



Description:

- *Clostridium* is a genus of typically anaerobic, Gram-positive, spore-forming bacteria belonging to the family Clostridiaceae.
- Pasteur first named them *Vibrio butyque*, but Adam Prazmowski changed this bacteria's name to *Clostridium* in 1880. Its name comes from the Greek *kloster* (κλωστήρ) or spindle.

Interesting Facts:

- *Clostridia* are one of the most commonly studied anaerobes that cause disease in humans.
- The *Clostridium* genus contains more than 100 species.
- *Clostridia spp* are vegetative cells that are rod shaped and arranged in pairs or short chains.
- *Clostridium* genus bacteria are often described as a biological threat but many of them have positive properties and are used in cosmetic and medicine manufacturing.
- *Clostridia* typically live in dust, soil, water and in human and animal intestines.
- When the environment is hostile, *Clostridia* produce spores which are resistant to many disinfectants, including some with antimicrobial properties.
- The odour produced by the *Clostridia* metabolism can be likened to that of mud, manure and the decay of plant materials.

Infection:

- *Clostridium* is typically an opportunistic pathogen and some of the better-known species are:
 - *C. botulinum*, which produces botulinum toxin and can cause botulism.
 - *C. difficile*, which can overgrow in the intestine when the inherent gut flora has been compromised (e.g. after antimicrobial treatment) leading, in some cases, to colitis.
 - *C. tetani*, which causes tetanus (lockjaw).
 - *C. perfringens*, which is commonly associated with gas gangrene also known as myonecrosis.
 - *C. sordellii*, which can cause toxic shock syndrome.

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- Media such as Columbia Agar (COL) can be used to examine for the presence / absence of *Clostridium*. Small translucent beige colonies 2-3mm in diameter are indicated as a positive result. This is then confirmed using identification techniques such as MALDI-ToF (Matrix Assisted Laser Desorption Ionization-time of Flight).
- It is one of the gallery of microorganisms used in growth promotion tests of media for Microbiological Quality of Sterile products Ph Eur 2.6.1, USP <71> & JP 4.06.
- The majority of species are obligate anaerobes and will only grow in conditions with very little or no oxygen present; however, some species can grow under aerobic conditions or are aero-tolerant. Most species are Gram-positive, but a few are Gram-negative.
- *Clostridium perfringens* is one of a gallery of organisms that can be tested for in water used for human consumption, as an ingredient, or for washing foods within food manufacturing premises.

