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MATERIAL DATA SHEET

Recombinant Human His6 SUMO1
Cat. # UL-715

Human Small Ubiquitin-like Modifier 1 (SUMO1), also known as Sentrin, UBL1, and SMT3C, is synthesized as a 101 amino acid (aa) propeptide with a predicted molecular weight of 11.5 kDa. Human SUMO1 is the most unique of the four identified SUMO proteins and shares only 44%, 47%, and 41% aa sequence identity with SUMO2, SUMO3, and SUMO4, respectively. In contrast, human SUMO1 shares 100% aa sequence identity with the mouse ortholog. SUMOs are a family of small, related proteins that can be enzymatically attached to a target protein by a post-translational modification process termed SUMOylation (1-3). All SUMO proteins share a conserved Ubiquitin domain and a C-terminal diglycine cleavage/attachment site. Following cleavage of a four aa C-terminal prosegment, the C-terminal glycine residue of SUMO1 is enzymatically attached to a lysine residue on a target protein. In humans, SUMO1 is conjugated to a variety of molecules in the presence of the SAE1/UBA2 SUMO-activating (E1) enzyme and the UBE2I/Ubc9 SUMO-conjugating (E2) enzyme (4,5). In yeast, the SUMO-activating (E1) enzyme is Aos1/Uba2p (6). SUMOylation can occur without the requirement of a specific SUMO ligase (E3), where SUMO1 is transferred directly from UBE2I/Ubc9 to specific substrates. In Alzheimer's disease models SUMO1 has been shown to influence the generation of Amyloid-beta peptide by promoting the accumulation of BACE-1 (7). Covalent modification of Phosphatase and Tensin Homolog Deleted on Chromosome (PTEN) by SUMO1 is thought to regulate tumorigenesis by retaining PTEN at the plasma membrane, an effect that suppresses PI 3-Kinase/Akt-dependent tumor growth (8).

The ubiquitin-like SUMO-1 is conjugated to a variety of proteins in the presence of UbcH9 and the SAE1/SAE2 (human) or Aos1/Uba2 (yeast) activating enzyme. SUMO-1 is derived from the precursor pro-SUMO-1 (Accession # NM_003352). Human SUMO-1 shares 46% and 47% identity with SUMO-2 and SUMO-3 respectively. SUMOylation can occur without the requirement of a specific E3 ligase activity, where SUMO is transferred directly from UbcH9 to specific substrates. SUMOylated substrates are primarily localized to the nucleus (RanGAP-1, RANBP2, PML, p53, Sp100, HIPK2), but there are also cytosolic substrates (IκBα, GLUT1, GLUT4). SUMO modification has been implicated in functions such as nuclear transport, chromosome segregation, and transcriptional regulation.

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Product Information

Quantity: 500 µg

MW: 13 kDa

Source: *E. coli*-derived
Contains an N-terminal 6-His tag
Accession # NM_003352

Stock: X mg/ml (X µM) in 50 mM HEPES pH 8.0, 150 mM NaCl and 1 mM DTT

Purity: >95%, by SDS-PAGE under reducing conditions and visualized by Colloidal Coomassie® Blue stain.

Use & Storage

Use: Recombinant Human His6-SUMO1 can be conjugated to substrate proteins via the subsequent actions of an SUMO-activating (E1) enzyme, an SUMO-conjugating (E2) enzyme, and an SUMO ligase (E3). Reaction conditions will need to be optimized for each specific application. We recommend an initial Recombinant Human His6-SUMO1 concentration of 10-50 µM.

Storage: **Use a manual defrost freezer and avoid repeated freeze-thaw cycles.**

- 12 months from date of receipt, -70 °C as supplied.
- 3 months, -70 °C under sterile conditions after opening.

Literature

References:

1. Desterro, J.M. *et al*. (1997) FEBS. Lett. **417**:297.
2. Bettermann, K. *et al*. (2012) Cancer Lett. **316**:113.
3. Praefcke, G.J. *et al*. (2012) Trends Biochem. Sci. **37**:23.
4. Okuma, T. *et al*. (1999) Biochem. Biophys. Res. Commun. **254**:693.
5. Tatham, M.H. *et al*. (2001) J. Biol. Chem. **276**:35368.
6. Johnson, E.S. *et al*. (1997) EMBO J. **16**:5509.
7. Yun, S.M. *et al*. (2012) Neurobiol Aging. [Epub ahead of print].
8. Huang, J. *et al*. (2012) Nat. Commun. **3**:911.

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