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Les Conférences du Grand Réseau de Recherche VASI

Végétal - Agronomie - Sols - Innovation

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Bâtiment Monod - salle V. Contesse - Mont-Saint-Aignan

Cell wall profiling of ripening wine and table grapes reveals changes in neutral and acidic β -(1,4)-galactans, extensins and arabinogalactan protein epitopes

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Wine grapes are small and soft with thick skins whereas table grapes are larger and crisp while being thin-skinned. Wine grapes are bred for concentrated flavor and aroma, but table grapes are mainly grown for eating and so texture and berry colouring are considered more important parameters. Table grapes are also exposed to hormone (gibberellin and ethylene) treatments to enhance fruit quality. Cell wall profiling tools [1] were used to track the ripening process in both wine and table grape cultivars. The techniques, in addition to GC-MS for monosaccharide composition, FT-IR spectroscopy for functional group chemistry and comprehensive microarray polymer profiling (CoMPP) also include the newly developed epitope detection chromatography (EDC) [2]. Strong developmental patterns were evident in the datasets suggesting genetically controlled turnover/deposition of arabinogalactan-proteins (AGPs), extensins and pectic- β (1,4)-galactans during ripening [3]. Unpublished data reveals pectic- β (1,4)-galactans were shown via EDC to be separable into acidic and neutral polymeric fractions. Furthermore, the neutral β (1,4)-galactan showed marked reduction in levels from green (berry touch) stage through véraison to ripe grapes compared to the acidic fraction. Moreover, specific differences were found in the pectin architecture of table grapes that varied significantly from wine grapes suggesting a role in texture differentiation. The importance of this study in providing a framework to understand cell wall-related berry biomechanical properties in wine and table grapes will be highlighted and discussed.

[1] Moore et al. (2014) *Carbohydrate Polymers.*, 99, 190-198

[2] Cornuault et al. (2014) *Plant Journal (in press)*

[3] Moore et al. (2014) *Annals of Botany (in press, online)*

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