EFFECT OF CLOSURE AND STORAGE TEMPERATURE ON PHENOLIC COMPOSITION AND COLOUR OF cv. MALBEC WINES (MENDOZA, ARGENTINA)

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INTRODUCTION

During wines bottled ageing, the phenolic composition of wines is subject to change depending on the ageing conditions (time, temperature, O2 level, closure). The aim of this study was to evaluate the effect of closure and storage temperature on color and phenolic composition of Malbec wines during aging.

MATERIALS AND METHODS

Sampling performed at 2, 4, 6, 9, 12, 15, 18, 21 and 24 months. Dissolved oxygen (DO) was measured by luminescence (Fibox3-Trace). Large and small polymeric pigments (LPP and SPP), anthocyanins (AT), tannins (TN), color intensity (C), hue, and CIELAB coordinates (L*, a*, b*, C*, H) were evaluated by spectroscopy methods.

RESULTS

DO was decreased during conservation (Fig. 1), wines bottled with C had more DO than those with R. Polymeric pigments were increased during aging (Fig. 3a and 3b). LPP was greater at T2 than at T1, probably due to high temperature and DO (C>R) promote polymerization reactions. Reductions in AT and TN concentrations were higher at T2 compared to T1 (Fig.3). These compounds could be related to polymerization and/or oxidation processes, etc. After 6 months of storage, an average observer could perceive the color change produced between young wine and wines stored at T2. The wines conserved at T1 had similar color to the young wine until 15 months. The wines conserved at the same temperature and different closure shown ΔE*ab < 3. Wines ageing at T1 showed ΔE*ab due to decreasing C*ab and increasing L* (Fig 5b and 6); at T2, ΔE*ab were attributed to decreasing C*ab and increasing tone, violet to brown, (Fig.4). ΔE*ab between treatments conserved at T1 and T2 during 24 months, were similar (regardless of the closure used) (Fig 5c). These differences were due to C*ab (T1 > T2) and tone (T2 > T1).

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