

Active Recombinant *C. difficile* TcdA Protein, His-tagged

Cat. No. tcdA-03C **Lot. No.** (See product label)

SPECIFICATION

Product Overview	Recombinant <i>E. coli</i> msyB (Thr2-Arg124) and <i>C. difficile</i> TcdA (Met1-Leu542, Arg184Asn) protein with a 6×His tag at C-terminus was expressed in <i>E. coli</i> .
Species	<i>C. difficile</i>
Source	<i>E. coli</i>
ProteinLength	2-124;1-542 a.a.
Description	Precursor of a cytotoxin that targets and disrupts the colonic epithelium, inducing the host inflammatory and innate immune responses and resulting in diarrhea and pseudomembranous colitis. TcdA and TcdB constitute the main toxins that mediate the pathology of <i>C. difficile</i> infection, an opportunistic pathogen that colonizes the colon when the normal gut microbiome is disrupted. Compared to TcdB, TcdA is less virulent and less important for inducing the host inflammatory and innate immune responses. This form constitutes the precursor of the toxin: it enters into host cells and mediates autoprocessing to release the active toxin (Glucosyltransferase TcdA) into the host cytosol. Targets colonic epithelia by binding to some receptor, and enters host cells via clathrin-mediated endocytosis. Binding to LDLR, as well as carbohydrates and sulfated glycosaminoglycans on host cells surface contribute to entry into cells. In contrast to TcdB, Frizzled receptors FZD1, FZD2 and FZD7 do not act as host receptors in the colonic epithelium for TcdA. Once entered into host cells, acidification in the endosome promotes the membrane insertion of the translocation region and formation of a pore, leading to translocation of the GT44 and peptidase

 Tel: 1-631-559-9269 1-516-512-3133

 Email: info@creative-biomart.com  Fax: 1-631-938-8127

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C80 domains across the endosomal membrane. This activates the peptidase C80 domain and autocatalytic processing, releasing the N-terminal part (Glucosyltransferase TcdA), which constitutes the active part of the toxin, in the cytosol.

Predicted N Terminal	Thr2 (msyB)
Bio-activity	Measured by its ability to hydrolyze UDP-Glucose. The specific activity is > 15 pmol/min/μg, as measured under the described conditions.
Molecular Mass	79 kDa
Endotoxin	< 1.0 EU/μg of the protein by the LAL method.
Purity	> 90%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
Storage	Use a manual defrost freezer and avoid repeated freeze-thaw cycles. 6 months from date of receipt, -20 to -70 centigrade as supplied. 3 months, -20 to -70 centigrade under sterile conditions after opening.
Storage Buffer	Supplied as a 0.2 μm filtered solution in Tris, NaCl and Glycerol.
Shipping	The product is shipped with polar packs.

GENE INFORMATION

Gene Name	tcdA toxin A [Clostridium difficile R20291]
Official Symbol	tcdA

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Synonyms	tcdA; toxin A; toxin A
Gene ID	8470358
Protein Refseq	YP_003217088
UniProt ID	P16154

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