

Impact of closure type and storage temperature on chemical and sensory composition of Malbec wines (Mendoza, Argentina) during aging in bottle

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Malbec is the flagship variety of Argentina mainly due to its high oenological value and plasticity to obtain different wine styles. During bottled aging, the chemical and organoleptic composition of wines is subject to changes depending on the aging conditions (closure, oxygen level, temperature, time). However, the combined effect of these factors on chemical composition and organoleptic characteristics of Malbec wines has not been studied yet. Wines were bottled with screw cap and natural cork and were kept in chambers at 15 °C and 25 °C for 2 years. Sampling was performed at 2, 4, 6, 9, 12, 15, 18, 21 and 24 months. Concentrations of free sulfur dioxide, dissolved oxygen, anthocyanins, tannins, esters, volatile phenols, organic acids, and color saturation decreased during the storage process. While, the formation of polymeric pigments, the color attributes (lightness and hue) and the levels of alcohols, norisoprenoids, furanoids and terpenoids increased. At 24 months, Malbec wines were organoleptically different. Wines kept at 15 °C were associated with high sensory perceptions in color intensity and violet tint, those presented a positive correlation with free sulfur dioxide, tannins, and anthocyanins levels. On the contrary, wines aged at 25 °C were linked with high sensory perceptions of dried vegetative and dried fruit aromas. These descriptors were positively correlated with norisoprenoids, furanoids, and terpenoids. In general, the chemical composition and organoleptic attributes of bottled Malbec wines (Mendoza, Argentina) were stable respect closure type employed, but highly sensitive to the combined effect of time and storage

temperature. This finding is key to making decisions about the wine style searched, and costs (e.g. refrigeration) involved in the conservation period until consumption. © 2019 Elsevier Ltd

Aging

Aromas

Cork

Malbec wines

Phenolics

Screw cap

Storage temperature

Aging of materials

Anthocyanins

Bottles

Color

Dissolved oxygen

Food storage

Lipids

Odors

Screws

Sulfur dioxide

Tannins

Aromas

Chemical compositions

Cork

Organoleptic characteristics

Phenolics

Positive correlations

Storage temperatures

Volatile phenols

Wine