

## SIRT3 Protein, Human

Cat. No.:	HY-P701609
Synonyms:	SIRT3; NAD-dependent protein deacetylase sirtuin-3; mitochondrial; hSIRT3; Regulatory protein SIR2 homolog 3; SIR2-like protein 3
Species:	Human
Source:	E. coli
Accession:	Q9NTG7 (S118-K399)
Gene ID:	23410
Molecular Weight:	

### PROPERTIES

Appearance	Solution.
Formulation	Supplied as a 0.22 µm filtered solution of 50 mM Tris-HCl, pH7.5, 200 mM NaCl, 20% glycerol.
Endotoxin Level	<1 EU/µg, determined by LAL method.
Reconstitution	Please use rapid thawing with running water to thaw the protein.
Storage & Stability	Stored at -80°C for 1 year. It is stable at -20°C for 3 months after opening. It is recommended to freeze aliquots at -80°C for extended storage. Avoid repeated freeze-thaw cycles.
Shipping	Shipping with dry ice.

### DESCRIPTION

Background	<p>SIRT3, a NAD-dependent protein deacetylase, intricately modulates the acetylation status of key lysine residues in various mitochondrial target proteins, including ACSS1, IDH, GDH, SOD2, PDHA1, LCAD, SDHA, and ATP synthase subunit ATP5PO. By catalyzing deacetylation, SIRT3 actively participates in the regulation of cellular energy metabolism, exerting influence on tissue-specific ATP levels and contributing to the fine-tuning of metabolic responses. Under metabolic stress conditions, SIRT3 deacetylates the transcription factor FOXO3, recruiting both FOXO3 and mitochondrial RNA polymerase POLRMT to mitochondrial DNA, thereby enhancing mtDNA transcription. Additionally, SIRT3 plays a crucial role in ceramide metabolism by deacetylating ceramide synthases CERS1, CERS2, and CERS6, promoting mitochondrial ceramide accumulation. Furthermore, SIRT3 regulates hepatic lipogenesis by utilizing NAD(+) substrate imported by SLC25A47, triggering downstream activation of the PRKAA1/AMPK-alpha signaling cascade. This activation ultimately leads to the downregulation of sterol regulatory element-binding protein (SREBP) transcriptional activities, mitigating ATP-consuming lipogenesis and restoring cellular energy balance.</p>
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**Caution: Product has not been fully validated for medical applications. For research use only.**

Tel: 609-228-6898

Fax: 609-228-5909

E-mail: [tech@MedChemExpress.com](mailto:tech@MedChemExpress.com)

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA