Accepted Manuscript

Volatile and fixed composition of sulphite-free white wines obtained after fermentation in the presence of chitosan

Antonio Castro-Marin, Ana Gabriela Buglia, Claudio Riponi, Fabio Chinnici

PII: S0023-6438(18)30218-4

DOI: 10.1016/j.lwt.2018.03.003

Reference: YFSTL 6932

To appear in: *LWT - Food Science and Technology*

Received Date: 7 October 2017

Revised Date: 17 February 2018

Accepted Date: 1 March 2018

Please cite this article as: Castro-Marin, A., Buglia, A.G., Riponi, C., Chinnici, F., Volatile and fixed composition of sulphite-free white wines obtained after fermentation in the presence of chitosan, *LWT - Food Science and Technology* (2018), doi: 10.1016/j.lwt.2018.03.003.

Volatile and fixed composition of sulphite-free white wines obtained after fermentation in the presence of chitosan

Antonio Castro-Marin [a], Ana Gabriela Buglia [a], Claudio Riponi [a], Fabio Chinnici [a*]

[a] *Department of Agricultural and Food Sciences, University of Bologna, Viale Fanin 40, 40127, Bologna, Italy*

RUNNING TITLE: Effects of chitosan on white grape must fermentation

Abstract

Consumers are increasingly interested in healthier wines containing reduced levels or totally absent of sulphites. In the present investigation distinct fermentations of white musts either in the presence of chitosan or sulphur dioxide were carried out in order to compare the volatile and fixed composition of the wines produced, and evaluate the impact of chitosan as an alternative to sulphur dioxide.

Chitosan promoted a 24 h extended lag-phase and diminished the titratable acidity of wines by about 1 g L^{-1} as a consequence of the absorption of tartaric and malic acids onto the polymer surface. The volatile composition of wines was analysed at the end of the alcoholic fermentation and then after 12 months of storage in glass bottle. Hexanoic, octanoic and decanoic acids were significantly higher in chitosan added wines, which further contained an increased amount of ethyl and acetate esters. Results demonstrated that, when added before the alcoholic fermentation, chitosan may affect both the acidic and volatile composition of wines, likely due to its polycationic behaviour and interaction with yeast wall constituents. This also suggests that attention to wine acidic balance should be paid before its use in other vinification steps such as must clarification or wine fining.