PRODUCT INFORMATION

CISD1 Cytosolic Domain (human, recombinant)

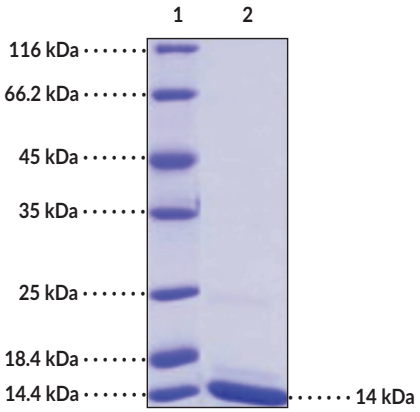
Item No. 32034

Overview and Properties

Synonyms:	CDGSH Iron Sulfur Domain 1, C10orf70, MitoNEET, ZCD1
Source:	Recombinant human N-terminal His-tagged CISD1 expressed in *E. coli*
Amino Acids:	32-108
Molecular Weight:	11.3 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥90% estimated by SDS-PAGE
Supplied in:	Lyophilized from sterile 20 mM Tris, with 150 mM sodium chloride and 10% glycerol
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: CISD1 Cytosolic Domain

SDS-PAGE Analysis of CISD1 Cytosolic Domain.
This protein has a calculated molecular weight of 11.3 kDa. It has an apparent molecular weight of approximately 14 kDa by SDS-PAGE under reducing conditions.

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Description

CDGSH iron sulfur domain 1 (CISD1), also known as mitoNEET, is an iron-sulfur outer mitochondrial membrane protein and member of the NEET protein family with roles in redox sensing, iron uptake, and respiratory capacity.[1,2] It is a homodimeric protein comprised of a β-cap domain and a cluster binding domain with each monomer consisting of an N-terminal in-organelle domain, a transmembrane domain, and a C-terminal cytosolic domain.[1] The CISD1 C-terminal domain houses the [2Fe-2S] cluster binding site which has roles in tuning redox properties of the protein in response to environmental conditions. *CISD1* mRNA expression is induced by the ferroptosis inducer erastin (Item No. 17754) in HepG2 cells in an iron-dependent manner and stabilization of the CISD1 [2Fe-2S] cluster by pioglitazone (Item Nos. 71745 | 22263 | 10028) inhibits mitochondrial iron uptake, lipid peroxidation, and subsequent ferroptosis in the same cells.[2] Overexpression of *CISD1* decreases oxidative stress-induced apoptosis in an HL-1 cardiomyocyte model of hypoxia and reoxygenation injury.[3] Levels of *CISD1* mRNA are decreased in subcutaneous and visceral adipose tissue isolated from patients with obesity and visceral adipose tissue levels of *CISD1* mRNA are positively correlated with insulin sensitivity in patients with morbid obesity.[4] Knockdown of *Cisd1* in mice induces mitochondrial dysfunction and increased levels of mitochondrial reactive oxygen species (ROS), as well as a loss of striatal dopamine, shortened stride length in a gait analysis, and decreased latency to fall in the rotarod test, all of which serve as markers of a Parkinsonian phenotype.[5] Cayman's CISD1 Cytosolic Domain (human, recombinant) protein consists of 95 amino acids and has a calculated molecular weight of 11.3 kDa. By SDS-PAGE, under reducing conditions, the apparent molecular mass is approximately 14 kDa.

References

1. Karmi, O., Marjault, H.-B., Pesce, L., *et al.* The unique fold and lability of the [2Fe-2S] clusters of NEET proteins mediate their key functions in health and disease. *J. Biol. Inorg. Chem.* **23(4)**, 599-612 (2018).
2. Yuan, H., Li, X., Zhang, X., *et al.* CISD1 inhibits ferroptosis by protection against mitochondrial lipid peroxidation. *Biochem. Biophys. Res. Commun.* **478(2)**, 838-844 (2016).
3. Habener, A., Chowdhury, A., Echtermeyer, F., *et al.* MitoNEET protects HL-1 cardiomyocytes from oxidative stress mediated apoptosis in an *in vitro* model of hypoxia and reoxygenation. *PLoS One* **11(5)**, e0156054 (2016).
4. Moreno-Navarrete, J.M., Moreno, M., Ortega, F., *et al.* CISD1 in association with obesity-associated dysfunctional adipogenesis in human visceral adipose tissue. *Obesity (Silver Spring)* **24(1)**, 139-147 (2016).
5. Geldenhuys, W.J., Benkovic, S.A., Lin, L., *et al.* MitoNEET (CISD1) knockout mice show signs of striatal mitochondrial dysfunction and a Parkinson's disease phenotype. *ACS Chem. Neurosci.* **8(12)**, 2759-2765 (2017).

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