

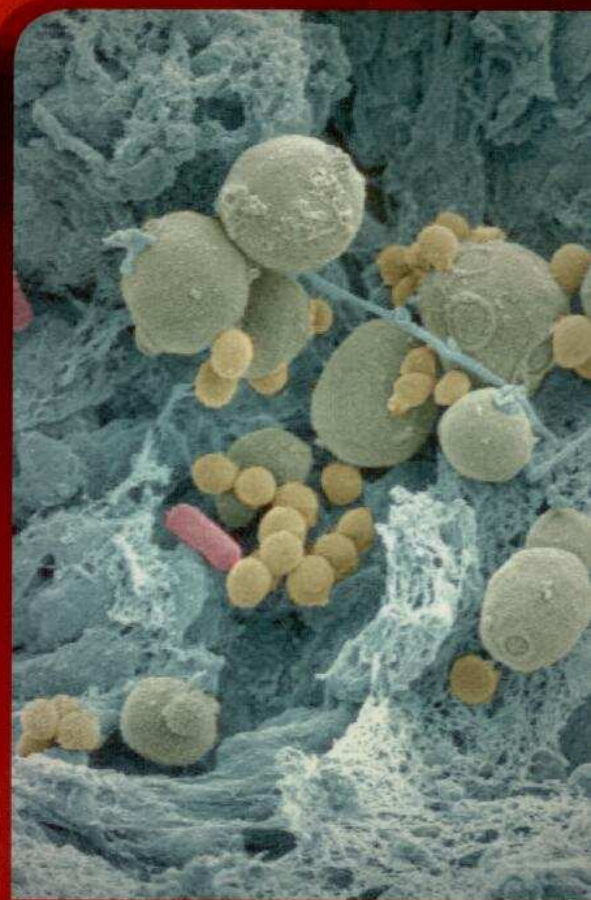
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The ozone, a powerful tool in the prevention of microbial spoilage in traditional food factory

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The production of high-quality fermented food, i.e., cheeses and wines, occurs frequently in traditional factories with a large employment of traditional materials having technological relevance but, also, some serious problems in the prevention of microbial spoilage. Among these «old» materials, wood represents a typical case. Wood is employed in the fabrication of instruments involved in the production of traditional food such as barrels for wine aging or shelves for seasoning of cheese. The sanitization of these apparatuses is today performed by empirical practices based on chemical sanitizers with the risk of poor efficacy and cross-contamination due to the residues of chemicals. The use of ozone could be a promising alternative. This molecule has some attractive features, thanks to the generator based on the Dielectric Barrier Discharge (DBD), it possible a cheap and in-situ production of ozone that results in activity against all microbiological forms. Furthermore, the high reactivity of ozone ensures the complete disappearance of residues after a few minutes of treatment.

In this work, we present some applications of ozone in the prevention of proliferation of spoilage microbes applied to barriques, large barrels, wine grapes, and shelves for seasoning of cheese. For each application, we describe the modification of the microflora due to the action of ozone combining traditional (plate count and genotypic characterization) and innovative (bioluminometry, pyro sequencing) analytical techniques. When the interaction between wood and food has a relevant impact for the quality of products, we evaluated the effects of ozone on the nature of wood components by specific tests and high-resolution analytical techniques. Results obtained confirmed that ozone is a valuable alternative to traditional agents, able to guarantee a complete sanitization in the technological interval of microbial contamination. The results obtained did not alter the nature of materials, excluding interferences with the productive process.