Title: Isolate Bacillus cereus strains from soil, milk and meat by PCR method & detection of cereolysin genes A, B, and their distinction for frequency


Abstract: Background and objectives: Bacillus cereus is a spore forming rod, catalase-positive, microaerophilic bacterium. Aerobic sporulating B. cereus as a common microbial contaminant in various kinds of food may cause deterioration and spoilage in food product and food poisoning consumption, resulting in a socio-economical damage. One of the important genes of B. cereus, which is responsible for disease, is cereolysin A and B (Cer A and Cer B). This gene encodes phospholipase C and sphingomyelinase, which constitute a biologically functional two component cytolysin. As such, B. cereus phospholipase C and sphingomyelinase act synergistically in lysing human erythrocytes.

Methods: 150 samples of meat, milk and soil were chosen and then B. cereus strains were identified and isolated from them. These strains were preserved in -70°C. The DNA samples were purified and extracted from bacteria by Qiagen DNA extraction mini kit and we did PCR. The pair proper primers were chosen for cerA and cerB genes and then PCR was performed for purified DNA strands.

Results: 109 strains of B. cereus (76.6%) were isolated from soil, milk and meat. The most strains isolated from soil (93) (62%). 82 strains contain cerA and cerB genes. Other isolated strains were without these genes or consist of at least one of them.

Conclusion: In the basis of this study performed by PCR we can say that the majority of strains contained cereolysin genes and the most strains were isolated from soil. The strains isolated from soil also contained cereolysin genes. These genes may intrinsically exist in B. cereus and archaic forms of genes.

Bacillus cereus, Cereolysin, PCR,

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