



3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone 800-325-5832 • (314) 771-5765
Fax (314) 286-7828
email: techserv@sial.com
sigma-aldrich.com

Product Information

Pertussis toxin from *Bordetella pertussis*

Catalog Number **P2980**
Storage Temperature $-20\text{ }^{\circ}\text{C}$

CAS RN 70323-44-3

Synonyms: Islet Activating Protein; Pertussigen;
Leukocytosis-Promoting Factor; Lymphocytosis
Promoting Factor; Histamine-Sensitizing Factor;
Pertussis Exotoxin; PTX; and PT

Product Description

Pertussis toxin is a protein isolated from the Gram-negative coccobacillus, *Bordetella pertussis*. The toxin is released in an inactive form. When the pertussis toxin B oligomer binds to the cell membrane, the S1 subunit of its A protomer becomes activated, perhaps through the action of glutathione and ATP.

Pertussis toxin causes potentiation of insulin secretion from mammalian pancreatic islets,^{1,2} catalyzes the ADP-ribosylation of the protein present in cell membrane preparations from human red blood cells,³ promotion of leukocytosis activity and agglutination activity,⁴ promotion of lipolysis on adipocytes,⁵ inhibition of epinephrine induced hyperglycemia,⁶ inhibition of histamine release.⁷ Pertussin toxin adjuvant activity is associated with enhanced cytokine production.⁸

Molecular mass:⁹ ~117 kDa (ultracentrifugation)
Pertussis toxin consists of 5 subunits combined in a 1:1:1:2:1 ratio, with the following molecular masses:¹⁰

S1 = 26,017 Da
S2 = 21,839 Da
S3 = 21,751 Da
S4 = 12,061 Da
S5 = 11,747 Da

This product is an aseptically filled solution containing 50% glycerol with 50 mM Tris, 10 mM glycine, and 0.5 M NaCl, pH 7.5.

Vial content is expressed as amount of protein as determined by the Bradford method.

This preparation migrates as five distinct bands, as described in the literature,⁹ when run on 12% polyacrylamide SDS-urea gels prepared according to the method of Laemmli.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices. Pertussis Toxin is a potent neurotoxin, considered a biohazard, and should be handled with care.

Preparation Instructions

This pertussis toxin product has not been preactivated with ATP. Preincubate pertussis toxin in the presence of 1–5 mM ATP and 1–5 mM DTT for *in vitro* use with cell membranes. Preincubation with ATP and DTT is not recommended for use with intact cells or *in vivo* use.^{11,12}

Storage/Stability

The product was prepared and packaged using aseptic technique. Store the product at $-20\text{ }^{\circ}\text{C}$.

References

1. Sumi, T. and Michio, U., *Endocrinology*, **97**, 352 (1975).
2. Yajima, M. *et al.*, *J. Biochem.*, **83**, 295 (1978).
3. Sekura, R.D. *et al.*, *J. Biol. Chem.*, **258**, 14647-14651 (1983).
4. Arai, H. and Sato, Y., *Biochim. Biophys. Acta*, **444**, 765 (1976).
5. Jacquemin, C. *et al.*, *Nature*, **17**, 182-184 (1986).
6. Yajima, M. *et al.*, *J. Biochem.*, **83**, 305 (1978).
7. Befus A. *et al.*, *J. Immunol.*, 1999 **163**, 47-53 (1999).
8. Di Pierro, F. *et al.*, *J. Pharmacol. Toxicol. Methods*, **37**, 91-96 (1997).
9. Tamura, M. *et al.*, *Biochemistry*, **21**, 5516-5522 (1982).
10. Yamakawa, Y. *et al.* *Anal. Biochem.*, **185**, 176-181 (1990).
11. Moss, J. *et al.*, *J. Biol. Chem.*, **258** (19), 11879 (1983).
12. Kaslow, H.R. *et al.*, *Biochemistry*, **26**, 123-127 (1987).

AH, RBG, MAM 01/07-1

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.