Title: Detecting of enterotoxigenic isolates of B. cereus in milk samples of Iran

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Abstract: Background and Objectives: Bacillus cereus is an ubiquitous gram-positive, spore-forming, motile rod, commonly found in soil, rice, raw and processed food. It is considered to be a common food and human opportunistic pathogen. It causes two distinct types of food poisoning i.e. diarrhea and emesis.

Three different genes including, bceT, entFM and hbla are responsible for diarrhoeal enterotoxin production in this bacterium. B. cereus is known to spoil milk and other food products. It is able to resist even in pasteurization process of milk. Thus, accurate diagnostic tools are required to ensure the hygienic quality of susceptible food items. In this study we have investigated the occurrence of hbla gene in common milk samples of Iran.

Materials & Methods: Ten different samples of milk including pasteurized, domestic and powdered milk have purchased from stores. The samples have cultured in nutrient agar. Following the dilution, the milk samples were cultured in B. cereus selective media (PEMBA). The biochemical and molecular test have been applied for isolating the colonies. DNA extraction has done by freeze and boiling method then by using specific Bacillus primers, PCR have used to confirm bacterial colonies. The molecular and biochemical results have shown that all studied milk samples were contaminated with B. cereus.

Results: The isolated B. cereus has been investigated for hbla gene using specific primers. In 40% of studied milk samples, the hbla gene has been detected.

Conclusion: In this research, hbla gene specific primers showed promising result in differentiation of enterotoxigenic and non-enterotoxigenic isolates of B. cereus in milk samples of Iran. Considering the fact that milk plays the most important role in nutrition of infants, children and adults, it is vital to study enterotoxigenic elements in it.

Bacillus cereus, Milk, hbla gene, PCR

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