

PRODUCT INFORMATION



Diphtheria Toxin (unnicked) from *Corynebacterium diphtheriae* Item No. 19657

Overview and Properties

Contents:	Each vial, when reconstituted to 0.5 ml with water, contains 1 mg of unnicked diphtheria toxin in 0.01 M Tris and 0.001 M EDTA at pH 7.5
Storage:	4°C (as supplied); After reconstitution, store at -20°C
Stability:	≥2 years
Purity:	≥90% (estimated by SDS-PAGE)
Protein	
Concentration:	Determined by absorbance at 280 nm using an extinction coefficient of 1.18 for a concentration of 1 mg/ml
Special Conditions:	Handle gently; do not vortex

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Description

Diphtheria toxin is a toxin produced by *C. diphtheriae* that catalyzes the ADP-ribosylation and inactivation of translation elongation factor 2 (EF-2). It is synthesized and excreted as a proenzyme and must undergo two covalent alterations in structure in order to be active. First, mild proteolysis results in the formation of "nicked toxin", which is enzymatically inactive and consists of two major fragments, A and B. Reduction of the nicked toxin with thiols releases the N-terminal A fragment, which is enzymatically active. The C-terminal B fragment binds to specific host receptors and translocates the catalytic domain into the cell.¹ After binding to the cell receptor, the diphtheria toxin is taken up by endocytosis, the pH of the endocytic vesicle drops and the translocation region of the toxin helps guide the catalytic domain into the host cytoplasm where it is released.² Within the cytoplasm, the diphtheria toxin catalytic domain ADP ribosylates EF-2, terminating protein synthesis and causing cell death.³

References

1. Ladokhin, A.S. pH-triggered conformational switching along the membrane insertion pathway of the diphtheria toxin T-domain. *Toxins (Basel)* **5(8)**, 1362-1380 (2013).
2. Murphy, J.R. Mechanism of diphtheria toxin catalytic domain delivery to the eukaryotic cell cytosol and the cellular factors that directly participate in the process. *Toxins (Basel)* **3(3)**, 294-308 (2011).
3. Bütepage, M., Ecke, L., Verheugd, P., et al. Intracellular mono-ADP-ribosylation in signaling and disease. *Cells* **4(4)**, 569-595 (2015).

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

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