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ProductInformation

Anti-SUMO-1 (C-terminal)
produced in rabbit, affinity isolated antibody

Catalog Number **S5446**

Product Description

Anti-SUMO-1 (C-terminal) is developed in rabbit using as immunogen a synthetic peptide corresponding to amino acids 86-97 located at the C-terminus of human SUMO-1, conjugated to KLH, This sequence is identical in many species including rat, mouse, bovine, chicken, and *Xenopus*, and highly conserved (single amino acid substitution) in *C. elegans* SMT3. This sequence has only 66% homology to human SUMO-2 and SUMO-3. The antibody is affinity-purified using the immunizing peptide immobilized on agarose.

Anti-SUMO-1 (C-terminal) recognizes unconjugated SUMO-1 (14 kDa), SUMO-1-fusion protein, as well as proteins covalently conjugated to SUMO-1, e.g., RanGAP1, 90 kDa, by immunoblotting. Staining of the SUMO-1 band in immunoblotting is specifically inhibited with the immunizing peptide.

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, 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 1% BSA and 15 mM sodium azide.

Antibody concentration: ~0.4 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 1-2 μg/mL is recommended using a nuclear extract of the human epitheloid carcinoma HeLa cell line, and a working concentration of 0.2-0.4 μg/mL is recommended using SUMO-1 and a SUMO-1 fusion protein.

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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