Public Abstract
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Title:INACTIVATION OF WILD-TYPE BACILLUS SPORES IN A SOY MEAT ANALOG MODEL BY EXTRUSION COOKING

The heat resistance of spores continues to be a challenge in food processing applications. Suitable methods that effectively inactivate spores without producing adverse effects on quality and nutrition of food products are constantly being sought. This pathogenic Bacillus is also found consistently in cereal ingredients and their end products and, thus, poses a risk as they could germinate under favorable growth conditions.
In this study, the efficacy of extrusion cooking (180ï‚°C, 125 rpm, 1 MPa pressure) in inactivating wild-type spores in a soy meat analog was determined. The objectives of this study were to first isolate wild-type bacilli from soy flour, soy protein isolate and wheat gluten, and compare their heat resistance to that of Bacillus cereus and Bacillus stearothermophilus spores. The spores of the isolated wild-type bacilli were then tested for their potential use as indicators of pathogenic B. cereus in extrusion processing by comparison to B. stearothermophilus spore inactivation in a soy meat analog.
The wild-type spores were isolated from soy flour, soy protein concentrate and wheat gluten. Several sporulation media were tested to determine the media that would yield the most heat resistant spores. Sporulation Agar I was determined to result in the most heat resistant spores. Next, the D-values (time it takes at a given temperature to kill 90% of the microorganism population) of B. cereus, 4II 1, B. stearothermophilus and 3III 1C spores suspended in peptone water were obtained. Both B. cereus and 4II 1 spores were less heat tolerant and had comparable D-values at 100Â°C heat treatment. B. stearothermophilus and 3III 1C spores were more heat resistant and had comparable D-values at heat treatment of 150Â°C. Extrusion cooking of the soy meat analog inoculated with B. stearothermophilus, 4II 1 and 3III 1C spores significantly reduced the numbers of all the inoculated spores. However, B. stearothermophilus spores were more resistant.