Wounding nectarine fruit disrupts *Monilinia laxa* infection: deciphering fruit gene pathway involved and the role of phenolic and volatile compounds

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Brown rot caused by *Monilinia* spp. provokes dramatic losses of peach in all production regions. Thus we search solutions to fight in sustainable ways against this disease. Compounds produced by fruit, through constitutive synthesis or *de novo* response to stress, may play a role in controlling the infection. In this study, we explored the effect of wounding the fruit on a subsequent infection, suspecting that the synthesis of new compounds after an injury can impede the fungi attack.
We performed a series of experiments to study the composition of the skin after injury and in case of inoculation immediately after wounding and seven hours after wounding. We also tested the influence of fruit presence on the growth in Petri dishes of *M. laxa* colonies.
It resulted that *M. laxa* growth was accelerated in the boxes that contained fruit. A total of 30 phenolic and terpenoid compounds were identified in the skin by HPLC analysis. In general, the treatment with wounds presented less content of these compounds than the treatment without wound. Inversely for volatile compounds, 70 were detected by GC-MS analysis, among which 13 were associated with wounded fruits only. The inoculation done seven hours after wounding resulted in slowed and reduced brown rot infection compared to inoculation done immediately after wounding. Red reactions were sometimes detected. Nine phenolic compounds were present only in those red zones, and 6 other compounds were present in greater proportion than in samples without red reaction. Among the latter, the two major phenolic compounds were identified as Eriodictyol-7-glucoside and Naringenin-7-glucoside. Results of RNAseq analyses acquired on wounded and non-wounded fruit highlighted pathways activated after injury.
Some of the compounds produced after injury may play an active role in plant-pathogen relations and/or activation of metabolic pathways involved in the susceptibility/resistance of peach to *M. laxa*.

Key words: biochemical compounds, RNAseq, biotic and mechanical stresses, disease resistance, *Monilinia* spp.*, Prunus persica*