Genetic characterisation of food borne Bacillus cereus strains from milk, cheese and rice by multiplex PCR assay

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Abstract

This study characterises enterotoxin genes including nheA, nheB, nheC, hblA, hblC, hblD, entFM, cytK, bce'T, and ess in 51 Bacillus cereus (B. cereus) strains isolated from pasteurized milk, processed cheese and cooked rice. A colony multiplex polymerase chain reaction was used to test for presence of genes in B. cereus isolates. Of the fifty one B. cereus isolates, 12 (33.3%) were from milk, 8 (22.2%) from cheese and 31 (60.7%) from rice. The isolates were classified into 15 toxigenic groups A - 0 according to the genes they contained. Group G had the highest number of strains, 8(15.7%) while groups D and H had one isolate each. The emetic toxin gene sequence (ess) was found in 18% while bce'T was found in 20% of rice isolates. The cytK gene was present in 4% of milk and 8% of rice isolates. The cytK gene was not found in any of the cheese isolates. All the other genes were found in isolates from all the three food types. The toxigenic profiles of isolates from milk and cheese differed from those of rice isolates, indicating different food preferences among B. cereus strains. Keywords: Bacillus cereus, Multiplex PCR, Gene profile patterns, food-borne