



NAD(+)-Dependent Deacetylase SIRT5

Product Data Sheet

For Research Use Only, Not for use in diagnostic procedures

NAD(+)-Dependent Deacetylase SIRT5

Human, recombinant protein expressed in *E. coli.*, Active

Cat# CY-E1155

Amount: 100µg (1.0 µg/µl)

Lot:

Specific Activity: 0.015 units/µg

Introduction:

Sir2 is a conserved protein and was recently shown to regulate lifespan extension both in budding yeast and nematode. In 2000, it was reported that the yeast Sir2 protein is a NAD(+)-dependent histone deacetylase that plays a critical role in transcriptional silencing, genome stability and longevity. In mammals, the homologs of Sir2 have been named Sirtuins (SIRT5), with seven members in a family termed SIRT1 through SIRT7. They share a conserved central deacetylase domain but have different N- and C-termini and display distinct subcellular localization, suggesting different biological functions (1).

The distant mammalian Sir2 homolog SIRT5 localizes in the mitochondrial matrix (2) and interacts with carbamoyl phosphate synthetase 1 (CPS1) which is catalyzing the initial step of the urea cycle for ammonia detoxification and disposal. SIRT5 deacetylates CPS1 and up-regulates its activity (3). Urate oxidase (UOX) were also identified as a target of SIRT5, and its activity was significantly increased by SIRT5-mediated deacetylation in mouse (4). In addition, it was shown that SIRT5 is an efficient protein lysine desuccinylase and demalonylase in vitro. The preference for succinyl and malonyl groups was explained by the presence of an arginine residue (arg105) and tyrosine residue (tyr102) in the acyl pocket of SIRT5 (5). Recently, KO mouse study showed many mammalian proteins have succinyl or malonyl lysine modifications and SIRT5 functions a global regulator of lysine succinylation in mitochondria and present a mechanism for inhibition of ketogenesis (6).

Product Description:

Full-length human SIRT5, containing an N-terminal GST tag, expressed in *E. coli.* and purified by GSH agarose chromatography.

Gene Information:

The gene accession number is NM_012241

Gene Aliases:

SIR2L5, Sirtuin 5

Formulation:

Recombinant SIRT5 is supplied frozen in a buffer containing 20mM HEPES-KOH (pH7.5), 50mM NaCl, 0.5mM EDTA, 1mM DTT, 50% Glycerol. Use a same buffer without glycerol for dilution when needed.

Molecular Weight:

Recombinant SIRT5 demonstrates approximately 60 kDa band by SDS-PAGE analysis.



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Storage:

Store product at -70°C. For optimal storage, aliquot target into smaller quantities after centrifugation and store at recommended temperature. For most favorable performance, AVOID REPEATED HANDLING AND MULTIPLE FREEZE/THAW CYCLES.

Stability:

Unopened vial at -70 °C, for 1 year after delivery.

Unit Definitions:

One unit is defined as the amount of deacetylase required to release 1 nmol of acetyl groups from CycLex's Fluoro-Substrate Peptide included in Cat# CY-1155 with 0.8mM NAD⁺ per minute at 20°C.

Specific Activity varies among production lots.

References:

1. North BJ et al.: Sirtuins: Sir2-related NAD-dependent protein deacetylases *Genome Biol.* 5: 224, 2004
2. Michishita E et al.: Evolutionarily conserved and nonconserved cellular localizations and functions of human SIRT proteins. *Mol Biol Cell.* 16:4623, 2005
3. Nakagawa T et al.; SIRT5 Deacetylates carbamoyl phosphate synthetase 1 and regulates the urea cycle. *Cell.* 137: 560, 2009
4. Nakagawa T et al.; SIRT5 deacetylates and activates urate oxidase in liver mitochondria of mice. *FEBS Lett.* 586:4076, 2012
5. Du J et al.; Sirt5 is a NAD-dependent protein lysine demalonylase and desuccinylase. *Science* 334: 806, 2011.
6. Rardin MJ et al.; SIRT5 regulates the mitochondrial lysine succinylome and metabolic networks. *Cell Metab.* 18:920, 2013



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Related Products

Kit

- * CycLex Cellular Histone Acetylation Assay Kit: Cat# CY-1140
- * CycLex HDACs Deacetylase Fluorometric Assay Kit Ver.2: Cat# CY-1150V2
- * CycLex SIRT1/Sir2 Deacetylase Fluorometric Assay Kit Ver.2: Cat# CY-1151V2
- * CycLex SIRT2 Deacetylase Fluorometric Assay Kit Ver.2: Cat# CY-1152V2
- * CycLex SIRT3 Deacetylase Fluorometric Assay Kit Ver.2: Cat# CY-1153V2
- * CycLex SIRT5 Deacetylase Fluorometric Assay Kit: Cat# CY-1155
- * CycLex SIRT6 Deacetylase Fluorometric Assay Kit Ver.2: Cat# CY-1156V2
- * CycLex HDAC8 Deacetylase Fluorometric Assay Kit Ver.2: Cat# CY-1158V2
- * CycLex NAMPT Colorimetric Assay Kit: CY-1251
- * CycLex NMNAT Colorimetric Assay Kit: CY-1252
- * CycLex NAD⁺/NADH Colorimetric Assay Kit: CY-1253

Enzyme

- * CycLex NAD(+)-Dependent Deacetylase SIRT1: Cat# CY-E1151
- * CycLex NAD(+)-Dependent Deacetylase SIRT2: Cat# CY-E1152
- * CycLex NAD(+)-Dependent Deacetylase SIRT3: Cat# CY-E1153
- * CycLex NAD(+)-Dependent Deacetylase SIRT5: Cat# CY-E1155
- * CycLex NAD(+)-Dependent Deacetylase SIRT6: Cat# CY-E1156
- * CycLex NAMPT (Nicotinamide Phosphoribosyltransferase): Cat# CY-E1251
- * CycLex NMNAT1 (Nicotinamide Mononucleotide Adenyltransferase 1): Cat# CY-E1252

Antibody

- * Anti-Acetylated Histone/p53-K382 Mouse Monoclonal Antibody: Cat# CY-M1029
- * Anti-Histone Deacetylase 1 (HDAC1) Rabbit Polyclonal Antibody: Cat# CY-P1011
- * Anti-Histone Deacetylase 2 (HDAC2) Rabbit Polyclonal Antibody: Cat# CY-P1012
- * Anti-Human SIRT1 Rabbit Polyclonal Antibody: Cat# CY-P1016

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