



CHOLERA TOXIN AND RELATED PRODUCTS

Cholera toxin is an oligomeric protein of MW 84,000 daltons and consists of a single A subunit surrounded by five B subunits.^{1,2,3} It is a potent activator of adenylate cyclase and is the pathogenic agent responsible for the symptoms of cholera.⁴ The B subunit (choleragenoid) is responsible for the binding of the holotoxin to G_{M1} ganglioside receptors on mammalian cell surfaces^{5,6} and facilitates entrance of the A subunit into the cell. The A subunit bears the ADP-ribosyl-transferase activity, which deregulates the G_s protein causing activation of adenylate cyclase.⁷ Due to the ubiquitous occurrence of the G_{M1} ganglioside receptor on eukaryotic cell membranes, cholera toxin activates adenylate cyclase in a wide variety of model systems.⁸

Cholera toxin has become a powerful research tool not only in microbiology, but in the fields of physiology, cell biology and biochemistry, as well. Because of the effect on adenylate cyclase, cholera toxin and its purified A subunit are frequently used for the study of signal transduction mechanisms. In addition, cholera toxin acts as an adjuvant through the stimulation of B-lymphocytes. The cholera toxin B subunit alone is used for track tracing in neurological research, taking advantage of G_{M1} ganglioside binding and retrograde transport. Several B subunit conjugates are discussed in another information sheet.

Cholera toxin from List Biological Laboratories, Inc. is isolated from *Vibrio cholerae* type Inaba 569B by modification of the methods of Rappaport *et al.*⁹ and Mekalanos *et al.*¹⁰ This product is highly purified and contains only trace amounts of B subunit, a by-product of lyophilization. In addition to the intact toxin, highly purified A subunit and B subunit are

available. These products are isolated by a modification of the method of Lai *et al.*¹¹

When equal weights are compared, the A subunit exhibits 3 to 5 times the transferase activity of the holotoxin.

Cholera toxin and native subunits all undergo treatment for the removal of contaminating endotoxin and are sterile as packaged. Each is supplied as a lyophilized powder. Cholera toxin and native B subunit are both available in an azide-free form. A detailed lot analysis documenting purity and biological activity accompanies each product shipment.

High titer polyclonal anti-choleragenoid from goat, suitable for use in either toxin neutralization or binding assays, is also available, and is provided as a lyophilized powder containing 0.1% NaN₃ as a preservative.

The above products are intended for research purposes only and are not for use in humans.

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References

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Ordering Information

Product No.	Description	Size
100	Cholera Toxin (azide-free)	1.0 mg
101	Cholera Toxin	1.0, 2.0, 5.0 mg
102	Cholera Toxin A Subunit	0.25 mg
103	Cholera Toxin B Subunit (Cholera genoid)	0.5, 1.0, 2.0 mg
104	Cholera Toxin B Subunit (low salt)	0.5 mg
703	Goat Anti-Cholera genoid	0.1 ml

For B Subunit conjugates, refer to the product information page regarding conjugates.



CERTIFICATE OF ANALYSIS
GOAT ANTI-CHOLERA TOXIN B SUBUNIT
Lot #7032A6

Gentaur Molecular Products
Voortstraat 49
1910 Kampenhout, Belgium

Contents:

Each vial, when reconstituted with 0.1 ml of purified water, contains 0.1 ml of goat antiserum to cholera toxin B subunit (choleragenoid). Sodium azide (0.1%) has been added as a preservative.

Assay:

The greatest dilution of this lot which forms an immunoprecipitin band against a 0.5 mg/ml solution of cholera toxin B subunit is 1:16. This result is comparable to that obtained with prior lots of goat anti-cholera toxin B subunit.

Packaging/Storage:

Lyophilized powder, stoppered under vacuum. Store at 4°C. DO NOT FREEZE.

Handling:

Good laboratory technique should be employed in the safe handling of this product. This requires observing the following practices:

1. Wear appropriate laboratory attire including a lab coat, gloves and safety glasses.
2. Do not mouth pipette, inhale, ingest or allow to come into contact with open wounds. Wash thoroughly any area of the body which comes into contact with the product.
3. Avoid accidental autoinoculation by exercising extreme care when handling in conjunction with any injection device.
4. This product is intended for research purposes by qualified personnel only. It is not intended for use in humans or as a diagnostic agent. List Biological Laboratories, Inc. is not liable for any damages resulting from the misuse or handling of this product.

FOR RESEARCH PURPOSES ONLY. NOT FOR HUMAN USE.

