

Product Information

Caspase 4, human

Recombinant, expressed in *E. coli*

Catalog Number **C6357**

Storage Temperature -70°C

EC 3.4.22.57

Synonyms: ICE-2, ICErel-II, Ich-2, TX

Product Description

Caspase 4 (ICE-2, ICErel-II, Ich-2, or TX) is a member of the caspase family of cysteine proteases. Caspases are synthesized as inactive pro-enzymes. The pro-enzymes contain N-terminal pro-sequences 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 4 is a hetero-tetramer consisting of two large (19.5 kDa) and two small (10 kDa) subunits.^{1,2} In some cases, the subunits in the pro-enzyme are separated by a linker that may be involved in regulation of the activation of the caspase.

All caspases contain an active-site pentapeptide of the general structure QACXG (where X is R, Q, or G). The amino acids Cys²⁸⁵ and His²³⁷ involved in catalysis and those involved in forming the P1 carboxylate binding pocket (Arg¹⁷⁹, Gln²⁸³, Arg³⁴¹, and Ser³⁴⁷) are conserved in all caspases, except for the substitution of Thr for Ser³⁴⁷ in caspase 8. This explains the absolute requirement for an Asp in the P1 position. Residues that form the P2–P4 binding pocket are not well conserved. This suggests that they may determine the substrate specificities of the caspases.

Human caspase 4 has been postulated to function as a caspase specific to endoplasmic reticulum stress.³ The role of human caspase 4 in inflammasome activation has been investigated.^{4,5}

The product is supplied as a lyophilized powder with 0.052% ammonium sulfate, 0.158% Trizma® HCl, and 0.76% NaCl.

Specific Activity: ~5,000 units/mg protein

Unit Definition: One unit will hydrolyze 1 nmole of the caspase substrate Trp-Glu-His-Asp-pNA (WEHD-pNA) to *p*-nitroaniline per hour at pH 7.2 at 37 °C. The reaction buffer used to assay caspase 4 contains 50 mM HEPES, pH 7.2, 50 mM NaCl, 0.1% CHAPS, 10 mM EDTA, 5% Glycerol, and 10 mM DTT.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

Reconstitute in PBS. 15% glycerol may be included with the PBS if so desired. 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**(Pt 1), 1-16 (1997).
2. Nicholson, D.W., and Thornberry, N.A., *Trends Biochem. Sci.*, **22**(8), 299-306 (1997).
3. Hitomi, J. *et al.*, *J. Cell Biol.*, **165**(3), 347-356 (2004).
4. Casson, C.N. *et al.*, *Proc. Nat. Acad. Sci. USA*, **112**(21), 6688-6693 (2015).
5. Viganò, E. *et al.*, *Nat. Comm.*, **6**, 8761 (2015).

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