

Title Acidification by gluconic acid of mango fruit tissue during colonization via stem end infection by *Phomopsis mangiferae*

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Abstract

Colonization of mango and other deciduous and tropical fruit by *Phomopsis mangiferae* was accompanied by local acidification of the host tissue. The fungus acidified the host tissue in mango and grape from pH 5.1 and 4.1, respectively, to 3.8 and 2.5. Analysis of the acidification process in colonized fruit showed that gluconic acid was the main organic acid accumulated at the infection site and in the lesion tissue. In liquid culture conditions the relative induction of transcripts of *pmgox1*, encoding for glucose oxidase (GOX) was 8–12 times greater at pH 7.0 and 8.0 than at pH 4.0. In infected fruit the detection of high levels of transcripts of *pmgox1* and the accumulation of gluconic acid and H₂O₂ in the decayed tissue, suggested that glucose oxidase contributed to the acidification of the tissue. At the same time, transcripts encoding the endopolygalacturonase gene, *pmpg1* accumulated greatly under acidic culture conditions, signifying the importance of the acidification in enhancing the pathogenicity of *P. mangiferae*. Our results indicate that ambient pH is a regulatory cue for processes linked to pathogenicity of postharvest pathogens, and that specific genes are expressed as a result of the environmental pH created by the pathogen.