

Title Global regulation of genes in citrus fruit in response to the postharvest pathogen *Penicillium digitatum*

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Abstract

Large-scale EST sequencing projects and microarray hybridization nowadays constitute two major approaches to analyse biological systems at a molecular level. Although the use of these methodologies are becoming commonplace in plant pathology, their application to postharvest pathology has not yet been reported. We will present analyses of the overall response of citrus fruit to *Penicillium digitatum* infection. We have constructed both subtracted and regular cDNA libraries from infected fruits. Analysis of the non-subtracted library gives us a picture of what genes are being transcribed, whereas the subtracted library provides more direct information on what citrus genes are induced upon *P. digitatum* infection. A cDNA microarray generated from the subtracted library has been used to identify what genes are upregulated in response to pathogen infection, and to determine the influence of ethylene on their expression. Under the framework of the Spanish 'Citrus Functional Genomic Project, CFGP' more than fifty cDNA libraries have been generated encompassing more than 90000 ESTs. These clones have been used to develop a cDNA microarray representing roughly 7000 unigenes. With this tool we have analyzed the differences and commonalities of the citrus fruit responses to ethylene, wounding, *P. digitatum* infection and induced resistance. We will present the results of such analyses emphasizing not only what genes are affected to a larger extent but also describing what are the major changes in biological processes and metabolic pathways.