Growth, Inactivation and Toxin Production of *Bacillus cereus* in Cooked Rice under Different Temperatures

Jun Wang*, Seung-Ya Yang, Hyeon-Kyung Ham, Myoung-Su Park, Xi-Hong Zhao, Joong-Hyun Park, Fereidoun Forghani, Gwang-Hee Kim, Bo-Geum Park and Deog-Hwan Oh

Department of Food Science and Biotechnology and Institute of Bioscience and Biotechnology, Kangwon National University, Chuncheon, Gangwon 200-701, Republic of Korea

*Corresponding author's e-mail: deoghwa@kangwon.ac.kr

Abstract: *Bacillus cereus* is capable of producing enterotoxin and emetic toxin that cause severe nausea, vomiting and diarrhea. The objective of this study was to investigate the effect of temperature on the growth, inactivation and toxin production of *B. cereus* in cooked rice. Inoculated cooked-rice samples were stored at 15, 25, 35 and 45 °C for the growth and toxin production of *B. cereus*, while inoculated samples (with/without 2-day storage at 35 °C) were treated at 80, 90 and 100 °C for inactivation and toxin destruction of *B. cereus*. The results indicated that production of emetic toxin was faster than enterotoxin production (no detection below 15 °C) at all the storage temperature (15-45 °C) within 72 h. On the contrary, emetic toxin were unable to be destroyed by heat treatment (80-90 °C), while enterotoxin was easily to be removed. In addition, *B. cereus* was more difficult to be inactivated by heat treatment after storage since they have already made thermo stable spores. This study can provide valuable and reliable information for preventing the food poisoning illnesses and establishment of risk assessment associated with *B. cereus*.

Key words: Growth, inactivation, toxin production, *Bacillus cereus*, cooked rice.