Data Sheet (Cat.No.TMPY-01869)

TargetMol

SIRT1 Protein, Human, Recombinant (His)

General Information

Synonyms:	SIR2L1;sirtuin 1
Protein Construction:	A DNA sequence encoding the human SIRT1 (Met 193-Ser 747) was expressed with a polyhistide tag at the N-terminus. Predicted N terminal: Met
Species:	Human
Expression Host:	E. coli
Accession:	Q96EB6
Molecular Weight:	62.8 kDa (predicted)

QC Testing

Biological Activity:	Activity testing is in progress. It is theoretically active, but we cannot guarantee it. If you require protein activity, we recommend choosing the eukaryotic expression version first.
Purity:	> 65 % as determined by SDS-PAGE
Endotoxin:	Please contact us for more information.
Formulation:	Lyophilized from a solution filtered through a 0.22 μm filter, containing PBS, pH 7.4, 10% glycerol. Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization.

Preparation and Storage

Reconstitution:

A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

Stability & Storage:

It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

Shipping:

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

Protein Background

SIRT1 belongs to the sirtuin family. Members of the sirtuin family are characterized by a sirtuin core domain and grouped into four classes. SIRT1 is included in class I of the sirtuin family. It is a NAD-dependent protein deacetylase, which regulates processes such as apoptosis and muscle differentiation by deacetylating key proteins. It deacetylates 'Lys-382' of p53/TP53 and impairs its ability to induce proapoptotic program and modulate cell senescence. SIRT1 also deacetylates TAF1B and thereby represses rDNA transcription by the RNA

polymerase I. It is involved in HES1- and HEY2-mediated transcriptional repression. SIRT1 inhibits skeletal muscle differentiation by deacetylating PCAF and MYOD1. It may serve as a sensor of the cytosolic ratio of NAD(+)/NADH, which is essential in skeletal muscle cell differentiation. It also deacetylates 'Lys-16' of histone H4 (in vitro). Component of the eNoSC (energy-dependent nucleolar silencing) complex, a complex that mediates silencing of rDNA in response to intracellular energy status and acts by recruiting histone-modifying enzymes. The eNoSC complex is able to sense the energy status of cell: upon glucose starvation, elevation of NAD(+)/NADP(+) ratio activates SIRT1, leading to histone H3 deacetylation followed by dimethylation of H3 at 'Lys-9' (H3K9me2) by SUV39H1 and the formation of silent chromatin in the rDNA locus.

Reference

Sharma A,et al.(2012) Interactomic and pharmacological insights on human Sirt-1. Front Pharmacol. 3-40.
Sun C,et al.(2007) SIRT1 improves insulin sensitivity under insulin-resistant conditions by repressing PTP1B. Cell Metab. 6(4):307-19.
Rodgers JT,et al.(2005) Nutrient control of glucose homeostasis through a complex of PGC-1alpha and SIRT1. Nature. 434(7029):113-8.
Nemoto S,et al.(2005) SIRT1 functionally interacts with the metabolic regulator and transcriptional coactivator PGC-1{alpha}. J Biol Chem. 280(16):16456-60.

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