Vibrio Cholera Characteristics

Vibrio cholera is a gram negative, oxidase positive, comma shaped bacteria that causes a life threatening, rice water diarrhea. The biochemistry behind this infective organism is in the toxin’s ability put the Gs subunit of the G protein in the “on” position with ADP ribosylation. This causes it to continuously activate adenylyl cyclase which produces cAMP. The cAMP is what binds to and opens the chloride channel (CFTR). This sustains the channels secretory ability and results in continued secretion of Cl into the gut lumen where Na and water follow. This ends in severe dehydration, electrolyte depletion and possible death. The organism is typically found in seafood, and should be treated with both glucose and Na rich electrolyte fluids.



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Gram-Negative
Graham-cracker Negative-devil
Vibrio cholera is a gram-negative bacteria that does not stain when crystal violet dye is applied due to a much thinner peptidoglycan layer.

Bacilli
Rod
Vibrio cholera is a bacillus, meaning it is shaped like a rod.

Glucose Fermenting
Glue-bottle Fern
This species is able to ferment glucose, which is a unique property allowing for the differentiation of the species from other similar bacteria.

Non-lactose Fermenting
Nun-milk-carton Ferns
The species is unable to ferment lactose as an energy source. This inability to ferment lactose is a distinguishing factor that helps with species identification.

Oxidase Positive
Ox-daisy
The species contains the enzyme oxidase. Other oxidase-positive organisms are Pseudomonas and Campylobacter jejuni.

Comma Shaped
Comma Shaped Shrimp
The characteristic shape of cholera is comma-shaped when examined under a microscope.

Thrives in Alkaline Environment
Thriving-plants at Alkaline pH
The factor that differentiates Campylobacter jejuni from Vibrio cholera is that cholera grows in an alkaline environment.

Crustaceans
Shrimp
Vibrio species are classically found in seafoods, particularly crustaceans.

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