Caspase 3 Human, Recombinant

Cat. No. NATE-0104

Lot. No. (See product label)

Introduction

Description Caspase 3 is a member of the CED-3 subfamily of caspases and is responsible for the cleavage of many key proteins such as the nuclear enzyme poly (ADP-ribose) polymerase (PARP), the inhibitor of caspase-activated deoxyribonuclease (ICAD), and gelsolin, a protein involved in apoptosis regulation. Caspase 3 is considered to be an effector caspase, activating pro-caspase 6 and pro-caspase 9 in vitro. Caspase 3 can be activated by caspase 8, caspase 6, and granzyme B.

Applications Caspase-3 is a caspase protein that interacts with caspase-8 and caspase-9. It is encoded by the CASP3 gene. CASP3 orthologs have been identified in numerous mammals for which complete genome data are available. Unique orthologs are also present in birds, lizards, lissamphibians, and teleosts. The CASP3 protein is a member of the cysteine-aspartic acid protease (caspase) family. Sequential activation of caspases plays a central role in the execution-phase of cell apoptosis. Caspases exist as inactive proenzymes that undergo proteolytic processing at conserved aspartic residues to produce two subunits, large and small, that dimerize to form the active enzyme. This protein cleaves and activates caspases 6 and 7; and the protein itself is processed and activated by caspases 8, 9, and 10. It is the predominant caspase involved in the cleavage of amyloid-beta 4A precursor protein, which is associated with neuronal death in Alzheimer's disease. Alternative splicing of this gene results in two transcript variants that encode the same protein. Caspase-3 shares many of the typical characteristics common to all currently-known caspases. For example, its active site contains a cysteine residue (Cys-163) and histidine residue (His-121) that stabilize the peptide bond cleavage of a protein sequence to the carboxy-terminal side of an aspartic acid when it is part of a particular 4-amino acid sequence. This specificity allows caspases to be incredibly selective, with a 20 kDa-fold preference for aspartic acid over glutamic acid. A key feature of caspases in the cell is that they are present as zymogens, termed procaspases, which are inactive until a biochemical change causes their activation. Each procaspase has an N-terminal large subunit of about 20 kDa followed by a smaller subunit of about 10 kDa, called p20 and p10, respectively.

Synonyms CASP3; caspase 3; Apopain; Yama; CPP32; SCA-1; CPP32B; caspase-3; CASP-3; CPP-32

Product Information

Species Human

Source E. coli

Form buffered aqueous glycerol solution. Solution in 10% (w/v) glycerol containing 50 mM HEPES, pH 7.4, 100 mM NaCl, 10 mM DTT, 1 mM EDTA, 0.1% CHAPS.

Activity > 1.0 units/mg protein

Pathway AGE/RAGE pathway, organism-specific biosystem; Activation of caspases through apoptosome-mediated cleavage, organism-specific biosystem; Amyotrophic lateral sclerosis (ALS), organism-specific biosystem

Function aspartic-type endopeptidase activity; cyclin-dependent protein serine/threonine kinase inhibitor activity; cysteine-type endopeptidase activity

Unit Definition One unit will cleave 1.0 µmole of N-acetyl-Asp-Glu-Val-Asp-pNA per min at pH 7.4 at 25°C.

Storage and Shipping Information

Storage −70°C

Storage -70 °C