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THE COMMERCIAL YEAST STRAIN AS A SIGNIFICANT SOURCE OF VARIANCE FOR TYROSOL AND HYDROXYTYROSOL IN WHITE WINE

Tyrosol (TYR) and hydroxytyrosol (HYT) are bioactive phenols present in olive oil and wine, basic elements of the Mediterranean diet. TYR is reported in the literature for its interesting antioxidant, cardioprotective and antiinflammatory properties. In wine, its concentration can reach values as high as about 40 mg/L [Pour Nikfardjam et al. 2007] but, more frequently, this phenol - derived from yeast metabolism of tyrosine during fermentation - is present at lower levels, generally higher in red wines compared to whites. HYT was measured for the first time by Di Tommaso et al. [1998] in Italian wines - with maximum values of 4.20 mg/L and 1.92 mg/L for red and white wines, respectively - while definitely lower concentrations have been found later in Greek samples. Concentrations of about 2-3 mg/L have been reported by Minuti et al. [2006] for red wines while Romboli et al. [2015] observed definitely higher concentrations - up to 25 mg/L - in case of slow fermentations of Sangiovese wines processed in lab-scale. Oddly, in spite of the non-negligible concentration of these compounds in wine, few data are available regarding the concentration variability of TYR and HYT due to not genetically engineered Saccharomyces cerevisiae strains available on the market and used in winery conditions. To investigate this variability, 7 yeast strains (Zymaflore VL1; Fermol Arome Plus; AWRI 796; La Claire EM2; Anchor VIN13; Zymaflore VL3; Mycoferm CRU 31) were used (15 g/hL) to ferment - on semi-industrial scale, at 18-21°C - five Pinot gris juices achieved from different vineyards. They were adequately provided with natural assimilable nitrogen (163-214 mg/L), and had been well settled (36 h, 10°C, < 100 NTU) and supplemented with 20-30 mg/L SO2. After alcoholic fermentation, wines were sulphited (80 mg/L) and maintained sur lies under argon blanketing (4°C x 90 days), with batonnage 1 time a week on average. In the transition from juice to wine, the mean concentrations of TYR and HYT increased about 60 and 20 times. In wine, TYR ranged between 4.20 and 15.51 mg/L, and HYT between 0.33 and 3.45 mg/L confirming the values in the literature. Statistically significant differences have been observed between yeast strains, both for TYR and HYT, and maximum variability between strain mean concentrations was about 35%, corresponding to a range of about 2.2 mg/L TYR and 0.55 mg/L HYT. In any case, the variability linked to the origin of the juice was higher than that linked to the Saccharomyces cerevisiae strain. Pour Nikfardjam et al. 2007]. Mitteilungen Klosterneuburg 57(3), 146-152 Di Tommaso et al. (1998). J. High Res. Chromatography 21(10), 549-553 Minuti et al. (2006). J. Chromatography A, 1114, 263-268 Romboli et al. (2015). W. J. Microbiol. Biotech. 31(7), 1137-1145.

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