

TITLE: OZONE TREATMENT EFFECT ON DEVELOPMENT OF ACID LACTIC BACTERIA AND INTERFERENCE OF ORGANIC MATTER

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ABSTRACT: Ozone has been used in food industry due to its action upon undesirable microorganisms. Its great oxidative potential makes it an important antimicrobial agent. There are a few data reporting the ozone's action ahead benefic microorganisms such as lactic acid bacteria and the organic matter interference over ozone's sanitizing effects. The aim of this study was to evaluate ozone's action on *Lactobacillus sakei* subsp. *sakei* (ATCC® 15524™), combined or not with organic matter. Cow milks with different compositions were used as organic matter, such as: lactose homogenized whole milk, lactose-free homogenized whole milk, lactose homogenized skimmed milk, lactose-free homogenized skimmed milk and non-homogenized whole milk. Moreover, water added with organic matter was used as a comparative measure. Ozone gas was used under concentrations of 21 and 31 mg/L, for 0, 5, 15 and 25 min. To investigate *Lb. sakei*, De Man Rogosa Sharpe was used. A Completely Randomized Design, with a 2 x 6 x 4 factorial pattern, under two concentrations, six substrates and four exposure periods of gas, with three repetitions was performed. Results revealed that composition of organic substrates interferes in ozone action. Maximum reduction of *Lb. sakei* count remained around 0.3 log cycle, when the substrate was skimmed milk homogenized with lactose. It is highlighted that in water, maximum possible reduction was obtained, taking into account the initial inoculums and the technique of quantification adopted. Regardless the presence of these substrates, ozone does not significantly alter the development of lactic acid bacteria. Finally, the application of ozone in the evaluated concentrations does not produce changes in the composition of cow's milk.

Keywords: equipment sanitation, lactic acid bacteria, milk, ozonization