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Título artículo: Impact of oenological antioxidant substances on the formation of 1-hydroxyethyl radical and phenolic composition in SO₂ free red wines

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RESUMEN:

BACKGROUND: Different natural substances, chitosan, inactive dry yeasts and freeze-dried aqueous extracts from two wine industry by-products (stems and shoots) were used in red winemaking as possible alternatives to SO₂. The resistance to oxidation of wines was evaluated by electron paramagnetic resonance. The phenolic composition of wines was analyzed by high performance liquid chromatography-diode array detection/electrospray ionization mass spectrometry, antioxidant activity was determined by DPPH (1,1-diphenyl-2-picrylhydrazyl radical) and ABTS [2,2'-azino-bis-(3-ethylbenzothiazoline-6-sulfonic acid) radical cation] assays and spectrophotometric measurements of color were compared.

RESULTS: The wines elaborated with chitosan and inactive dry yeast presented greater capacity to inhibit the formation of the 1-hydroxyethyl radical compared to the wines elaborated with stem or shoot extracts. The total content of anthocyanins was higher in the wines elaborated with SO₂; however, the concentration of flavan-3-ols was higher in the wines with chitosan. In addition, the wines with chitosan and inactive dry yeast presented the highest % polymerization. Wines elaborated with stem extract had a lower concentration of flavonols and stilbenes.

CONCLUSION: Chitosan and inactive dry yeast, which are used as an alternative to SO₂ in winemaking, allow the control of the formation of 1-HER in red wines. Wines with stem and shoot extracts showed a lower resistance to oxidation.

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