

THE INHIBITORY EFFECT OF CHITOSAN AGAINST MICROORGANISMS INVOLVED IN THE DIFFERENT STAGES OF WINE PRODUCTION

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There has been increasing trend towards minimizing SO₂ levels in wine industry because of the adverse health effects of high levels of SO₂. In this context, chitosan has received considerable attention as potential natural food preservative because of its antibacterial and antifungal activity. In this study, the inhibitory effect of chitosan towards *S. cerevisiae* as well as wine spoilage organisms including lactic acid bacteria and wild yeasts, and the possibility of use of chitosan at different stages of wine production was evaluated. Wine fermentation and malolactic fermentation of musts were conducted with the addition of chitosan considering the minimum inhibition concentration (MIC) of chitosan for each strain. The antimicrobial activity of chitosan during wine storage was also investigated. MIC of chitosan for the strains was as follows; >2 g/L for *S. cerevisiae*, 2 g/L for *L. plantarum*, 0,2 g/L for *L. hilgardii*, *O. oeni*, *B. bruxellensis* and 0,4 g/L for *Z. bailii*, *H. uvarum*. In wine fermentation experiments conducted with the addition of different concentrations of chitosan and chitosan-SO₂ mixture, similar total weight loss, residual sugar and ethanol production after fermentation in different groups was explained as the addition of chitosan decreased the fermentation rate but did not inhibit the completion of fermentation. It was determined that the decreasing effect on fermentation rate was higher as the chitosan concentration increased. In conclusion, chitosan can be used to minimize amounts of SO₂ in wine production.

Keywords: Chitosan, wine fermentation, antimicrobial activity, minimum inhibition

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