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Impact of oxygen dissolved at bottling and transmitted through closures on the composition and sensory properties of a Sauvignon Blanc wine during bottle storage.

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This work outlines the results from an investigation to determine the effect of the oxygen dissolved at bottling and the specific oxygen barrier properties of commercially available closures on the composition, color and sensory properties of a Bordeaux Sauvignon Blanc wine during two years of storage. The importance of oxygen for wine development after bottling was also assessed using an airtight bottle ampule. Wines were assessed for the antioxidants (SO₂ and ascorbic acid), varietal thiols (4-mercapto-4-methylpentan-2-one, 3-mercaptohexan-1-ol), hydrogen sulfide and sotolon content, and color throughout 24 months of storage. In addition, the aroma and palate properties of wines were also assessed. The combination of oxygen dissolved at bottling and the oxygen transferred through closures has a significant effect on Sauvignon Blanc development after bottling. Wines highly exposed to oxygen at bottling and those sealed with a synthetic, Nomacorc classic closure, highly permeable to oxygen, were relatively oxidized in aroma, brown in color, and low in antioxidants and volatile compounds compared to wines sealed with other closures. Conversely, wines sealed under more airtight conditions, bottle ampule and screw cap Saran-tin, have the slowest rate of browning, and displayed the greatest contents of antioxidants and varietal thiols, but also high levels of H₂S, which were responsible for the reduced dominating character found in these wines, while wines sealed with cork stoppers and screw cap Saranex presented negligible reduced and oxidized characters.

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