Revision 1

Store at -20C

#2928

DAPK3/ZIPK Antibody

Cell Signaling TECHNOLOGY®

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

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W	H M R	Endogenous	52	Rabbit	#O43293	1613

Product Usage Information

Application	Dilution
Western Blotting	1:1000

Storage

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

Specificity/Sensitivity

DAPK3/ZIPK Antibody detects endogenous levels of total DAPK3/ZIPK protein.

Species predicted to react based on 100% sequence homology

Monkey

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to residues at the carboxyl terminus of human DAPK3/ZIPK. Antibodies were purified by protein A and peptide affinity chromatography.

Background

Death-associated protein kinase (DAPK1) is a Ca^{2+}/calmodulin-regulated serine/threonine kinase that participates in a wide range of apoptotic signals including interferon-γ, tumor necrosis factor α, Fas, activated c-Myc, and detachment from the extracellular matrix. In addition to the kinase domain and calmodulin regulatory segment, DAPK1 also has eight ankyrin repeats, a cytoskeleton binding region, and a conserved death domain (1-3). Deletion of the calmodulin-regulatory domain generates a constitutively active mutant kinase. Ectopic expression of wild-type DAPK1 induced cell death in HeLa cells. Conversely, expression of a catalytically inactive mutant protected cells from interferon-γ-induced cell death (4). The catalytic domain of DAPK1 has very high sequence similarity to vertebrate myosin light chain kinase (MLCK) and a RXX(S/T)X motif derived from myosin light chain protein was shown to be phosphorylated *in vitro* by DAPK1 (5).
The DAPK family consists of several kinases including DAPK, DAPK2/DRP-1 (6), and DAPK3/ZIPK/DLK (7-9) with homology in their catalytic domain. Overexpression of DAPK3/ZIPK, but not a catalytically inactive mutant, can induce apoptosis (7). DAPK3 was also identified as a myosin light chain kinase, demonstrating ability to phosphorylate the regulatory light chain of myosin II in a Ca^{2+}/calmodulin-independent manner (8). In addition to an amino-terminal kinase domain, DAPK3 contains a carboxy-terminal leucine zipper domain that mediates interaction with leucine zipper transcription factors such as ATF4 (7). DAPK3 is predominantly localized to the nucleus and has been found in PML oncogenic domains (PODs) associated with DAXX and PAR-4, and can phosphorylate PAR-4 *in vitro* (10,11). In addition, DAPK3 can phosphorylate STAT3 at Ser727 to enhance its transcriptional activity (12).

Background References

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4. Cohen, O. et al. (1997) *EMBO J* 16, 998-1008.
5. Velentza, A. V. et al. (2001) *J Biol Chem* 276, 38956-38965.
6. Inbal, B. et al. (2000) *Mol Cell Biol* 20, 1044-54.
7. Kawai, T. et al. (1998) *Mol Cell Biol* 18, 1642-51.
8. Murata-Hori, M. et al. (1999) *FEBS Lett* 451, 81-4.
9. Kögel, D. et al. (1998) *Oncogene* 17, 2645-54.
10. Page, G. et al. (1999) *Oncogene* 18, 7265-73.
11. Kawai, T. et al. (2003) *Mol Cell Biol* 23, 6174-86.
12. Sato, N. et al. (2005) *Int Immunol* 17, 1543-52.

Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

W: Western Blotting

Cross-Reactivity Key

H: Human **M:** Mouse **R:** Rat

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