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**Production of hydroxyl radicals and their relationship with phenolic compounds in white wines**

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**Abstract**

Exposure of white wine to oxygen can cause detrimental effects, such as loss of sensorial characteristics. New antecedents, to the oxidation of wine, establish the importance of the formation of metallic complexes with compounds with adjacent hydroxyls. These complexes could reduce iron, promoting the formation of radicals through the Fenton reaction. The formation of hydroxyl radical ( $\cdot\text{OH}$ ) induced by air was found in all 18 white wines analysed by electronic paramagnetic resonance (EPR) spectroscopy. The variation in the  $\cdot\text{OH}$  production was related to the phenolic composition of the wines. The amount of these radicals was linearly related to 5 phenolic compounds (caffeic acid, protocatechuic acid, p-coumaric acid, gentisic acid and syringic acid). Therefore, in this study, the relationship between certain phenolic compounds and the induction and amplification of the  $\cdot\text{OH}$  production was established and was postulated to be a chemical oxidation pathway to the Fenton reaction.

**Keywords:**

Hydroxyl radical; white wine; EPR spectroscopy; phenolic compounds

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