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PHENOLIC PARAMETERS EXPLAINING DIFFERENT ASTRINGENCY PROPERTIES IN RED WINES

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The astringency perception of wine tannins is not related only to the astringency global intensity but several sub qualities have to be considered. Descriptors as complex and velvet are associated to a pleasant sensation while attributes as drying, harsh and unripe are representative of negative astringency features. Several instrumental methods involving tannin precipitation were developed in order to objectively estimate wine astringency but up to now none of them is able to predict all aspects of astringency perception. In this study we investigated the link between methods usually used to characterize wine tannins and phenolics and astringency features. Seventy-five wines belonging to 11 Italian grape varieties were evaluated by 14 wine experts for different levels of global astringency GAs, sum of positive attributes (complex and surface smoothness) PAs and, sum of negative attributes (drying, harsh and dynamic) NAs. A set of chemical parameters significantly correlated (a=0.05) to astringency sub-qualities was individuated: GAs are positively correlated with total proanthocyanidins, VRF (vanillin reactive flavans), MCP (methyl cellulose precipitable tannins), BSAreactive-tannins and SPI (saliva precipitation index); NAs are positively correlated with total proanthocyanidins, VRF, BSAr-tannins, SPI, MCP and negatively with large polymeric pigments (LPP) and anthocyanins/BSAreactive-tannins ratio (A/T); PAs are positively correlated with LPP, A/T and negatively correlated with total proanthocyanidins, VRF and BSAreactive-tannins. Tannin concentration estimated by phloroglucinolysis was positively correlated with GAs and NAs while a negative correlation with PAs was observed. Total wine polysaccharides and proteins are not significantly correlated with any of the measured astringency parameters. Each astringency predictive methods based on tannin precipitation assays is explained by different chemical variables: BSAreactive-tannins by total proanthocyanidins, total phenolics, VRF and Abs_{280nm} (R^2=0.9164); MCP by Abs_{280nm}, total phenols, total proanthocyanidins, vanillin reactive flavans and Abs230nm (R^2=0.8151); SPI by LPP, Abs_{230nm}, total proanthocyanidins and vanillin reactive flavans (R^2=0.4501).