



Clostridium perfringens (*C. perfringens*, formerly known as *C. welchii*, or *Bacillus welchii*) is a rod-shaped **Gram-positive bacterium** that is found in many environmental sources as well as in the intestines of humans and

animals. Anaerobic, spore-forming bacterium *C. perfringens* is distributed ubiquitously throughout the environment and is responsible for food poisoning, gastrointestinal disease, gas gangrene and related necrotic conditions (enteritis or enterotoxemia) in humans and other mammals. This bacterium also ranks among the most common and important pathogens of humans and livestock. Most outbreaks are associated with undercooked meats, often in large quantities of food left to sit out for long periods of time. Beef, poultry, gravies, and dried or pre-cooked foods are common sources of *C. perfringens* infections, nearly 1 million cases of food borne illness each year.

C. perfringens has a single circular chromosome made up of approximately 3.6 million base pairs. The virulence of *C. perfringens* is attributable largely to its ability to produce at least 16 different toxins and extracellular enzymes. However, no single strain produces this entire toxin panoply. A commonly used toxin typing classification system assigns *C. perfringens* isolates to types A to E based upon their ability to produce four typing **toxins (alpha, beta, epsilon and iota-toxins)**. **Type A** bacteria produce alpha toxin, **type B** bacteria produce alpha, beta, and epsilon toxins, **type C** bacteria produce alpha and beta toxins, **type D** bacteria produce alpha and epsilon toxins, and **type E** bacteria proteins produce alpha and iota toxins. *C. perfringens* enterotoxin (CPE) is the main virulent factor that initiates many critical GI diseases. *C. perfringens* types A-E variants are differentiated by their serological properties and specific toxins.

Type A (alpha toxin is with diseases in horse, lamb, goat, sheep, pig, dog, and chicken). Type B (alpha, beta, and epsilon) is associated with Necrotizing enteritis and enterotoxemia in sheep, cattle, and horse). Type C (alpha and beta toxin) causes enteritis in sheep, cattle, and horse. Type D (alpha and epsilon toxins) may produce enterotoxemia in sheep, goat, and cattle. Type E (alpha and iota toxins) causes enteritis in rabbit, lamb, and cattle. *C. perfringens* toxins: Alpha toxin/CPA ~43 kda (370aa); beta toxin/CPB (35 kda, 336-aa), epsilon toxin/ETX (34 kda, 319aa), Iota toxin/ITX (binary toxin Ib ~100 kda and Ia ~45 kda).

C.Perfringens vaccines:



Several vaccines are in use in animals. ***C.Perfringens Type A Toxoid*** (Novartis), ***C. Perfringens Types C & D Antitoxin*** (Colorado Serum Company), ***C. perfringens vaccine, inactivated (Type D, Enterotoxaemia Vaccine***, Bio-med) - for use in healthy cattle, sheep and goat as an aid in the control of disease. It is difficult to assess the efficacy of these vaccines due to unavailability of simple and easy antibody ELISA kits. Therefore, there

is serious need to develop antibody ELISA kits that can be used not only by vaccine manufacturers but also by researchers,

About ADI's *C.perfringens* Antibody ELISA Kits*-ADI has developed antibody ELISA kits to determine the efficacy of various vaccines in various animals. The kit uses highly purified recombinant *C. perfringens* toxins as antigens to avoid non-specific detection and for safe handling. No bacteria or bacterial-extracted antigens are used in the kit. Moreover, the antibody kits are quantitative to allow determination of antibody titers in vaccinated samples to establish better vaccine formulations.

**All antibody ELISA kits are for research use only (RUO), not for diagnosis, cure or prevention of the disease.*

C.Perfringens Vaccine Related ELISA kits

(See Details at the website) http://4adi.com/commerce/catalog/spcategory.jsp?category_id=

Species	Species	Total IgG Cat#	IgM Specific Cat#
<i>C. perfringens</i> toxins (Alpha+beta+Epsilon) Antibody ELISA, 96 tests, Quantitative	Rabbit	RB-500700-1	
	Mouse	RB-500710-1	
	Pig	RB-500720-1	
	Goat/Sheep	RB-500730-1	
	Cow	RB-500740-1	
	Chicken	RB-500750-1	
	Dog	RB-500760-1	

Clostridium-perfringens-vaccine-ELISA-Flr 170403AC

