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Product Information

Anti- Histone Deacetylase 1 (HDAC1)
produced in rabbit. IgG fraction of antiserum

Catalog Number **H3284**

Product Description

Anti-Histone Deacetylase 1 is produced in rabbit using as immunogen a synthetic peptide (CKEEKPEAKGVK-EEVKLA) corresponding to the C-terminus region of histone deacetylase 1 of human origin (amino acid residues 466-482 with N-terminal added cysteine) conjugated to maleimide-activated KLH. This sequence is identical in mouse. Whole antiserum is purified to provide an IgG fraction of antiserum.

Anti-Histone Deacetylase 1 specifically recognizes histone deacetylase 1 by immunoblotting and immunoprecipitation (65 kDa). An additional band of lower molecular weight may be detected in some cell line extracts by immunoblotting. Staining of HDAC1 by immunoblotting is specifically inhibited with the immunizing peptide. The antibody is also useful for the detection of HDAC1 by immunohistochemistry. The epitope(s) recognized by the antibody is resistant to routine formalin-fixation and paraffin-embedding, unless there is a protease digestion. The antibody reacts with HDAC1 of human, rat and mouse origin.

The basic repeating unit of chromatin is the nucleosome, which consists of 146 bp of DNA wound about a histone octamer composed of two each of the core histones H2A, H2B, H3 and H4. Reversible acetylation of highly conserved lysine residues in N-terminal tail domains of core histones plays an important role in transcriptional regulation, cell cycle progression and developmental events. Several histone acetyltransferases (HATs) catalyze the acetylation reaction (GCN5, PCAF, p300/CBP, TAF_{II} 250, P/CAF, SRC-1, BRCA-2). Acetylation of the core histones is generally considered to be associated with gene activation, probably through maintenance of the unfolded structure of transcribing nucleosomes.[1,2] Histone acetylation is a dynamic process whose levels are determined by the net activities of HATs and the competing enzymes histone deacetylases (HDACs).[3] Both activities are associated with the nuclear matrix. Six or seven different mammalian HDACs have been described. HDAC1, HDAC2 and HDAC3 are similar to yeast Rpd3 protein, while HDAC4, HDAC5 and HDAC6 are similar to yeast Hda1 protein.[4,5]

Histone deacetylases activities were often, but not always, associated with transcriptional repression and nucleosomal condensations.[6,7] HDAC1, HDAC2 and several other HDACs are the catalytic subunits of different multiprotein regulatory complexes.[8] Other components of such complexes may include: co-repressors such as mSin3, N-CoR, SMRT, associated proteins such as SAP18, SAP30, RbAp46, RbAp48, c-Ski oncogenic protein, a protein involved in DNA methylation, etc. Nucleosome remodeling and deacetylation (NRD) complexes containing HDAC1, HDAC2, Mi-2 (CH3, CH4) dermatomyositis specific autoantigen and MTA2 protein that is related to metastasis-associated protein 1, were recently described. In this way, ATP-dependent nucleosome remodeling activity and histone deacetylation may be interconnected or interdependent.[9,10] Recruitment of the multiprotein complexes to promoter sites occurs by many sequence specific DNA-binding proteins such as unliganded nuclear hormone receptors, DP1-E2F, YY1 and Rb family of transcription factors, transcriptional repressors and tumor suppressors (e.g. BRCA1). Aberrant recruitment of HDACs by certain oncoproteins may occur in certain neoplastic diseases.[11]

Reagent

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

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 dilution samples should be discarded if not used within 12 hours.

Product Profile
Immunoblotting: a minimum working dilution of 1:20,000 is determined using a nuclear extract of HeLa human epithelioid carcinoma cell line.

Immunoblotting: a minimum working dilution of 1:2,000 is determined using a whole extract of PC-12 rat pheochromocytoma cell line.

Immunoprecipitation: a recommended working volume of 5-10 µl is determined using a whole lysate of NIH 3T3 cells.

Indirect immunoperoxidase staining: a minimum working dilution of 1:500 is determined using protease-digested, formalin-fixed, paraffin-embedded human lymph node sections.

Note: In order to obtain best results and assay sensitivity in different techniques and preparations we recommend determining optimal working dilutions by titration test.

References

1. Bauer, W.R., et al, *J. Mol. Biol*., **236**, 685 (1994).
2. Lee, D.Y., et al., *Cell*, **72**, 731 (1993).
3. Taunton, Y., et al., *Science*, **272**, 408 (1996).
4. Grozinger, C.M., et al., *Proc. Natl. Acad. Sci. USA*, **96**, 4868 (1999).
5. Fischle, W., et al., *J. Biol. Chem*., **274**, 11713 (1999).
6. Wolffe, A.P., *Science*, **272**, 371 (1996).
7. Grunstein, M., *Nature*, **389**, 349 (1997).
8. Hassig, C.A., et al., *Proc. Natl. Acad. Sci. USA*, **95**, 3519 (1999).
9. Tong, J.K., et al., *Nature*, **395**, 917 (1998).
10. Zhang, Y., et al., *Cell*, **95**, 279 (1998).
11. Lin, R.J. et al., *Nature*, **391**, 811 (1998).

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