

RT-qPCR profiling of pathogenesis related genes in *Musa acuminata* cv. 'Berangan' seedlings challenged with *Fusarium oxysporum* F. SP. Cubense tropical race 4

ABSTRACT

The expression profile of pathogenesis related genes are signatures of an infection response in plant cells. Pathogenic infections can increase or reduce gene expression in a plant system in a relatively specific pattern. These expression patterns can be used as standards in pathogenicity studies and, where phenotypic expression is normally used to gauge a plants response to infection, it could additionally present a more rapid and early screening reference tool. Three genes: catalase (CAT), pathogen related protein (PR10), and phenylalanine ammonia (PAL) all implicitly implicated in the plant disease response pathway were targeted for analysis during the infection of *Fusarium oxysporum* f. sp. Cubense tropical race 4 (FOCR4) in banana *Musa acuminata* cv. Berangan seedlings after a standard challenge under growth room conditions. Distinct patterns of gene expression were observed at three infection time points by real time expression analysis. There was a sequential 10-fold reduction in expression for the PR gene while, the PAL and CAT genes were both upregulated. These results present a set of reference genes that could be used for screening of a plant's response to *Fusarium* before the onset of symptoms.

Keyword: *Fusarium* wilt; *Musa acuminata*; Tropical race 4; Pathogen attack; PAL gene