

# Workspace 'Workspace 1' in 'G-spore-forming-bacilli'

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## Bacillus Species

Gram<sup>+</sup>, aerobic, chains

saprophytic → in soil, water, air

2 forms

emetic (vomiting)

- heat stable

- cause: toxin by bacteria

usually found in reheated rice, or rice that was out for long

diarrhea

heat labile

cause: bacteria itself

meat and saucy dishes

## shape

B. cereus



- B hemolysis

- motile

- lecithinase activity

Resistant to penicillins and cephalosporins

A spore form in harsh environment, and germinate when there is a host or when harsh condition is absent.

B. anthrax

- complete opposite

## Clostridium

motile, flagellated, Anaerobes

- grow on blood enriched media

Clostridium botulinum

symmetrical, descending, flaccid paralysis

Blocks release of Acetylcholine causing a reversible flaccid paralysis

causes

foodborne wounds botulinum IM inject

- canned food

- honey

Symptoms: first → GI symp

nausea, vomiting, abdominal cramps

diarrhea

then → neurological symp

Dry mouth, blurred vision, and diplopia

inability to swallow, and speech

extensive respiratory muscle paralysis

in babies → poor feeding, weakness (floppy baby)

Diagnose:

Elisa, PCR, mouse bioassay

Treatment

supportive, surgical debridement (wound)

A, B, E antitoxin (IV)

C perfringens

non-motile, food borne

- gas forming

"stormy fermentation" in milk media

Double zone of hemolysis

Can cause: necrotizing enteritis or piglet disease)

Toxins have lethal, necrotizing, and hemolytic properties.

in wound

gas gangrene

- crepitation in the muscle, foul-smelling discharge, rapidly progressing necrosis, fever, hemolysis, toxemia, shock, and death.

Diagnosis

- blood agar

- Negler test

in GI

diarrhea

- usually no vomiting or fever  
1-2 days

treatment

- surgical debridement

- penicillin

- hyperbaric Oxygen

- food poisoning → supportive

Clostridium difficile

- part of normal flora

- health care associated infection (antibiotic usage)

Toxin A

to cytotoxic production & hypersecretion of fluid

Toxin B

depolymerisation of actin with loss of cytoskeleton

Virulence factor:

Adhesin factor and hyaluronidase

Diagnose:

- diarrhea

- Detection of toxin by: ELISA, latex agglutination  
PCR, culture

- pseudomembranous in Endoscopy

Treatment

- metronidazole

- vancomycin (oral)

- stop antibiotic

- limited spectrum antibiotics