This study evaluated a direct multiplex PCR to detect food contamination with enterotoxigenic Bacillus cereus (B. cereus) in comparison with culture and multiplex gene detection using colonies. Detection of B. cereus enterotoxin genes was done on artificially-contaminated and ready-to-eat market foods including cooked rice, pasteurized milk and cheese. Of the 108 food samples analysed, 51 (47.2%) were found to be contaminated with enterotoxigenic B. cereus by culture and enterotoxin detection by multiplex PCR, but only 14 (12.9%) of them were found to be contaminated with enterotoxigenic B. cereus by direct multiplex PCR. B. cereus enterotoxin genes were detected only in artificially-contaminated and ready-to-eat market foods with bacterial counts of equal or more than 4000 \((4 \times 10^3)\) cfu/ml for both pasteurized milk and cheese and equal or more than 40,000 \((4 \times 10^4)\) cfu/g for cooked rice. Since high contamination of food with B. cereus \((10^6\) cfu/g) has been associated with food poisoning, this technique can be used to identify foods suspected to cause food poisoning without culture and identification of B. cereus. Detection of any of the enterotoxin genes will indicate contamination of foods with enterotoxigenic B. cereus group.