal treatment for the control of banana anthracnose by induction of defense related genes through application of 0.2 mM Jasmonic acid and a cell suspension of a microbial antagonist (*Burkholderia spinosa*) at a concentration of 1×10^5 CFU/ml to banana fruits. Expression of a defense related gene, chitinase in local banana cultivars due to application of the two treatments (*i.e.* jasmonic acid and *B. spinosa*) were investigated using relative Reverse Transcriptase PCR (RT-PCR). RPS-2 gene was used as the reference gene for normalization of the gene expression in banana cultivars *Seenikesel* which is a moderately resistant cultivar and 'Kolikuttu', a susceptible cultivar to anthracnose. Total RNA was extracted separately from the fruit peels of two banana cultivars, subjected to application of jasmonic acid and *B. spinosa* cell suspension at different time intervals before and after treatments. The extracted RNA were subjected to cDNA synthesis and PCR amplification was performed using gene specific primers for chitinase. The RT-PCR products were separated on 2 % agarose gel and subjected to gel documentation. The band intensities of each RT-PCR product were analyzed using Gel UN Scan- IT software and relative gene expression was calculated for all samples with reference to the expression of reference gene (RPS-2) at each treatment combinations (cultivar x treatment x time interval). Expression of chitinase gene was induced in both banana cultivars by the exogenous application of *B. spinosa* in comparison to the treatment with jasmonic acid. Therefore, application of *B. spinosa* cell suspension is a potential non-fungicidal method to induce the expression of chitinase gene which could be a preventive measure for management of fungal infections in banana.

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