

Sporicidal action of ozone and hydrogen peroxide: a comparative study.

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Elimination of contaminating spores on packaging materials and food-contact surfaces remains a challenge to the food industry. Hydrogen peroxide and chlorine are the most commonly used sanitizers to eliminate these contaminants, and ozone was recommended recently as an alternative. Hence, we compared the sporicidal action of ozone and hydrogen peroxide against selected foodborne spores of *Bacillus* spp. Under identical treatment conditions, 11 microg/ml aqueous ozone decreased spore counts by 1.3 to 6.1 log₁₀ cfu/ml depending upon the bacterial species tested. Hydrogen peroxide (10%, w/w), produced only 0.32 to 1.6 log₁₀ cfu/ml reductions in spore counts. Thus, hydrogen peroxide, at approximately 10,000-fold higher concentration, was less effective than ozone against *Bacillus* spores. Resistance of spores to ozone was highest for *Bacillus stearothermophilus* and lowest for *B. cereus*. Therefore, spores of *B. stearothermophilus* are suitable for testing the efficacy of sanitization by ozone. Electron microscopic study of ozone-treated *B. subtilis* spores suggests the outer spore coat layers as a probable site of action of ozone.