

A Quantitative Microbiological Exposure Assessment Model for *Bacillus Cereus* Inpackaged Rice Cakes with Thermal Processing

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The objective of this study was to develop quantitative microbial exposure assessment models for *Bacillus Cereus* in packaged rice cakes (PRC). Probability distribution for growth of *Bacillus Cereus* in PRC was estimated and effects of thermal processing and acidification on extending the shelf-life of PRC were quantitatively assessed. Heat penetration curves at cold point for retort process and pasteurization were successfully predicted using heat transfer simulation model and nonlinear regression model (RMSE < 1.20 °C). The retort process showed a better sterilization effect than the pasteurization process, but degraded the quality of rice cakes such as color, shape, and texture. The final contamination level in PRC of slab shape package (> 6.63 log CFU/g at 95% level) was lower than that in randomly packed sample (> 7.77 log CFU/g at 95% level) because the cold point in the slab shape package was closer to the surface. Acidification significantly inhibited the growth of *B. cereus* and also affected the inactivation of *B. cereus*. A combination of acidification and low temperature pasteurization extended the shelf-life of PRC, while minimizing quality degradation of products (< 0.43 log CFU/g at 95% level).

Biography:

Dr. Won Byong Yoon is a professor at Kangwon National University (KNU) since 2008. He has a unique academic background. He has a B.S. and M.S. in Food Science and technology, and M.E. in Mechanical Engineering and a Ph.D. Major in Biological Systems Engineering and minor in Chemical Engineering. Before joining KNU, he worked in a processed food industry (associate director in Food R&D Center, CJ cheiljedang, Seoul, S. Korea) and a flavor company (Asia-Pacific regional marketing manager and Seafood specialist, Firmenich-Asia, Singapore). He has been working on food process engineering, food rheology and seafood processing for more than 14 years. His research interest includes relation characterization of proteins and hydrocolloids, drying and powdering, high viscous fluid mechanics, heat and mass transfer during food processing, least cost formulation development and computational fluid dynamics. He has so far published more than 90 articles in highly regarded international journals in the field of food process engineering. In addition, he has coauthored a chapter of surimi Paste Preparation, Gel Analysis and Rheology in the 3rd Edition of Surimi and Surimi Seafood.