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O 37 - Polyphenol profiling by UHPLC-MRM-MS gives new insights into the color diversity of worldwide Rosé wines

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Abstract

Purpose: Rosé wines have a large diversity of colors worldwide, ranging from the light-grey pink, through yellowish-pink, to purple. Wine color greatly impacts consumer preference during purchase process and wine tasting and can be a signature of Rosé wines from a vineyard or a geographical origin. As in red wines, the Rosé wine colors are mainly due to anthocyanins, a subclass of polyphenols composed of red pigments extracted from the grape skin, but also to the numerous phenolic derived pigments formed during the Rosé specific wine-making process. We wanted to better understand the correlation between the different subclasses of phenolics and the color parameters of a broad Rosé wine collection.

Experimental description: 150 polyphenols from 300 Rosé wines from a millesime of the « Centre du Rosé » worldwide collection were analyzed by UPLC-MS-MRM. Without preconcentration, the wines were injected on a C_{18} UHPLC column for a 30 minutes gradient and the detection was held by a Waters TQD triple quadripole mass spectrometer operated in the MRM (Multiple Reaction Monitoring) mode. In parallel wine color was measured with the L*a*b* colorimetric model. PCA and non-directed chemometric strategies were used to analyze the data.

Results: We developed a polyphenol profiling method[(1)] that links phenolics composition with color characteristics. Light rosé color is largely due to pyrano-anthocyanin pigments. For brownish Rosés, the color is mainly due to oxidation phenomena during wine making. The more colored Rosé wines contain a larger concentration of native anthocyanins, stilbenes and gallic acid, as a result of a more extensive extraction form grape skin during the first wine-making steps.

Conclusions: Shedding light on pigment reactions and evolution during wine-making process was made possible by this in-depth large scale polyphenol analysis of Rosé wines. Within a homogeneous wine-making process, we were able to predict the color characteristics based on a polyphenol composition model. The discriminating capability of our model according to wine origin, grape variety, process, style… is still under improvement with the integration of standard oenological parameters (pH, sulfite content…) in the model.

Key Words: polyphenols, wine color, œnology, MRM Mass Spectrometry

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