PRODUCT INFORMATION

SMPDL3A (human, recombinant; His-tagged)

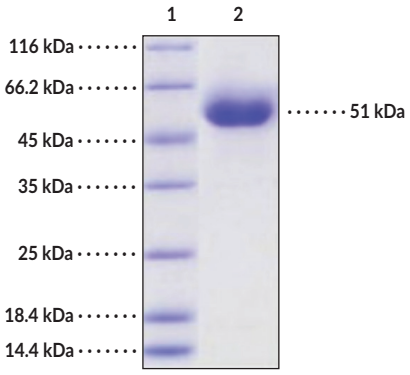
Item No. 40468

Overview and Properties

Synonyms:	Acid Sphingomyelinase-like Phosphodiesterase 3A, ASML3A, ASM-like Phosphodiesterase 3A, Sphingomyelin Phosphodiesterase Acid-like 3A
Source:	Recombinant C-terminal His-tagged SMPDL3A expressed in HEK293 cells
Amino Acids:	1-453
Molecular Weight:	50.3 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥95% estimated by SDS-PAGE
Supplied in:	Lyophilized from sterile PBS, pH 7.4
Endotoxin Testing:	<1.0 EU/µg, determined by the LAL endotoxin assay

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

Image



Lane 1: MW Markers
Lane 2: SMPDL3A

SDS-PAGE Analysis of SMPDL3A. This protein has a calculated molecular weight of 50.3 kDa. It has an apparent molecular weight of approximately 51 kDa by SDS-PAGE under reducing conditions due to glycosylation.

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Description

Sphingomyelin phosphodiesterase acid-like 3A (SMPDL3A) is a zinc-dependent nucleotide phosphoesterase and member of the acid sphingomyelinase-like enzyme family.[1] It is composed of an N-terminal catalytic domain and a C-terminal domain, which contains an asparagine located at position 356 (Asn356). The N-glycosylation of Asn356 is required for SMPDL3A stability, enzymatic activity, and cellular secretion.[1,2] SMPDL3A is expressed in, and secreted from, osteoclasts, adipocytes, astrocytes, and macrophages and reduces local inflammation induced by nucleotide tri- or diphosphates.[1,3] Its intracellular levels and secretion are increased by cAMP, cholesterol, and liver X receptor (LXR) activation, and it localizes to the lysosome, which provides the acidic environment required for its optimal catalytic activity.[1,3] *SMPDL3A* knockout decreases cell proliferation, colony formation, and migration, as well as induces cell cycle arrest in the G_0/G_1 phase and apoptosis in HepG2 hepatocellular carcinoma cells.[4] *In vivo*, *SMPDL3A* knockout in HepG2 cells reduces tumor volume and weight in a HepG2 xenograft mouse model. SMPDL3A levels are increased in patients with hepatocellular carcinoma (HCC) and negatively correlated with prognosis. Cayman's SMPDL3A (human, recombinant; His-tagged) protein consists of 442 amino acids and has a calculated molecular weight of 50.3 kDa. By SDS-PAGE, under reducing conditions, the apparent molecular mass of the protein is 51 kDa due to glycosylation.

References

1. Gorelik, A., Illes, K., Superti-Furga, G., *et al.* Structural basis for nucleotide hydrolysis by the acid sphingomyelinase-like phosphodiesterase SMPDL3A. *J. Biol. Chem.* **291(12),** 6376-6385 (2016).
2. Traini, M., Kumaran, R., Thaysen-Andersen, M., *et al.* N-glycosylation of human sphingomyelin phosphodiesterase acid-like 3A (SMPDL3A) is essential for stability, secretion and activity. *Biochem. J.* **474(7),** 1071-1092 (2017).
3. Traini, M., Quinn, C.M., Sandoval, C., *et al.* Sphingomyelin phosphodiesterase acid-like 3A (SMPDL3A) is a novel nucleotide phosphodiesterase regulated by cholesterol in human macrophages. *J. Biol.Chem.* **289(47),** 32895-32913 (2014).
4. Zhang, Y., Chen, W., Cheng, X., *et al.* Sphingomyelin phodiesterase acid-like 3A promotes hepatocellular carcinoma growth through the enhancer of rudimentary homolog. *Front. Oncol.* **12,** 852765 (2022).

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