SANTA CRUZ BIOTECHNOLOGY, INC.

PLC γ1 (663-760): sc-4052

BACKGROUND

Phosphoinositide-specific phospholipase C (PLC) plays a crucial role in the initiation of receptor mediated signal transduction through the generation of the two second messengers, inositol 1,4,5-triphosphate and diacylglycerol from phosphatidylinositol 4,5-bisphosphate. There are many mammalian PLC isozymes, including PLC β1, PLC β2, PLC β3, PLC β4, PLC γ1, PLC γ2, PLC δ1, PLC δ2 and PLCε. PLC γ1 is widely distributed in bronchiolar epithelium, type I and II pneumocytes and fibroblasts of the interstitial tissue. Actin-regulatory protein Villin is tyrosine phosphorylated and associates with PLC γ1 in the brush border of intestinal epithelial cells. Villin regulates PLC γ1 activity by modifying its own ability to bind phosphatidylinositol 4,5-biphosphate. PLC γ1 binds Integrin α1/β1 and modulates Integrin α1/β-specific adhesion. PLC γ1 and Ca^{2+} play a direct role in VEGF-regulated endothelial growth, however this signaling pathway is not linked to FGF-mediated effects in primary endothelial cells. PLC γ1 is rapidly activated in response to growth factor stimulation and plays an important role in regulating cell proliferation and differentiation. It may also have a protective function during cellular response to oxidative stress.

REFERENCES

1. Suh, P., et al. 1988. Inositol phospholipid-specific phospholipase C: complete cDNA and protein sequences and sequence homology to tyrosine kinase-related oncogene products. Proc. Natl. Acad. Sci. USA 85: 5419-5423.
2. Emori, Y., et al. 1989. A second type of rat phosphoinositide-specific phospholipase C containing a Src-related sequence not essential for phosphoinositide-hydrolyzing activity. J. Biol. Chem. 264: 21885-21890.
3. Koch, C.A., et al. 1991. SH2 and SH3 domains: elements that control interactions of cytoplasmic signal-ing proteins. Science 252: 668-674.
4. Meldrum, E., et al. 1991. A second gene product of the inositol-phospholipid-specific phospholipase Cδ subclass. Eur. J. Biochem. 196: 159-165.
5. Rhee, S.G. and Choi, K.D. 1992. Regulation of inositol phospholipid-specific phospholipase C isozymes. J. Biol. Chem. 267: 12393-12396.
6. Kim, M.J., et al. 1993. Cloning of cDNA encoding rat phospholipase Cβ4, a new member of the phospholipase C. Biochem. Biophys. Res. Commun. 194: 706-712.
7. Jhon, D., et al. 1993. Cloning, sequencing, purification and G_q-dependent activation of phospho-lipase Cβ3. J. Biol. Chem. 268: 6654-6661
8. Wu, D., et al. 1993. Activation of phospholipase C β2 by the α and βγ subunits of trimeric GTP-binding protein. Proc. Natl. Acad. Sci. USA 90: 5297-5301.

CHROMOSOMAL LOCATION

Genetic locus: PLCG1 (human) mapping to 20q13.1; Plcg1 (mouse) mapping to 2 H2.

SOURCE

PLC γ1 (663-760) is expressed in *E. coli* as a 41 kDa tagged fusion protein corresponding to amino acids 663-760 of PLC γ1 of human origin.

PRODUCT

PLC γ1 (663-760) is purified from bacterial lysates (>98%) by glutathione agarose affinity chromatography; supplied as 50 µg purified protein in PBS containing 5 mM DTT and 50% glycerol.

Also available in agarose conjugate form: PLC γ1 (663-760) AC: sc-4052 AC; supplied as 100 µg protein conjugated to 0.1 ml agarose in PBS containing 0.1% azide, 0.1% BSA and 10% glycerol.

APPLICATIONS

PLC γ1 (663-760) is recommended for the enrichment of PLC γ1 associated proteins when used in combination with Glutathione-Agarose (sc-2009).

Molecular Weight of PLC γ1: 155 kDa.

Agarose conjugate form, sc-4052 AC, is recommended for direct precipitation of target proteins.

SELECT PRODUCT CITATIONS

1. Venema, R.C., et al. 1998. Angiotensin II-induced association of phospholipase Cγ1 with the G-protein-coupled AT1 receptor. J. Biol. Chem. 273: 7703-7708.
2. Takahashi, T., et al. 2001. A single autophosphorylation site on KDR/Flk-1 is essential for VEGF-A-dependent activation of PLC γ and DNA synthesis in vascular endothelial cells. EMBO J. 20: 2768-2778.
3. Ceridono, M., et al. 2005. Tyrosine 769 of the keratinocyte growth factor receptor is required for receptor signaling but not endocytosis. Biochem. Biophys. Res. Commun. 327: 523-532.
4. Belleudi, F., et al. 2006. Endocytic pathways and biological effects induced by UVB-dependent or ligand-dependent activation of the keratinocyte growth factor receptor. FASEB J. 20: 395-397.

STORAGE

Store PLC γ1 (663-760): sc-4052 at -20° C and store PLC γ1 (663-760) AC: sc-4052 AC at 4° C; stable for one year from the date of shipment.

RESEARCH USE

For research use only, not for use in diagnostic procedures.