ADDITION OF CARBON DIOXIDE AND ASCORBIC ACID IN WHITE WINES: EFFECTS ON BROWNING DEVELOPMENT AND ANTIOXIDANT ACTIVITY

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Abstract

White wines contain low concentrations of antioxidant compounds, which make them sensitive to the oxidation and the development of brown colour. Browning is a serious problem which affects the quality and the sensory attributes of white wines. It is well known that it is associated with polyphenol oxidation, and therefore it may be accompanied by changes in the antioxidant capacity. The addition of different amounts of carbon dioxide (C1:0.535g/L, C2:0.9g/L, C3:1.1g/L) and ascorbic acid (As1:100mg/L, As2:150mg/L, As3:200mg/L) before bottling and the effect in browning capacity and antioxidant protection of white wines was investigated in this work. Browning was approached from a kinetic point of view by the accelerated browning test and antioxidant activity was evaluated by the 2,2-diphenyl-1-picrylhydrazyl (DPPH•) assay. The results showed that the percentage change in browning ($\%\Delta A_{420}$) and the antioxidant activity (A_R) were significantly affected by the addition of carbon dioxide and ascorbic acid. Antioxidant activity enhancement was observed after the addition of CO2 and ascorbic acid in all samples.

Keywords: browning rate, antioxidant activity, wine, polyphenols