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IETCA 13 - Modelling of the impact of bentonite treatment on 'Muscat blanc' must before f 'prise de mousse' in the production of Asti DOCG aromatic sweet sparkling wine

Ilana Lambri^{a*}, Roberta Mastrocinque^a, Donato Colangelo^a, Dante Marco De Faveri^a, Luca Rolle^b,
Giacinto Gerbi^b, Fabrizio Torchio^b

^a Istituto di Enologia e Ingegneria Agro-Alimentare, Università Cattolica del Sacro Cuore, Via Emilia
Parmense 84, 29122 Piacenza, Italy

^b Università degli Studi di Torino, DISAFA - Dipartimento di Scienze Agrarie, Forestali e Alimentari, Largo
Braccini 2, 10095 Grugliasco (TO), Italy

ilana.lambri@unicatt.it

ABSTRACT - The presence of terpenes in grape juices and wines is an enormous potential to enhance the organoleptic characteristics of wines, which contributes to a final product with increased fruit-like flavours. In the case of aromatic white wines, protein stability and the presence of intense, fine aromas are two important requirements [1]. The removal of aromatic compounds during wine fining has long been a matter of debate. Researchers [2] suggested the use of bentonite as a clarifying agent during juice settling, since the volatile loss is not as drastic as it is in wine, but others observed that bentonite addition before fermentation causes flavour loss [3]. Therefore, the role of bentonite added to settling juices from aromatic grapes is still unclear especially when Ca-bentonites are considered.

This study focuses on the impact of one Na-bentonite and one Ca-bentonite for the clarification of 'Muscat blanc' must before 'prise de mousse'. The clays were used both individually and mixed together at amounts ranging from 10-100 g hL⁻¹ as modelled by Central Composite Design. The heat-stability of colloidal matter, the concentration of total proteins and the content of the free- and glycosylated-terpenols of treated and control samples were assessed through O.I.V. methods, HS-SPME-GC-MS techniques, and UPLC-MS approaches.

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Results showed that the significant effect on the protein reduction was operated by 10 and 100 g hL⁻¹ of 100% Na-bentonite and by 55 and 100 g hL⁻¹ of the mixture at 50% of both clays. The heat unstable colloidal matter was highly reduced by the mixtures in which Na-bentonite was higher than 85 % and by pure Ca-bentonite at 55 and 100 g hL⁻¹. The free-terpenols and β -damascenone were depleted by low amounts of Ca-bentonite, whilst they were not significantly affected by Na-bentonite even at high doses.

Finally, the impact on the glycosylated forms of linalool, nerol, and geraniol was negligible irrespective of the bentonite type and its dose. These outcomes allowed at validating the effects of a clarifying agent usually applied for grape juice settling and wine fining in order to achieve findings that are partially unknown especially when the aromatic grapes are considered.

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