

Chemical, physical, and sensory attributes of Sauvignon blanc wine fermented in different kinds of vessels

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Abstract

The use of vessels that are alternative to conventional cylindrical stainless steel tanks and traditional oak barrels during winemaking has increased in recent years. Examples of these alternative vessels include fashionable, oval-shaped vessels or classic clay jars. A Sauvignon blanc grape juice was fermented (by using a commercial starter made of two different commercial strains from Oenobrand/Anchor Oenology) in four different vessels in triplicate: 150 L cylindrical stainless steel tanks (as a control), 980 L polyethylene oval-shaped tanks, 450 L concrete oval-shaped tanks, and 225 L clay jars. Afterwards, the finished wines were chemically, physically, and sensorially characterized. The wine fermented in the concrete vessels had a slightly higher pH (about 0.05 pH units) and lower titratable acidity (about 0.20 g/L of tartaric acid equivalents) value than those of the control wine. The wine fermented in the clay jars showed the lowest amounts of C₁₀, C₁₂, and C₁₄ volatile compounds (containing about 69% of those compounds when compared with the control wine). The wine fermented in the polyethylene oval-shaped tanks was described as the most bitter, while the wine fermented in the concrete oval-shaped tanks was described as the least fruity when wines were sensory analyzed by a panel of 11 wine experts. The wines fermented in the oval-shaped vessels showed lower volatile acidity (about 25% reduction of volatile acidity when compared with wines fermented in non-oval-shaped vessels), higher residual sugars (wines fermented in the oval-shaped vessels contained about 1.7 g/L of residual sugars, while wines fermented in the non-oval-shaped vessels contained about 1.4 g/L of residual sugars), higher phosphorous content (with an increase of about 12%), and required a lower dose of bentonite to achieve protein stability (about 64 g/hL of bentonite) than those of the other wines (about 75 g/hL of bentonite). Even though some statistical differences were found among wines fermented in the different vessels, it should be noted that the differences were very small. Thus, it seems that the impact of the fermentation vessel type on final wine features is lower than expected.

Author keywords

Alcoholic fermentation

Clay jar

Concrete vessel

Oval-shaped vessel

Polyethylene vessel

White wine