Product Data Sheet

Product Name: Cholera toxin (choleragen)
Cat. No.: GC31655

Chemical Properties

Cas. No.	9012-63-9		
SMILES	[Cholera toxin]		
Formula		M.Wt	
Solubility	When reconstituted to 0.5 ml with water, the buffer is 0.05 M Tris, 0.2 M NaCl, 0.001 M Na2EDTA at pH 7.5	Storage	Store at 4°C
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		
Structure			

Cholera toxin

Protocol

Cell experiment [1]:

Cell lines	Jurkat cells

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Preparation Method	Cells were incubated for 3 h with medium alone or with Cholera toxin (0.5 ug/ml) in medium. After washing the cells the expression of the indicated antigen on the cell surface was measured by FCM analysis.
Reaction Conditions	0.5ug/ml;3h
Applications	Cholera toxin treatment of Jurkat cells for 3 h caused a nearly total disappearence of the TcR complex from teh surface of the cell.

References:

[1]. Nunes J, Bagnasco M, et,al. Cholera toxin inhibits the increase in cytoplasmic free calcium induced via the CD2 pathway of human T-lymphocyte activation. J Cell Biochem. 1989 Apr;39(4):391-400. doi: 10.1002/jcb.240390405. PMID: 2542344.

Background

Cholera toxin (choleragen) is an enterotoxogenic protein complex consisting of a single A subunit (cholera toxin A subunit (CTA)) and a pentamer of B subunits (cholera toxin B subunit (CTB)). It enters the host cell by binding to ganglioside GM1 on the plasma membrane and retrograde into the endoplasmic reticulum via the trans-Golgi network[1-3].

Cholera toxin(0.5ug/ml;3h) treatment of Jurkat cells for 3 h caused a nearly total disappearence of the TcR complex from teh surface of the cell[4,5]. Cholera toxin enters host intestinal epithelia cells, and its retrograde transport to the cytosol results in the massive loss of fluids and electrolytes associated with severe dehydration[6]. Cholera toxin activates adenylate cyclase by catalyzing ADP-ribosylation of Gs alpha, the stimulatory guanine nucleotide-binding protein[7].

References:

[1]. van Heyningen S. Cholera toxin. Biol Rev Camb Philos Soc. 1977 Nov;52(4):509. doi: 10.1111/j.1469-185x.1977.tb00858.x. PMID: 203347.
[2]. Wernick NL, Chinnapen DJ, et,al. Cholera toxin: an intracellular journey into the cytosol by way of

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the endoplasmic reticulum. Toxins (Basel). 2010 Mar;2(3):310-25. doi: 10.3390/toxins2030310. Epub 2010 Mar 5. PMID: 22069586; PMCID: PMC3153193.
[3]. Kellner A, Taylor M, et,al. A binding motif for Hsp90 in the A chains of ADP-ribosylating toxins that move from the endoplasmic reticulum to the cytosol. Cell Microbiol. 2019 Oct;21(10):e13074. doi: 10.1111/cmi.13074. Epub 2019 Jul 5. PMID: 31231933; PMCID: PMC6744307.
[4]. Sommermeyer H, Schwinzer R,et,al. Cholera toxin modulates the T cell antigen receptor/CD3 complex but not the CD2 molecule and inhibits signaling via both receptor structures in the human T cell lymphoma Jurkat. Eur J Immunol. 1989 Dec;19(12):2387-90. doi: 10.1002/eji.1830191232. PMID: 2575034.
[5]. Nunes J, Bagnasco M, et,al. Cholera toxin inhibits the increase in cytoplasmic free calcium induced via the CD2 pathway of human T-lymphocyte activation. J Cell Biochem. 1989 Apr;39(4):391-400. doi: 10.1002/jcb.240390405. PMID: 2542344.
[6]. Wands AM, Cervin J, et,al. Fucosylated Molecules Competitively Interfere with Cholera Toxin Binding to Host Cells. ACS Infect Dis. 2018 May 11;4(5):758-770. doi: 10.1021/acsinfecdis.7b00085. Epub 2018 Feb 22. PMID: 29411974; PMCID: PMC5948155.
[7]. Tsai SC, Noda M, et,al. Stimulation of choleragen enzymatic activities by GTP and two soluble proteins purified from bovine brain. J Biol Chem. 1988 Feb 5;263(4):1768-72. PMID: 3123477.

Caution: Product has not been fully validated for medical applications. For research use only.
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