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Genome-wide Expression Profiling in Ponkan Infected by Candidatus Liberibacter asiaticus

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### **Genome-wide Expression Profiling in Ponkan Infected by *Candidatus Liberibacter asiaticus***

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Huanglongbing (HLB) is an economical and destructive disease of citrus in South China, such as in Guangdong, Guangxi that is caused by the bacterium *Candidatus Liberibacter asiaticus*. The interaction at mRNA level between pathogen and citrus (Ponkan, *Citrus reticulata* Blanco ) was primarily researched by Digital Gene Expression Tag Profiling. Ponkan leaves at 13 weeks and 26 weeks after HLB inoculation were used for analysis. The numbers of up-regulated genes were increased from 37% in 13 wpi (weeks post inoculation) to 64% in 26 wpi. The differentially expressed genes (DEGs) fold change increased more than 8 times from 16.7% to 87.3%. Gene ontology (GO) process molecular function enrichment analysis showed that the DEGs with oxidation reduction function increased from 4.41% to 8.48% and that DEGs responsive to stresses increased from 1.10% to 2.08%, but those related to defense responses decreased from 0.74% to 0.64%. However, those related to defense responses of down-regulated genes increased from 0.55% to 0.79%. Apparently, the expression level of resistance genes strengthened, while the defense ability of host declined along with enhanced stresses caused by HLB infection. Photosynthesis-related genes were down-regulated at both 13 wpi and 26 wpi, which indicated that HLB infection greatly reduced the citrus photosynthesis, perhaps via feedback regulation of the accumulated starches resulted from blockage of sieve tubes by the bacteria in the phloem tissue. RIN4, a negative regulator of plant immunity, was also found up-regulated by approximately 9-fold.