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Vitality and detection of *Bacillus anthracis* spores in dairy products

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The food supply chain becomes increasingly dependent on centralized production and processing systems to meet the nationwide demand for food. Particularly, the milk supply system is vulnerable to intentional contamination. Spores of Bacillus anthracis, the etiological agent of anthrax, are highly resistant against heat, mechanical or chemical stress and can survive conditions used for preservation of milk products. In this study we monitored growth behavior of B. anthracis during laboratory scale cream cheese and yoghurt manufacturing. Whole milk inoculated with 10^2, 10^3 or 10^6 B. anthracis ($pX01^-$, $pX02^+$) spores/ml was used to prepare cream cheese and yoghurt. Bacteria were enumerated by plating method and real time-PCR quantification. Laboratory scale made cream cheese and yoghurt were visually and sensatory similarly to commercially available products. Number of lactic acid bacteria increased about 4 logs and the pH dropped to 4.3 in the finished product. Both, B. anthracis spores and vegetative cells were mainly found in the cream cheese fraction, whereas almost no bacteria could be detected in the whey fraction. Spores decreased about 1 log and no obvious growth for vegetative cells was observed during storage time for up to 24 days at 4°C. Vitality assays in yoghurt are still in process. These data indicate that the viability of B. anthracis is not affected during the cream cheese manufacturing process. Spores remain viable during production process and storage, but no germination was observed. In case of an intentional contamination spores will remain viable and represent a potential source of infection.

Biography

Katja Mertens has completed her Ph.D at the age of 32 years from the Research Center Borstel, Leibniz center for medical and life sciences and the University of Luebeck in Germany, working on lipopolysaccharide biosynthesis and O-serotyping. She finished her postdoctoral studies from Texas A&M University College of Medicine in 2009. She has worked with the obligate intracellular bacterial pathogen, Coxiella burnetii with focus on the development of genetic tools for engineering this agent. She was appointed research faculty in 2009 and moved back to Germany in 2011 to work at the Friedrich Loeffler-Institute in Jena on Anthrax. She has published in several reputed journals and scientific books.

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