PRODUCT INFORMATION

TRAIL Intracellular Domain (human, recombinant)

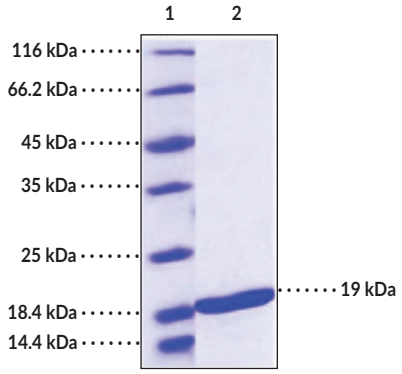
Item No. 32049

Overview and Properties

Synonyms:	Apo-2L, Apo-2 Ligand, CD253, TNF Ligand Superfamily Member 10, TNFSF10
Source:	Recombinant human TNFSF10 expressed in *E. coli*
Amino Acids:	114-281
Uniprot No.:	P50591
Molecular Weight:	19.6 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥97% estimated by SDS-PAGE
Supplied in:	Lyophilized from sterile 40 mM Tris, pH 7.0 and 0.3 M sodium chloride

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

Image



Lane 1: MW Markers
Lane 2: TRAIL Intracellular Domain

SDS-PAGE Analysis of TRAIL Intracellular Domain. This protein has a calculated molecular weight of 19.6 kDa.

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM

PRODUCT INFORMATION

Description

TNF-related apoptosis-inducing ligand (TRAIL) is a protein encoded by the *TNFSF10* gene in humans and a member of the TNF superfamily of proteins.[1] TRAIL contains an N-terminal cytoplasmic domain, a transmembrane domain, and a C-terminal extracellular receptor binding domain.[1,2] It is produced in immune effector cells as a transmembrane precursor protein from which mature, soluble TRAIL is formed by proteolysis.[2] Soluble TRAIL is cleaved from the precursor protein on the extracellular side of the membrane in response to stimulation by cytokines, such as IFN-γ (Item No. 32008).[1] TRAIL monomers form trimers with a single zinc atom bound at the trimer interface, which is required for its structural stability and function.[3] The trimer binds to the pro-apoptotic death receptors DR4 and DR5 and the decoy receptors DcR1 and DcR2, which lack functional intracellular domains.[1] The intracellular death domains of DR4 or DR5 colocalize upon TRAIL binding, which recruits Fas-associated death domain (FADD) and pro-caspase-8 and initiates either the extrinsic or intrinsic apoptotic pathways depending on the cell type. DR4 and DR5 are highly expressed on a variety of cancer cells while DcR1 and DcR1 are primarily expressed on non-cancerous cells, which allows TRAIL to selectively induce apoptosis in cancer cells.[4] Recombinant human TRAIL induces apoptosis in a variety of cancer cell lines and reduces tumor growth in mouse xenograft models.[5] However, it increases proliferation in certain cancer cells *in vitro*, and other cells lines develop resistance, which can sometimes be partially mitigated by combining it with other agents. A cysteine-to-threonine mutation at position 723 of *TNFSF10* is associated with sporadic breast cancer, and SNPs in *TNFSF10* are associated with fatty liver disease, multiple sclerosis, and asthma.[1] *TNFSF10* expression is decreased in breast cancer patients with brain metastases and increased in patients with multiple sclerosis. In addition, protein levels of TRAIL are increased in patients with systemic lupus erythematosus (SLE) and multiple sclerosis. Cayman's TRAIL Intracellular Domain (human, recombinant) protein consists of 169 amino acids and has a calculated molecular weight of 19.6 kDa.

References

1. Allen, J.E. and El-Deiry, W.S. Regulation of the human TRAIL gene. *Cancer Biol. Ther.* **13(12)**, 1143-1151 (2012).
2. Di Pietro, R. and Zauli, G. Emerging non-apoptotic functions of tumor necrosis factor-related apoptosis-inducing ligand (TRAIL)/Apo2L. *J. Cell Physiol.* **201(3)**, 331-340 (2004).
3. Hymowitz, S.G., O'Connell, M.P., Ultsch, M.H., *et al.* A unique zinc-binding site revealed by a high-resolution X-ray structure of homotrimeric Apo2L/TRAIL. *Biochemistry* **39(4)**, 633-640 (2000).
4. Wong, A.H.M., Kong, W.Y., Fang, C.-M., *et al.* The TRAIL to cancer therapy: Hindrances and potential solutions. *Crit. Rev. Oncol. Hematol.* **143**, 81-94 (2019).
5. Oldenhuis, C.N.A.M., Stegehuis, J.H., Walenkamp, A.M.E., *et al.* Targeting TRAIL death receptors. *Curr. Opin. Pharmacol.* **8(4)**, 433-439 (2008).

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM