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ProductInformation

CALPAIN 1 ACTIVE
from Human Plasma

Product Number **C 6108**
Storage Temperature -70 °C

EC 3.4.22.17

Product Description

This product is an active form of Calpain 1 from human plasma. It is a neutral calcium-dependent cysteine protease containing the EF-hand motif. The protease consists of two subunits; the larger subunit has four domains, one homologous with papain and one with calmodulin. The smaller subunit has one domain homologous with calmodulin.[1, 2, 3] *In vivo*, the enzyme is usually present in an inactive form and found mainly in the cell cytosol.

Calpain 1 is activated by limited autolysis in the presence of calcium. It requires micromolar levels of calcium for activation and, therefore, it is often referred to as micro-calpain, or μ-calpain. Calpain 2 is activated by millimolar levels of calcium and referred to as milli-calpain, or m-calpain. Activation of Calpain 1 leads to cellular protein degradation, neuronal cell degeneration, and autoimmune demyelinating diseases such as multiple sclerosis. It functions as an upstream regulator of apoptosis.[4, 5, 6]

Solution in 20 mM imidazole-HCl, containing 5 mM β-mercaptoethanol, 1 mM EDTA, 1 mM EGTA, and 30% glycerol.

Purity: ≥98% (SDS-PAGE)

Precautions and Disclaimer

This product is for laboratory use only. Please consult the Material Data Safety Sheet for information regarding hazards and safe handling practices

Storage/Stability

The product ships on dry ice and it is recommended to store the product at -70 °C. Avoid repeated freeze-thaw cycles.

References

1. Ohno, S., et al., Evolutionary origin of a calcium-dependent protease by fusion of genes for a thiol protease and a calcium-binding protein? Nature (London), **312**, 566-570 (1984).
2. Aoki K., et al., Complete amino acid sequence of the large subunit of the low-Ca^{2+}-required form of human Ca^{2+}-activated neutral protease (mu CANP) deduced from its cDNA sequence. FEBS Lett., **205**, 313-317 (1986).
3. Ohno, S., et al., Cloning and evolution of calcium-dependent protease, cDNA cloning of a novel family of calcium-binding proteins. Methods of Enzymology, **139**, 363-379 (1987).
4. Glaser, T. et al., Calpain (Ca^{2+}-dependent thiol protease) in erythrocytes of young and old individuals. Proc. Natl. Acad. Sci., USA, **91**, 1879-1883 (1994).
5. Shields, D. C., et al., A putative mechanism of demyelination in multiple sclerosis by a proteolytic enzyme, calpain. Proc. Natl. Acad. Sci., USA, **96**, 11486-91 (1999).
6. Squier, M. K. and Cohen, J. J., Calpain, an upstream regulator of thymocyte apoptosis. J. Immunol., **158**, 3690-3697 (1997).

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