

Identification of Virulent Genes of Cronobacter sp. Isolated from Foods

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Abstract

Cronobacter sakazakii formerly known as *Enterobacter sakazakii* is an ubiquitous opportunistic pathogen found in a variety of areas, foods & food ingredients, water as well as hospitals and houses. Most common *Cronobacter sp.* outbreaks were caused by ingestion of contaminated foods, powdered infant formula (PIF) and the outbreaks cause neonatal meningitis, necrotizing enterocolitis, sepsis and life-threatening infections in elderly persons. *Cronobacter sp.* contaminations were rarely reported in Bangladesh. In this study *Cronobacter muytjensii* and *Cronobacter sakazakii* were isolated from 74 food (rice, dal, ruti, cake, biscuit, sugarcane juice and laddu) samples of Dhaka city. All isolates were identified by API20E kit and gene specific PCR, ERIC, ITS-G, ITS-IA, 16S rRNA partial gene sequencing by Sanger method. Both strains were found to have significant tolerance to high temperature, low pH, osmotic stress high antibiotic resistance to common antibiotics. Virulence genes were identified by gene specific PCR of following target sites, *zpx*, *cpa*, *mot*, *ompA*, *omX*, *osmY*, *hly* (zinc-containing metalloprotease, *Cronobacter* plasminogen activator encoding gene, outer membrane protein A, outer membrane protein X, osmotically inducible gene, motility, hemolysin). Both strains produced enterotoxins of different molecular weight. Periplasmic proteins were extracted and toxin proteins were identified according to their molecular weight by SDS-PAGE. Stress-tolerant *Cronobacter* contamination can be prevented by ensuring hygiene in production and post-processing of cooked and raw foods.

Keywords: Virulence, *Cronobacter*, food, Dhaka, ERIC.