

IMPACT ON CHITOSAN APPLICATION OF DIFFERENT MICROORGANISMS HAVING OENOLOGICAL INTEREST

Chitosan is an effective antimicrobial agent available in the wine industry, because it ensures the control of a of spoilage microorganisms, such as Brettanomyces of lactic acid bacteria.

In this work, an exhaustive characterization of 12 commercial chitosans was performed in accordance with the OIV methods. These analyses made it possible to determine the animal or fungal origin of the 12 samples. Furthermore, ionic chromatography coupled with an amperometric detector (IC-PAD) confirmed peculiar polysaccharide profiles for fungal and animal-derived chitosans. The antimicrobial activity of chitosans was evaluated against a large pool of microorganisms involved in wine industry, studding the specie-specific sensitivity and their mechanism of action. Chitosans were tested in static and stirred conditions, in a synthetic grape must, in order to discriminate against the physical settling of cells and their specific antimicrobial activity. Moreover, the activity of the soluble portion of chitosan was checked by inoculating microorganisms in the media after chitosans removal.

The results highlighted the different sensitivity of microorganisms to chitosans, allowing selective control of spoilage agents. However, the yeast and bacteria involved in fermentation were damaged by chitosan, and the synthetic media treated with this molecule showed a less fermentative aptitude. The evidence obtained in laboratory were validated by tests performed in winery. A commercial chitosan was further tested during the semi-industrial cold stabulation of grape must prior the alcoholic fermentation, however with inconclusive results.

In conclusion, the work confirms that chitosan is a promising tool oenology, but an in-depth study of the biochemical interaction between chitosan and food microorganisms is necessary.

Presenting author: Raffaele Guzzon Fondazione Edmund Mach – Fondazione Edmund Mach

Additional authors: Tomas Roman Fondazione Edmund Mach, Tiziana Nardin Fondazione Edmund Mach, Roberto Larcher Fondazione Edmund Mach

Email: raffaele.guzzon@fmach.it

Keywords: Chitosan, Brettanomyces, Grape cold stabulation, Wine spoilag
