Bacillus cereus essay example

Literature, Russian Literature

Bacillus cereus is an endemic Gram-positive bacterium that dwells in the soil. It is rod-shaped, beta hemolytic, as well as a motile. A number of its strains are detrimental to human beings and lead to food borne diseases. Other strains can be helpful as probiotics for animals1. Bacillus cereus causes of fried rice syndrome, since the bacteria are characteristically contracted from fried rice, which has been left for many hours at room temperature2. B. cereus bacteria are facultative anaerobes and can secrete protective endospores just as other genus Bacillus members. Its virulence factors are phospholipase C, as well as cereolysin.

B. cereus is responsible for marginal foodborne sicknesses, resulting in severe vomiting, nausea, as well as diarrhea3. Bacillus food borne sicknesses take place because of survival of the endospores of the bacteria when food is not properly cooked. Cooking temperatures below or equal to 100°C permit a number of B. cereus spores to endure. This problem is intensified when food is then not properly refrigerated, permitting the endospores to undergo germination. Germination, as well as growth basically takes place from 10°C to 50°C, even though a number of strains are psychrotrophic. Bacterial growth leads to the secretion of enterotoxins, of which one is highly tolerant to acids and heat. Ingestion results in two types of sickness, which include emetic (vomiting) and diarrheal syndrome4.

The diarrheal type is linked to a broad range of foods, has an incubation time of 8. 0 to 16 hours, and is linked to gastrointestinal pain and diarrhea. It is also known as the long-incubation type of B. cereus food poisoning, and it may be hard to distinguish it from poisoning induced by Clostridium perfringens. The emetic type, on the other hand, is commonly induced by

rice cooked for an insufficient time, as well as temperature to kill any present spores, and then not refrigerating properly. It can secrete a toxin, cereulide that is not deactivated by later reheating. This type results in vomiting and nausea one to five hours following consumption. It can be hard to differentiate from other short-term food borne toxins from bacteria such as Staphylococcus aureus. The diarrhetic syndromes seen in patients are believed to be caused by the three toxins namely, nonhemolytic enterotoxin, cytotoxin K, and hemolysin BL5.

A 61 year old American male patient, Luons, George T., who was presenting with gastroenteritis, was admitted to hospital due to mental confusion, high fever, as well as diarrhea. The Patient had been given probiotic treatments, useful intestinal bacteria. The patient was also reported to have a pre-existing condition referred to as Chronic Lymphocytic Leukemia, and allergies to drugs had not been reported. The patient was referred to the laboratory and tests were carried out with the source of specimen being feces.

The patient was advised to drink plenty of fluids particularly fluids that contain electrolytes. Electrolytes aid in replacing salts, such as sodium, as well as minerals lost due to diarrhoea. Antibiotics were also prescribed to act against bacterial infections such as gentamicin that works by binding to the bacteria’s 30S subunit resulting in protein synthesis interruption. Such a drug is gentamicin with administration of 2. 5 mg/kg/dose IV twice a day. To avoid the illness, the patient was requested always keep food very hot (over 140°F) or very cold (40°F or lower) to avoid bacteria invasion.

Cited References