Prevalence of enterotoxigenic bacillus cereus and its enterotoxins in milk and milk products in and around Nairobi

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Abstract

Objectives: To determine the prevalence of enterotoxigenic Bacillus cereus (B. cereus) and enterotoxins in milk and milk products. Design: A random sampling of milk products was carried out. Setting: Market milk and milk products were collected from retail shops in Nairobi and analysed for contamination with enterotoxigenicB. cereus and its enterotoxins using reverse passive latex agglutination and TECRA ELISA immunoassay tests. Subjects: Ninety six milk samples including 36 raw milk, 42 pasteurised milk, 10 yogurt and eight fermented milk samples. Forty seven Bacillus cereus isolated from milk and milk products. Main outcome measures: Isolation of enterotoxigenic B. cereus from milk and milk products and detection of B. cereus hemolytic (hemolysin BL) and non-hemolytic enterotoxins in milk. Results: Fifty seven percent of the samples were contaminated with B. cereus. Eighty one percent (38 out of 47) of the isolates produced non-hemolytic enterotoxins, while 25 (53.2 %) of the isolates produced hemolysin BL. Eighteen (38.3 %) of the isolates produced both hemolysin BL and non-hemolytic enterotoxins. About fourteen percent (14.3 %) of the pasteurised milk samples tested positive for non-hemolytic enterotoxin. Conclusion: Enterotoxigenic B. cereus and enterotoxins occur in market milk and their presence poses a potential risk of causing food poisoning. The risk can be reduced if milk products undergo thorough quality control checks and are always kept at below 4°C till consumption. Post pasteurization contamination which is commonly blamed for spoilage of milk products by B. cereus is not necessarily the most important source of this organism.