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Product Information

Anti-SUMO-1
produced in rabbit, affinity isolated antibody

Catalog Number **S8070**

Product Description

Anti-SUMO-1 is produced in rabbit using as immunogen a synthetic peptide corresponding to amino acids 1-16 located at the N-terminus of human SUMO-1, conjugated to KLH. This sequence is identical in many species including mouse, rat, dog, bovine, and highly conserved (single amino acid substitution) in chicken and *Xenopus* SUMO-1. It is not found in human SUMO-2 and SUMO-3. The antibody is affinity-purified using the immunizing peptide immobilized on agarose.

Anti-SUMO-1 recognizes unconjugated SUMO-1 (14 kDa) and SUMO-1-GST (41 kDa) as well as proteins covalently conjugated to SUMO-1 (e.g. RanGAP1, 90 kDa). Applications include the detection of SUMO-1 by immunoblotting, immunoprecipitation, and immunofluorescence. Staining of the SUMO-1 band in immunoblotting is specifically inhibited with the SUMO-1 immunizing peptide (human, amino acids 1-16).

SUMO-1 is a highly conserved, small ubiquitin-related modifier, also known as SMT3C, SMT3H3, UBL1, PIC1, GMP1 and sentrin, that has been shown to be covalently conjugated to a large variety of cellular proteins.[1-3] The conjugation of SUMO-1 to cellular proteins has been implicated in multiple cellular processes including nuclear transport, cell cycle control, oncogenesis and inflammation, and the response to viral infection. SUMO-1 is conjugated to a target protein by a pathway that is distinct from but analogous to ubiquitin conjugation.[2-4] Like ubiquitin, SUMO-1 conjugation forms an isopeptide bond between Gly^{97} at C-terminus SUMO-1 and the ε-amino group on the Lys side chain of the target protein.[3-5] However, unlike ubiquitin, SUMO-1 is unable to form multi-chain forms. Two ubiquitin-like proteins, known as SUMO-2 (SMT3B, SMT3H2 and sentrin-2) and SUMO-3 (SMT3A, SMT3H1 and sentrin-3), that are related to SUMO-1 but are apparently functionally distinct, have been identified.[6-8] SUMO-2 and SUMO-3 are very similar to each other (95% sequence identity) but are relatively different from SUMO-1 (50% sequence identity) suggesting that they represent a subfamily distinct from SUMO-1. Several substrates for SUMO-1 have been reported in vertebrate species including RanGAP1, PML, Sp100, HSF1, Smad4, IκBα, c-Jun, p53, and Mdm2.[9] RanGAP1, a Ran GTPase-activating protein critically involved in nucleocytoplasmic trafficking, is a major SUMO-1 substrate. SUMO-1 covalently modifies RanGAP1 on a single lysine residue at position 526 in the C-terminus of RanGAP1.[5, 10-11] A large fraction of SUMO-1-modified RanGAP1 (90 kDa), appears to be tightly associated with the nuclear envelope. Unmodified RanGAP1 is present in the cytoplasm suggesting that modification by SUMO-1 may target RanGAP1 to the nuclear pore complex (NPC).

Reagent

Supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide.

Antibody concentration: 1.0-1.5 mg/mL

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

For continuous use, store at 2-8 °C for up to one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing, or storage in frost-free freezers, is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilutions should be discarded if not used within 12 hours.

Product Profile

Immunoblotting: a working concentration of 0.5-1 µg/mL is recommended using a nuclear extract of the human epitheloid carcinoma HeLa cell line.

Indirect immunofluorescence: a working concentration of 4-8 µg/mL is recommended using HeLa cells.

Immunoprecipitation: 10-20 µg of the antibody can immunoprecipitate protein from a nuclear extract of HeLa cells.

Note: In order to obtain the best results using various techniques and preparations, we recommend determining the optimal working dilutions by titration.

References

1. Matunis, M.J., et al., *J. Cell Biol.*, **135**, 1457-1470 (1996).
2. Kamitani, T., et al., *J. Biol. Chem.*, **272**, 14001-14004 (1997).
3. Mahajan, R., et al., *Cell*, **88**, 97-107 (1997).
4. Bayer, P., et al., *J. Mol. Biol.*, **280**, 275-286 (1998).
5. Mahajan, R., et al., *J. Cell Biol.*, **140**, 259-270 (1998).
6. Johnson, P.R., and Hochstrasser, F., *Trends Cell Biol.*, **7**, 408-413 (1997).
7. Lapenta, V., et al., *Genomics*, **40**, 362-366 (1997).
8. Saito, H., and Hinchey, J., *J. Biol. Chem.*, **275**, 6252-6258 (2000).
9. Melchior, F., *Ann. Rev. Cell Dev. Biol.*, **16**, 591-626 (2000).
10. Matunis, M.J., et al., *J. Cell Biol.*, **140**, 499-509 (1998).
11. Muller, S., et al., *EMBO J.*, **17**, 61-70 (1998).

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