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Product Information

Caspase 1, human
recombinant, expressed in *E. coli*

Catalog Number **C5482**
Storage Temperature –70 °C

EC 3.4.22.36
Synonyms: ICE; Interleukin-1β-Converting Enzyme

Product Description
Caspase 1 is the prototypical member of the caspase family of cysteine proteases. Caspases are synthesized as inactive proenzymes. Caspase 1 exists in cells as an inactive 45 kDa proenzyme. The proenzymes contain N-terminal prosequences of various lengths followed by a large subunit (17–22 kDa) and a small subunit (10–12 kDa). Caspases are activated by cleavage at specific Asp residues to produce the two subunits. Caspase 1 is a heterotetramer consisting of two large (p20, 20 kDa) and two small (p10, 10 kDa) subunits.[1,2] In some cases, the subunits in the proenzyme are separated by a linker that may be involved in regulation of the activation of the caspase. The mechanism of regulation of caspase 1 activation is complex and to date, is poorly understood. In THP-1 cells, a large proportion of the caspase 1 is present in the inactive proenzyme form.

All caspases contain an active-site pentapeptide of the general structure QACXG (where X is R, Q, or G). The amino acids Cys^{285} and His^{237} involved in catalysis and those involved in forming the P1 carboxylate binding pocket (Arg^{179}, Gln^{283}, Arg^{341}, and Ser^{347}) are conserved in all caspases, except for the substitution of Thr for Ser^{347} in caspase 8. This explains the absolute requirement for an Asp in the P1 position. Residues forming the P2–P4 binding pocket are not well conserved. This suggests they may determine the substrate specificities of the caspases. Evidence suggests that not all caspases are required for cell death and some caspases appear to be more important than others.[2]

The product is supplied as a lyophilized powder containing 0.052% ammonium sulfate, 0.158% Tris-HCl, and 0.76% sodium chloride.

Specific Activity: ≥5,000 units/mg protein

Unit definition: One unit will hydrolyze 1 nanomole of the caspase substrate, YVAD-*p*NA, to *p*-Nitroanaline and YVAD per hour at pH 7.2 and 37 °C. The reaction buffer used to assay caspase 1 contains 50 mM Hepes, pH 7.2, 50 mM NaCl, 0.1% Chaps, 10 mM EDTA, 5% glycerol, and 10 mM DTT.

Preparation Instructions
Reconstitute in phosphate buffered saline. Store solutions in aliquots at –70 °C.

Storage/Stability
The product ships on dry ice and storage at –70 °C is recommended. Repeated freezing and thawing is not recommended.

References
1. Cohen, G.M., Biochem. J., **326,** 1-16 (1997).
2. Nicholson, D.W., and Thornberry, N.A., Trends Biochem. Sci., **22,** 299-306 (1997).

Related Products
Substrates:
N-Acetyl-Tyr-Val-Ala-Asp *p*-nitroanilide (Catalog Number A6845)
N-Acetyl-Trp-Glu-His-Asp-7-amido-4-methylcoumarin (Catalog Number A0216)
N-Acetyl-Trp-Glu-His-Asp-7-amide-4-trifluoromethy-lcoumarin (Catalog Number A6720)
N-Acetyl-Tyr-Val-Ala-Asp-7-amido-4-trifluoromethyl-coumarin (Catalog Number A9965)
N-Acetyl-Tyr-Val-Ala-Asp-7-amido-4-methylcoumarin (Catalog Number A2452)

Inhibitor:
N-Acetyl-Trp-Glu-His-Asp-al (Catalog Number A1466)

KWJ,RBG,MAM 01/11-1