Cholera Toxin A Subunit  
from *Vibrio cholerae*

**Product Number**  C 2398  
**Storage Temperature**  2-8 °C

**Product Description**

**Molecular Weight:** Approximately 27.2 kDa

Cholera toxin is a protein secreted during growth in the animal gut by some strains of the bacterium *Vibrio cholerae*. This product is obtained from *Vibrio cholerae* strain Inaba 569B El-tor biotype. Cholera toxin, an enterotoxin (the bowel is the target organ), is the fundamental cause of cholera symptoms.¹,²

Cholera toxin consists of two structurally and functionally distinct types of subunits (subunit A and subunit B).³ Subunit A is combined with one to five identical B subunits. The holotoxin consists of a single central A subunit surrounded by a ring of five identical noncovalently associated B subunits with apparent five-fold symmetry.³ Only the holotoxin has efficient biologic activity because subunit A by itself does not cross the cell membrane of target cells.²

Subunit B binds to a cell surface receptor G₄M₁ followed by transmembrane transport and subsequent internalization of the entire toxin.² Subunit B by itself does not adversely affect target cells.

Subunit A is initially a single folded peptide with internal disulfide bridges. During secretion, the folded peptide is proteolytically nicked producing two disulfide-linked peptides: A1 (21.8 kDa) and A2 (5.4 kDa). Peptide A2 connects subunit A to the pentameric ring (B subunits) by a single disulfide bridge.² Once Subunit A enters the cytoplasm of a target cell, peptide A1 is released from peptide A2 by disulfide reduction.

Peptide A1 functions enzymatically as an ADP-ribosyltransferase within the target cell. A1 irreversibly activates adenylate cyclase, resulting in many metabolic alterations.²,³ Although these cellular metabolic alterations can lead to host death (massive diarrhea and dehydration), they do not kill individual target cells.² Tissue culture cells treated with the toxin are not killed and host tissues do not become necrotic.

**Precautions and Disclaimer**

For Laboratory Use Only. Not for drug, household or other uses.

**Preparation Instructions**

This product is soluble in water (1 mg/ml at room temperature and 0.25 mg/ml at 2-8 °C). When this product is reconstituted with water to a final concentration of 0.5 mg protein per ml, the solution will also contain 50 mM Tris buffer, 200 mM NaCl, 3 mM NaN₃, and 1 mM Na₂EDTA, pH 7.5.

**Storage/Stability**

Do not freeze solutions. Solutions should be stored at 2-8 °C for up to 1 year.

**References**


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