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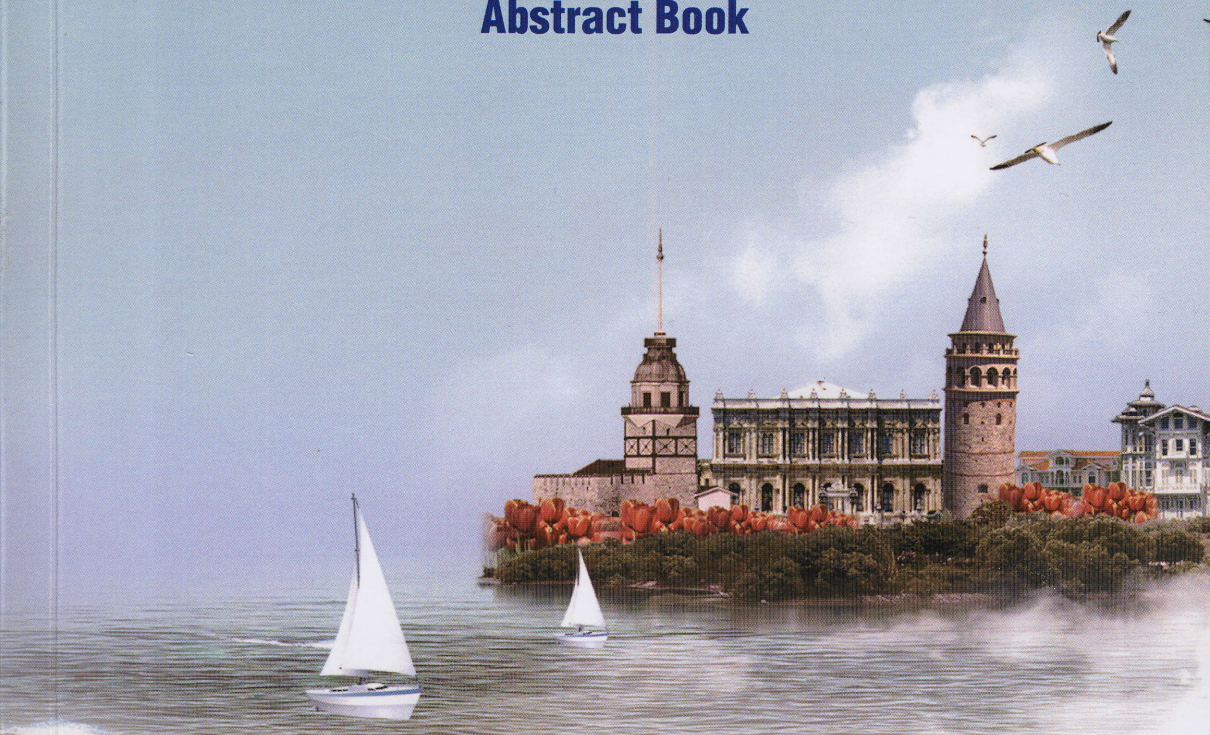

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The prevention of microbial wine spoilage by using ozone as a sanitising agent

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The use of antiseptic in winemaking is not without complications due to the tightening up of regulations and consumer opposition. The use of ozone could be an alternative, as it offers some interesting advantages: it is active against all microbiological forms and already ensures the complete disappearance of residues a few minutes after treatment. We propose a study on the use of ozone in a winery. Considering that the worst microbial contamination occurs during wine ageing in barrels, the paper focuses on spoilage microorganisms adapting well to barrel conditions. In the laboratory we took into account 19 species of microorganisms; for each of them the residual cell concentration was evaluated after a permanence of 30 minutes in an aqueous ozone solution. At a higher cellular concentration (> 100000 cfu/mL) non-specific protective action is carried out by the organic matter present in solution, and a very high ozone concentration is required to eliminate the microorganisms. On reducing the cellular concentration, the action of ozone was more uniform and 2.5 mg/L of ozone were generally sufficient to inactivate the microflora. The experience was exported to an Italian winery, where tests were performed using 4 batches of barrels, treated using steam, UV radiation and ozone in gaseous or aqueous form. Irradiation of the inner surface of barrels using UV was the least effective, eliminating 35% of yeasts. Thermal treatment with steam was able to eliminate about 67% of yeasts. The effectiveness of ozone was not significantly different from that of aqueous steam. Both aqueous and gaseous treatments killed on average 72% of the yeast population. No differences were found in the effectiveness of treatments in plate counts on WL Agar, confirming the non specific action of treatments. In the case of plate counts performed on DBDM, which recovered the Brettanomyces/Dekkera genera, the reduction in cell density was greater than that observed in other plate counts. This observation makes it possible to surmise that the sensitivity of Brettanomyces/Dekkera to the tested treatments is higher than that of more useful oenological yeasts.