DEVELOPMENT OF MULTIPLEX PCR ASSAY FOR THE RAPID DETECTION OF EMETIC BACILLUS CEREUS STRAINS

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Emetic Bacillus cereus is food poisoning pathogen and can be commonly found in various kinds of food. Emetic toxin has a serious effect on human health as the causative agent of food poisoning. However, due to the lack of a suitable assay, it is not easy to diagnose genes inducing emetic toxin. To detect the genes associated with emetic toxin, a multiplex PCR assay was developed as a reliable and rapid identification method for the emetic B. cereus strains based on a unique genes sequence of the CER, ces and groEL. Specificity and sensitivity of the primers was confirmed using conventional PCR and gel electrophoresis. The PCR products of CER, ces and groEL genes showed that all target bands had exactly formed at 699, 370 and 236 bp amplicon size as required position without non-specific target bands, respectively. The primers did not react with genes from non-emetic B. cereus strains. Additionally, the level of detection limit was confirmed in the food; cooked rice and milk. It is lower than medium broth as much as 10-folds on account of existence of PCR inhibitors. In that case of more than 3 log CFU/ml of B. cereus cells per milliliter of sample, the primers enabled to detect emetic genes in foods. It will be useful for rapid screening and diagnosis tool of emetic B. cereus. On the other hand, it will be needed to improve the detection method of emetic B. cereus and to prevent misdiagnosis of emetic B. cereus food poisoning.