Revision 4

Store at -20C

#12675

Initiator Caspases Antibody Sampler Kit

1 Kit (5 x 20 microliters)

Cell Signaling TECHNOLOGY®

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For Research Use Only. Not for Use in Diagnostic Procedures.

Product Includes	Product #	Quantity	Mol. Wt	Isotype/Source
Cleaved Caspase-9 (Asp330) (E5Z7N) Rabbit mAb	52873	20 µl	37 kDa	Rabbit IgG
Caspase-3 (D3R6Y) Rabbit mAb	14220	20 µl	35, 19, 17 kDa	Rabbit IgG
Caspase-2 (C2) Mouse mAb	2224	20 µl	12, 14, 48 kDa	Mouse IgG1
Caspase-9 (C9) Mouse mAb	9508	20 µl	47/37/35 (H). 49/39/37 (M). 51/40/38 (R). kDa	Mouse IgG1
Caspase-8 (1C12) Mouse mAb	9746	20 µl	18, 43, 57 kDa	Mouse IgG1
Anti-rabbit IgG, HRP-linked Antibody	7074	100 µl		Goat
Anti-mouse IgG, HRP-linked Antibody	7076	100 µl		Horse

Please visit cellsignal.com for individual component applications, species cross-reactivity, dilutions, protocols, and additional product information.

Description

The Initiator Caspases Antibody Sampler Kit provides an economical means of evaluating initiator (apical) caspase proteins. The kit contains enough primary antibody to perform two western blots with each primary antibody.

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at –20°C. Do not aliquot the antibody.

Background

Apoptosis is a regulated physiological process leading to cell death. Caspases, a family of cysteine acid proteases, are central regulators of apoptosis. Initiator caspases (including 2, 8, 9, 10 and 12) are closely coupled to proapoptotic signals, which include FasL, TNF-α, and DNA damage. Once activated, these caspases cleave and activate downstream effector caspases (including 3, 6 and 7), which in turn cleave cytoskeletal and nuclear proteins such as PARP, α-fodrin, DFF and lamin A; inducing apoptosis (1,2).

Formation of a death-inducing signaling complex (DISC) around the receptors for death factors, including FasL and TNF-α, is essential for receptor-mediated apoptosis (3). Upon ligand activation, Fas and TNF-R1 associate with death domain (DD) containing adaptor proteins FADD (Fas associated death domain) (4,5) and TRADD (TNF-R1 associated death domain) (6). In addition to a carboxy-terminal DD, FADD contains an amino-terminal death effector domain (DED) that binds to DEDs and activates initiator caspase 8 (FLICE, Mch5, MACH) and caspase 10 (FLICE2, Mch4) (7-12). TRADD does not contain a DED and therefore must associate with FADD in response to TNF-R1 driven apoptosis (13).

Caspase-9 (ICE-LAP6, Mch6) is activated through the mitochondrial-mediated pathway. Cytochrome c released from mitochondria associates with procaspase-9 (47 kDa)/Apaf-1. Apaf-1 mediated activation of caspase-9 involves proteolytic processing resulting in cleavage at Asp315 and producing a p35 subunit. Another cleavage occurs at Asp330 producing a p37 subunit that can amplify the apoptotic response (14-17).

Caspase-2 (Nedd2/ICH-1) is the nuclear apoptotic respondent to cellular genotoxic stress or mitotic catastrophe. The procaspase is cleaved at Asp316, producing a 14 kDa fragment and a 32 kDa prodomain/large subunit. Subsequent processing at Asp152 and Asp330 produces an 18 kDa large subunit and a 12 kDa small fragment (18). Activation occurs upon recruitment to a complex containing a p53-induced death domain protein, PIDD (19). This suggests that caspase-2 can be a nuclear initiator caspase with a requirement for caspase-9 and caspase-3 activation in downstream apoptotic events (20,22). In apoptotic pathways resulting from UV-induced DNA damage, processing of caspase-2 occurs downstream of mitochondrial dysfunction and of caspase-9 and caspase-3 activation, extending a possible role for caspase-2 as a parallel effector caspase (22).

Caspase-3 (CPP-32, Apoptain, Yama, SCA-1) is a critical executioner of apoptosis and caspase-3 cleavage is a key indicator of initiator caspase activation. Caspase-3 is either partially or totally responsible for the proteolytic cleavage of many key proteins including the nuclear enzyme poly (ADP-ribose) polymerase (PARP) (23). Activation of caspase-3 requires proteolytic processing of its inactive zymogen into activated p17 and p12 fragments (24).

Background References

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