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Produktinformation

- Forschungsprodukte & Biochemikalien
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- Laborgeräte & Service

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Lieferung & Zahlungsart

siehe unsere Liefer- und Versandbedingungen

Zuschläge

- Mindermengenzuschlag
- Trockeneiszuschlag
- Gefahrgutzuschlag
- Expressversand

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PRODUCT INFORMATION

Malate Dehydrogenase 1 (human, recombinant)

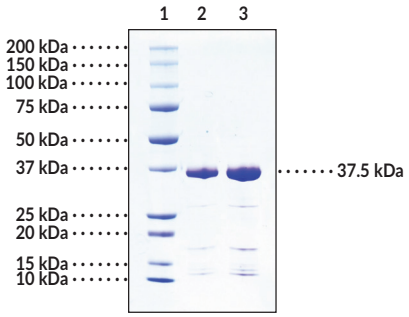
Item No. 40110

Overview and Properties

Synonyms:	Aromatic α-keto Acid Reductase, Cytosolic Malate Dehydrogenase, MDH1, Soluble Malate Dehydrogenase
Source:	Active recombinant human C-terminal His-tagged MDH1 expressed in *E. coli*
Amino Acids:	1-337
Uniprot No.:	P40925
Molecular Weight:	37.49 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	***batch specific*** (≥85% estimated by SDS-PAGE)
Supplied in:	25 mM HEPES, pH 7.5, with 150 mM sodium chloride, 5% glycerol, and 1 mM mercaptoethanol
Concentration:	***batch specific*** mg/ml
Activity:	***batch specific*** U/ml
Specific Activity:	***batch specific*** U/mg
Unit Definition:	One unit defined as the amount of enzyme required to consume 1 µmol of NADH per minute at 25°C in 50 mM HEPES, pH 7.5, with 240 µM oxaloacetic acid (Item No. 30280).

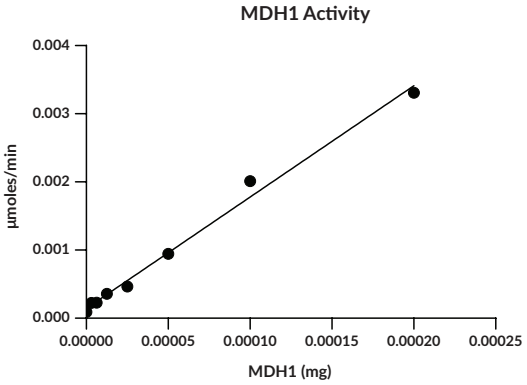
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: MW Markers
Lane 2: MDH1 (2 µg)
Lane 3: MDH1 (4 µg)

Representative gel image shown; actual purity may vary between each batch.



MDH1 (human, recombinant) enzyme specific activity was determined through NADH oxidation at 340 nm using 240 µM oxaloacetic acid (Item No. 30280) as a substrate.

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent *via* email to your institution.

WARRANTY AND LIMITATION OF REMEDY
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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PRODUCT INFORMATION

Description

Malate dehydrogenase 1 (MDH1) is an NAD-dependent dehydrogenase and oxidoreductase.[1] It is composed of an N-terminal NAD binding domain and a C-terminal substrate binding domain that reversibly catalyzes the conversion of malate to oxaloacetate in the cytosol.[1,2] MDH1 functions as a homodimer and is ubiquitously expressed in the human body, functioning as a key metabolic enzyme in glycolysis and the urea acid cycle.[1] MDH1 supports increased rates of cancer glycolysis by serving as both a carbon and NAD supplier in lieu of, and in addition to, lactate dehydrogenase (LDH).[3] *MDH1* expression is amplified in a variety of cancers, including lung squamous cell carcinoma, diffuse B cell lymphoma, as well as bladder and pancreatic cancers, and its higher expression is negatively correlated with patient survival. Oncogenic K-Ras-induced glycosylation of MDH1, but not the mitochondrial MDH2 isoform, stabilizes the substrate-binding domain, increases MDH1 activity, and increases proliferation in pancreatic cancer cells.[4] MDH1 activity is increased in brain homogenates from patients with early Alzheimer's disease compared to brain homogenates from age-matched individuals without Alzheimer's disease.[5] Cayman's Malate Dehydrogenase 1 (human, recombinant) protein can be used for ELISA, enzyme assay, and Western blot (WB) applications.

References

1. McCue, W.M. and Finzel, B.C. Structural characterization of the human cytosolic malate dehydrogenase I. *ACS Omega* **7(1)**, 207-214 (2021).
2. Minárik, P., Tomásková, N., Kollárová, M., *et al*. Malate dehydrogenases — structure and function. *Gen. Physiol. Biophys*. **21(3)**, 257-265 (2002).
3. Hanse, E.A., Ruan, C., Kachmann, M., *et al*. Cytosolic malate dehydrogenase activity helps support glycolysis in actively proliferating cells and cancer. *Oncogene* **36(27)**, 3915-3924 (2017).
4. Zhu, Q., Zhou, H., Wu, L., *et al*. O-GlcNAcylation promotes pancreatic tumor growth by regulating malate dehydrogenase 1. *Nat. Chem. Biol*. **18(10)**, 1087-1095 (2022).
5. Reed, T.T., Pierce, W.M., Markesbery, W.R., *et al*. Proteomic identification of HNE-bound proteins in early Alzheimer disease: Insights into the role of lipid peroxidation in the progression of AD. *Brain Res*. **1274**, 66-76 (2009).

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