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Synergistic Effect of the NovaSterilis Process on Microbial Inactivation in Shredded Mozzarella-Type Cheese.

Cheese is exposed to increased risks of bacterial contaminations during shredding, thus requiring post-processing decontamination. The ability to effectively decontaminate shredded cheese could also present the opportunity for a significantly increased shelf-life, alleviating the need for refrigerated storage. Cornell University scientists evaluated supercritical carbon dioxide (scCO₂) alone and in combination with the NovaKill™ additive to decontaminate shredded mozzarella cheese, by testing Gram-positive and Gram-negative bacteria, bacterial endospores, and natural bacterial, yeast and mold micro-flora in cheese.

The authors of the study found that scCO₂ alone in the conditions used (30 minutes at 35°C and 9.9 MPa) failed to inactivate test organisms and native microflora, and that the NovaKill™ sterilant alone produced limited microbial inactivation. As expected, the combination of scCO₂ with the NovaKill™ sterilant produced strong antimicrobial synergism against Gram-positive and Gram-negative bacteria, bacterial endospores, and the natural bacterial, yeast and mold micro-flora found in cheese. Importantly, after 21 days of non-refrigerated storage at 25°C, shredded cheese processed with NovaKill™ / scCO₂ still exhibited highly reduced counts for all test organisms.

New Publication: Sikin *et al.*, *Food Control* C 70:174-82.

Current scCO₂ applications

The NovaKill™ / scCO₂ technology is being utilized by US and International Tissue Banks to produce sterile allograft tissue in final packaging ready for transplantation. To date over 100,000 NovaKill™/scCO₂-sterilized allograft transplants have been performed with no adverse reports. This sterilization technology has also been validated for sterilization of two medical devices with regulatory approval. NovaSterilis licenses processes utilizing a larger 100 liter scCO₂ sterilization unit, the Nova8800™, to meet the high throughput needs of larger tissue processors and medical device manufacturers. NovaSterilis' scCO₂ process provides the medical materials industry with a safe and effective, in house, low-cost terminal sterilization alternative.

For more information on NovaSterilis and supercritical carbon dioxide visit www.novasterilis.com or call 607-330-2772.