

Short Communication

Presence of *Bacillus cereus* s.l. from ready-to-eat cereals (RTE) products in Sarawak

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Article history

Received: 14 August 2012

Received in revised form:

27 September 2012

Accepted: 5 October 2012

Abstract

Bacillus cereus is a soil inhabitant gram positive bacterium, and is known to cause severe food poisoning. The objective of this study was to isolate and identify the presence of *Bacillus cereus* s.l. from selected ready to eat cereals purchased randomly from local supermarkets in Kuching and Kota Samarahan, Sarawak. The result showed that four of the 30 food samples were detected to be contaminated by *B. cereus* s.l. . Our findings suggested that it is important for the public to be aware of the safety of RTE cereals consumption, as it is possible that *B. cereus* s.l. may be present in high count number and pose hazardous health effects to the consumers.

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Keywords

Bacillus cereus s.l.
ready-to-eat (RTE) cereals

Introduction

Bacillus cereus is a gram positive bacterium that causes severe food poisoning. As its name suggests, the bacterium is rod shaped and forms spores under stress. The spores are able to survive in hot and dry conditions, and remain dormant for many years (Sagripanti *et al.*, 2006; Henriques and Moran, 2007). The bacterium is commonly present in soil, but can be found in foods, such as dairy products, rice, cereals and cereals derivatives, dried foods, spices, eggs, vegetables (salads) and meats (Kramer and Gilbert, 1989; Granum, 2005). It was only recognized as a bacterial cause of food poisoning in 1955 and accounts for about 2% of all food-borne illness in the industrialized world.

Foods with *B. cereus* contamination will usually trigger emetic (vomiting) reactions and diarrhea. This is due to the emetic toxin and enterotoxins (Drobniewski, 1993) produced by the bacterium and their spores during foods processing (Sagripanti *et al.*, 2006; Henriques and Moran, 2007). Several food poisoning outbreaks in cereal products showed that the presence of *B. cereus* s.l. as the main cause (CDC, 1994; Diereck *et al.*, 2005; Reyes *et al.*, 2006; Kennedy, 2008).

Ready-to-eat (RTE) cereals have been receiving

popularity among Malaysian as their breakfast diet. Ready-to-eat (RTE) cereals in Malaysian market come under a variety of brands, and are either locally produced or imported. These cereals offer several benefits, such as, to provide important vitamins and minerals, low in calories, less fat and cholesterol as well as more fiber. Although there are many advantages in consuming RTE cereals, yet there are still needs to evaluate the food safety of the product in Sarawak, Malaysia, as there are rare reports on the spore-forming bacterium in local foods, both processed and raw items. Therefore, this research was embarked with the aim to isolate and identify the presence of *B. cereus* s.l. from selected RTE cereals through a series of biochemical tests and confirmation by using BBL Crystal™ Identification Systems Gram - Positive ID Kit.

Materials and Methods*Sample collection and bacteria identification*

A total of 30 commercial cereal products (raw cereals, pre-mixed cereal drinks and breakfast cereals) were randomly purchased from different sale points in local supermarkets at Kuching and Kota Samarahan, Sarawak, Malaysia (Table 1). The sampling was carried out from December 2009 until February 2010. Twenty grams of the food samples

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