3050 Spruce Street, St. Louis, MO 63103 USA
Tel: (800) 521-8956 (314) 771-5765 Fax: (800) 325-5052 (314) 771-5757
email: techservice@sial.com sigma-aldrich.com

Product Information

Anti-Cathepsin D antibody, Mouse monoclonal
clone CTD-19, purified from hybridoma cell culture

Product Number **SAB4200767**

Product Description

Anti-Cathepsin D antibody, Mouse monoclonal (mouse IgG2a isotype) is derived from the CTD-19 hybridoma, produced by the fusion of mouse myeloma cells and splenocytes from BALB/c mouse immunized with Cathepsin D Purified from human liver. The isotype is determined by ELISA using Mouse Monoclonal Antibody Isotyping Reagents, Product Number ISO2. The antibody is purified from culture supernatant of hybridoma cells.

Anti-Cathepsin D antibody, Mouse monoclonal recognizes Cathepsin D from human[1] and rabbit[2] origin. The product does not react with non-cleaved bovine cathepsins D and B, nor with human cathepsins B, C, G, and H. The product may be used in several immunochemical techniques including Immunoblotting[1-3] (Cathepsin D at ~48kDa and Cathepsin D heavy chain at ~26kda and ~30kda), Immunohistochemistry[2] and Immunofluorescence.

Cathepsin D, also known as CatD or CTSD, is one of the most abundant lysosomal endoproteinases implicated in protein catabolism. Lysosomal cathepsins can be divided into three groups: cysteine (cathepsins B, C, F, H, K, L, O, S, V, W, and X), aspartic (cathepsins D and E) and serine (cathepsin G) proteases.[4] CatD is synthesized in the rough endoplasmic reticulum as pre-proprotein. After removal of signal peptide, the pro-Cathepsin D is targeted to endosomes to form an active, ~48kDa, single-chain intermediate then to the lysosomes to form the fully active mature protease, composed of a ~30kDa heavy chain and a ~14kDa light chain.[5-6] CatD plays numerous physiological functions in the cells including metabolic degradation of intracellular proteins and the activation of enzymatic precursors.[4,5,7] In the central nervous system, CatD is particularly important for the control of neuronal homeostasis, cell migration, and interneuron communication. CatD-mediated proteolysis is essential to neurons by accomplishing the degradation of unfolded/oxidized protein aggregates that continuously reach the lysosomes via autophagy or endocytosis.[5,7]

The level of CatD synthesized by the cells isincreased in response to mitogenic signals from estrogen, EGF, FGF, and IGF- I. The ability of tumor cells to invade the extracellular matrix has been attributed to cathepsins released by tumor cells or associated with its plasma membrane.

High concentrations of CatD enzyme levels in cancers patients is correlated with a significantly shorter overall survival.[8] Moreover, plasma CatD is proposed as a non-invasive marker for prediction of hepatic inflammation in children.[9]

Anti-Cathepsin D antibody, Mouse monoclonal may be used to study the distribution of CatD in human cancers and to relate its concentrations to various biochemical, histological and clinical characteristics.

Reagent

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

Antibody Concentration: ~ 1.0 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 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 working concentration of 2–4 μg/mL is recommended using human breast cancer MCF7 cell line.

Immunofluorescence: a working concentration of 5–10 μg/mL is recommended using HeLa cells.

Immunohistochemistry: a working concentration of 10–20 μg/mL is recommended using heat-retrieved formalin-fixed, paraffin-embedded human liver sections.

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

References

1. Bourdenx M., et al., *Autophagy*, **12**, 472-83 (2016).
2. Chen X., et al., *Front Aging Neurosci*., **8**, 129 (2016).
3. Singh K., et al., *Breast Cancer Res*., **17**, 27 (2015).
4. Stoka V., et al., *Ageing Res Rev*., **32**, 22-37 (2016)
5. Di Domenico F., et al., *Expert Opin Ther Targets*, **20**, 1393-5 (2016).
6. Bach AS., et al., *Oncotarget*, **6**, 28084-103 (2015).
7. Vidoni C., et al., *Med Res Rev*., **36**, 845-70 (2016).
8. Duffy MJ., et al., *Clin Chem*., **37**, 101 (1991).
9. Walenbergh SM., et al., *Am J Gastroenterol*., **110**, 462-70 (2015).