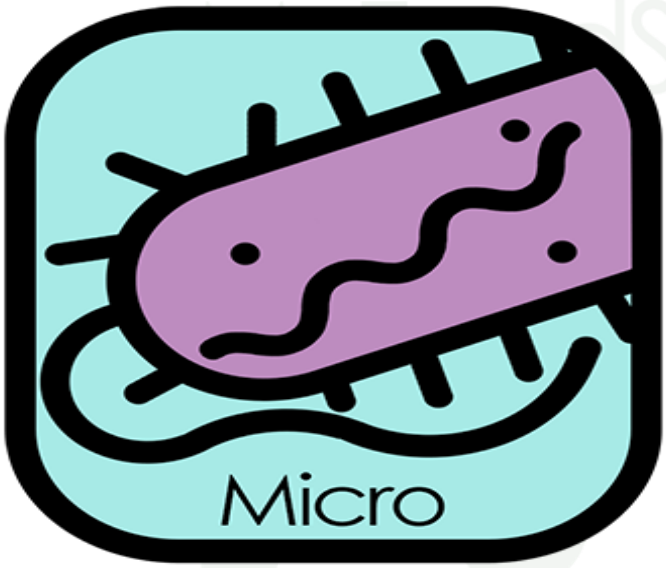
MY FOOD SAFETY MICROORGANISM PROFILE

Bacillus cereus



Characteristics: **Gram-positive, spore-forming, facultative anaerobic, motile and rod shaped.**

Minimum heat treatment: **Spore former**, so can survive cooking processes, **hot holding** above 63°C, rapid **cooling** to below 5°C in < 4 hours in chilled foods and in ambient, **heat treatment** of

Sources: Dormant **spore** in many dry foods, it can germinate under the right conditions, especially if product is not cooled rapidly. Pathogenicity occurs when cells have multiplied to the hundreds of thousands and millions.

Growth temperature: Although growth can occur above 4°C, very slow growth is only possible below 10°C. The organism is typically **mesophilic**.

Water activity (**aw**):
Spores typically germinate at >0.9,but have been known to germinate as low as 0.8.

Minimum growth (**pH**):
Greater than 4.5, optimum 6-7 and has been known to grow in as alkaline conditions as 9.3.

Salt tolerance (**NaCl**): >2.5% will usually see a deline in cell numbers.

Foods most often implicated: Ubiquitous in the environment and present in all foods, the food most commonly associated is rice that has been cooked and allowed to cook at room temperature, giving the right environment in terms of temperature, **aW** and **pH** for cells to germinate from **spores**. The **cooling** (**blast chilling**) steps in an **FBO** ie after cooking rice and pasta (**CQC**) or vegetables, is a **CCP** because of this **organism.**

Pathogenicity factor: 2* - Duration of illness – vomiting and diarrhea, is usually over after 24-48 hours.

Illness on-set (**gestation period**): Hours after live cells are ingested.

Important factors:

1) Control of this **organism** is relatively easy, normal cooking will not destroy **spores**, the key is **rapid cooling** or **blast chilling**.
2) An overspec in a food product would normally take counts of >1x10(4)
3) Rice, pasta and all dry ingredients are particularly susceptible if introduced to an environment of a higher **aW** and without controlling factors such as **pH** or **temperature**.

MyFoodSafety.Net
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