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ProductInformation

ANTI-Op18/STATHMIN
Developed in Rabbit
IgG Fraction of Antiserum

Product Number **O 0138**

Product Description

Anti-Op18/Stathmin is developed in rabbit using a synthetic peptide corresponding to the C-terminus of human Op18/stathmin (amino acids 132-149, with an N-terminally added cysteine-glycine linker), conjugated to maleimide-activated keyhole limpet hemocyanin (KLH) as immunogen. This sequence is identical in rat and mouse Op18/stathmin. It is specific for Op18/stathmin and not found in other members of the stathmin family such as SCG10, RB3, and XB3. Whole antiserum is fractionated and then further purified by ion-exchange chromatography to provide the IgG fraction of antiserum that is essentially free of other rabbit serum proteins.

Anti-Op18/Stathmin recognizes human and rat Op18/stathmin (19 kDa). Applications include immunoblotting and immunohistochemistry. Staining of Op18/stathmin in immunoblotting is specifically inhibited with Op18/stathmin immunizing peptide.

Oncoprotein 18 (Op18)/stathmin (also termed p18, p19, prosolin, metablastin) is a widely expressed and highly conserved cytosolic phosphoprotein.[1-3] Op18/stathmin is most abundant in the brain and neurons.[1] Its expression is regulated during development and tissue regeneration.[4,5] Op18/Stathmin displays a high sequence homology with the developmentally regulated neuronal protein SCG10 and the neuronal specific phosphoproteins RB3 and XB3.[6] Op18/stathmin is also highly expressed in a number of human malignancies, such as acute leukemias, lymphomas, neuroblastomas, prostatic adenocarcinomas, and breast carcinomas.[3,9,10]

Op18/stathmin has a complex pattern of phosphorylation in response to various extracellular stimuli, in particular, growth and differentiation factors. Its phosphorylation pattern varies during the cell cycle especially during mitosis where Op18/stathmin is phosphorylated on one to four serine residues.[4-5] The protein kinase systems involved in Op18/stathmin phosphorylation include members of the cyclin-dependent kinase family (CDKs), MAP kinase, CAM kinase IV, and PKA.

It has been proposed that Op18/stathmin can act as an intracellular relay integrating the activation of diverse signaling pathways and participating in control of proliferation and differentiation of cells.
Op18/stathmin is an important regulator of microtubule (MT) dynamic both *in vitro* and in intact cells. It forms complexes with α/β-tubulin heterodimers and destabilizes MT both *in vivo* and *in vitro* by promoting MT catastrophes.[11,12] The MT-destabilizing activity of Op18/stathmin is turned off in response to phosphorylation on its four serine residues, allowing formation of the mitotic spindle and cell progression through mitosis. Overexpression of wild-type Op18/stathmin in mammalian cells does not prevent spindle formation in mitosis, whereas overexpression of Op18/stathmin phosphorylation site mutants prevents it.[12,13] Two mechanisms have been proposed to explain the MT-destabilizing activity of Op18/stathmin.[14] In one mechanism, Op18/stathmin forms a sequestering complex with free tubulin in which one Op18/stathmin molecule binds two α/β-tubulin dimers. Alternatively, Op18/stathmin may increase the catastrophe frequency of MTs.

Reagent

Anti-Op18/Stathmin is supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide.

Precautions and Disclaimer

Due to the sodium azide content, a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazards and safe handling practices.

Storage/Stability
For continuous use, store at 2-8 °C for up to one month. For prolonged storage, freeze in working aliquots at –20 °C. Repeated freezing and thawing is not recommended. Storage in frost-free freezers is also 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
For immunoblotting, a minimum working antibody dilution of 1:2,000 is recommended using a whole cell extract of the human acute lymphoma Jurkat cell line and cytosolic fraction of rat brain.

For immunoblotting, a minimum working antibody dilution of 1:2,000 is recommended using a cytosolic fraction of rat brain.

For immunohistochemistry, a minimum working antibody dilution of 1:500 is recommended using formalin-fixed, paraffin-embedded sections of human tonsil.

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

References

1. Sobel, A., Trends Biochem. Sci., **16,** 301 (1991).
2. Sobel, A., et al., J. Biol. Chem., **264,** 3765 (1989).
3. Hailat, N., et al., Oncogene, **5**, 1615 (1990).
4. Koppel, J., et al., J. Biol. Chem., **265**, 3703 (1990).
5. Koppel, J., et al., FEBS Lett., **331**, 65 (1993).
6. Ozon, S., et al., Eur. J. Biochem., **248**, 794 (1997).
7. Hanash, S.M., et al., J. Biol. Chem., **263**, 12813 (1988).
8. Brattsand, G., Br. J. Cancer, **83**, 311 (2000).
9. Strahler, J.R., Biochem. Biophys. Res. Commun., **185**, 197 (1992).
10. Brattsand, G., et al., Eur. J. Biochem., **220**, 359 (1994).
11. Belmont, L.D., and Mitchison, T.J., Cell, **84**, 623 (1996).
12. Marklund, U., et al., EMBO J., **15**, 5290 (1996).
13. Gavet, O., et al., J. Cell Sci., **111**, 3333 (1998).
14. Howell, B., et al., Mol. Biol. Cell, **10**, 105 (1999).

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