

COLOUR STABILITY OF RED WINE AFTER TREATMENT WITH MESOPOROUS SILICA SBA-15

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The phenolic compounds are the most important components of wines and are directly related to colour, astringency, bitterness and oxidative level. The red colour of young wines is mainly due to: (a) free anthocyanins, principally as flavylium cation (red) and quinoidal anhydro-base (blue);(b) the self-association of anthocyanins; and (c) copigmentation of anthocyanins with other phenols present in wine (i.e., flavanols, flavonols and hydroxycinnamic acids).

The purpose of this work was to investigate the evolution of colour stability of red wine on treatment with mesoporous material SBA-15.

The purely siliceous molecular sieve SBA-15 was synthesized hydrothermally and the typical gel molar composition was **1TEOS : 0.017P123 : 5.95HCl : 194H₂O**.

Wine colour was evaluated by simple CIELab76 methods reflecting the colour visual appreciation. This method has been proposed as an OIV method for colour determination.

This CIELab76 colour or space system is based on a sequential or continuous Cartesian representation of 3 orthogonal axes: *L*, *a* and *b* (Fig.1). The chromatic characteristics were calculated by equations:

$$L=116(Y/Y_n)^{1/3} -16; b=200-[(Y/Y_n)^{1/3}-(Z/Z_n)^{1/3}]; a=500[(X/X_n)-(Y/Y_n)];$$

$$C = (a^2 + b^2)^{1/2}; H = \text{tg}^{-1}(b/a); \Delta H = [(\Delta E)^2 - (\Delta L)^2 - (\Delta C)^2]^{1/2};$$

$$\Delta E = [(\Delta L)^2 + (\Delta a)^2 + (\Delta b)^2]^{1/2}; \Delta E = [(\Delta L)^2 + (\Delta C)^2 + (\Delta H)^2]^{1/2}$$

Mesoporous silica SBA-15 retains phenolic compounds from red wine, it is comparable with those obtained using active carbon as adsorbent and can be used as fining agent for red wine.

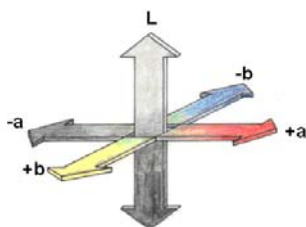


Fig.1 Diagram of colourimetric coordinates according to *Commission Internationale de l'Eclairage* (CIE, 1976)

References

1. Commission Internationale de l'Eclairage (CIE). *Colorimetry (2nd ed.)*. Publication of the CIE: Vol. 15.2. Vienna: CIE, (1986).