[P 054] (Un)targeted analysis to unravel critical interactions between sugars and phenolics in Strecker aldehydes formation in beverages.

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The knowledge of the chemical processes occurring during wine aging that result in a specific chemical/sensory profile remains limited. This lack of knowledge and understanding significantly limits the ability to improve product quality and consistency. For that reason, unravelling the chemical changes occurring during aging that are responsible for wine flavour, constitutes a critical task when one attempts to address issues related with authenticity and sensory quality.
The interaction between phenolics oxidation and Maillard reaction in the formation of sensory active substances, such as Strecker aldehydes, has been reported recently for wine model conditions (1). In order to gather more information to rank oxidation and Maillard reaction regarding phenylacetaldehyde formation, the interaction between sugars and phenolic compounds were further studied. Three solutions have been prepared: (a) glucose and phenylalanine, (b) gallic acid and phenylalanine, (c) gallic acid, glucose and phenylalanine. The chemical supervision of the dominant mechanisms was obtained by quantifying reaction intermediaries such as: Amadori compound, 3-deoxyglucosone, dicarbonyls, o-quinones as well as hydroxyalkylsulphonic acids by LC-ESI-UHR-QqTOF-MS. It was observed that phenylacetaldehyde formation was 4 times higher in the solution B when compared with C. The presence of glucose in system C decreased by half the amount of *o*-quinone and showed as a result a lower concentration of phenylacetaldehyde. This is in line with previous results (1), where for the first time, it was reported that when glucose, gallic acid and phenylalanine are combined, the rate of formation of phenylacetaldehyde decreases when compared with the model solutions where glucose is absence. The same behaviour was observed for the phenolic *o*-quinone, a crucial substrate for the formation of aldehydes in wine. On the other hand, the presence of sugar together with the gallic acid increased the formation of the Amadori compound an intermediate of Maillard reaction. Finally, an untargeted analysis has been performed to better contextualize the observed behaviour. This work brings new insights into the role of glucose in managing the beverages shelf-life in particular wine.

1. Monforte, A. R., Martins, S. F. I. S., Silva Ferreira, A. R., Strecker Aldehydes Formation in Wine: New Insights into the Role of Gallic Acid, Glucose and Metals in Phenylacetaldehyde formation, 2017, J. Agric. Food Chem, DOI:1021/acs.jafc.7b00264