

**TITLE:** IMPORTANCE OF BIOCHEMICAL TESTS IN THE IDENTIFICATION OF CLOSTRIDIUM PERFRINGENS IN SAMPLES INTENDED FOR HUMAN CONSUMPTION

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**ABSTRACT:**

The history of mankind is often associated with numerous food poisoning events caused by microorganisms, among which pathogens, *Clostridium perfringens* stands out. It is a bacterium belonging to the family Bacillaceae, obligatory anaerobic and Gram-positive. This is responsible for gas gangrene and others intoxications that can be acquired through the ingestion of contaminated food and water, thus sanitary conditions, quality controls and knowledge of the biology of microorganisms are indispensable to ensure the safety of products intended for consumption human. Therefore, the objective of this study was to demonstrate the relevance of using biochemical and confirmatory tests to identify *C. perfringens* in liquid matrix. For this, the following tests were evaluated: catalase, sucrose, glucose, gelatinase, lactose, indole, starch, esculin, acid phosphatase, motility and sulphase. The strain used for the identification test was *C. perfringens* ATCC 13124 and in parallel, reference strains were used as negative control: *Escherichia coli* ATCC 25922; *Enterococcus faecalis* 29212; *Pseudomonas aeruginosa* 9027; *Salmonella typhimurium* 14028; *Staphylococcus aureus* 6538P. The strains were cultivated in a greenhouse at  $35 \pm 0.5$  °C, while the *C. perfringens* strain was previously seeded in thioglycolate broth for 24 hours. After growth, the colonies were transferred to tubes containing the reagents under anaerobic and aerobic conditions, then incubated for 24 hours at  $35 \pm 0.5$  °C. For gelatinase assay, after incubation, positive for lactose, they were transferred to the refrigerator at 4 ° a 6° C for 2 hours. The results of the tests revealed agreement with the literature and were efficient for identification of *C. perfringens* and differentiation between the strains used. It is known that the manipulation of anaerobes in vitro, is a great challenge for the execution of biological tests and the lack of resources for investment in anaerobic equipment, intensify this problem. It is concluded that the evaluation of the presence of *C. perfringens* in water and food requires more and more careful analysis for confirmation of the species in the microbiological cultures, and that the absence of biochemical tests in the analyzes can lead to false-positive results.

**Keywords:** *Clostridium perfringens*, biochemical tests, intoxication, anaerobiosis, quality control.

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