

## 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.