



PI 3-KINASE p85 C-TERMINAL SH2 DOMAIN,

Human, Recombinant
Expressed in *E. coli*

Product Number **P 2115**

Storage Temperature $-70\text{ }^{\circ}\text{C}$

Product Description

Phosphatidylinositol (PI) 3-Kinase p85 C-terminal SH2 domain is produced from a cDNA sequence corresponding to amino acids 624-718 of human PI 3-kinase containing the carboxyl-terminal SH2 domain, that has been fused to glutathione S-transferase (GST). It is derived from a pGEX vector expressed in *E. coli*. The fusion protein is purified from the *E. coli* lysate by affinity chromatography on glutathione agarose and eluted with glutathione. The molecular weight of the fusion protein is approximately 42 kDa.

PI 3-Kinase is an important enzyme in the regulation of processes such as cell proliferation and survival and carbohydrate metabolism. PI 3-Kinase exhibits dual specificity, with both lipid kinase and protein kinase activities. PI 3-Kinase catalyzes the phosphorylation of phosphatidylinositol at the D-3 position of the inositol ring producing second messengers that are important in several signal transduction pathways.

PI 3-Kinase is a heterodimer consisting of a p110 (110 kDa) catalytic subunit and a p85 (85 kDa) regulatory subunit that has no catalytic function. p85 has an SH3 (Src homology) domain in the amino terminal region and two SH2 domains located in the carboxyl terminal region. The SH2 domains have been shown to bind to the intracellular domains of receptor tyrosine kinases and other intracellular proteins containing phosphotyrosines. Phosphorylation of the p85 subunit of PI 3-Kinase by receptor tyrosine kinases, such as the insulin receptor or the epidermal growth factor receptor and their substrates, activates PI 3-Kinase. This, in turn, increases the production of phosphatidylinositol 3,4,5-trisphosphate (PIP₃) that activates 3-phosphoinositide-dependent protein kinases (PDKs) and phospholipase C (PLC) isoforms. The activation of PLC increases the production of inositol 3,4,5-trisphosphate (IP₃) that, in turn, increases intracellular Ca²⁺ concentration and, thus, the activity of calmodulin-dependent enzymes, such as protein kinase A.

PI 3-Kinase also acts as an adapter protein via its SH2 domains, regulating the activation of intracellular proteins such as Akt/PKB (cell survival), and p70 S6 Kinase (protein synthesis and cell growth).

Product Information

PI 3-Kinase p85 C-terminal SH2 domain can be used as a control protein in immunoblotting. About 50 ng of the protein was recognized by a rabbit polyclonal antiserum to PI 3-Kinase.

Reagent

PI 3-Kinase p85 C-terminal SH2 domain is supplied as a frozen solution in Tris buffered saline (TBS), pH 8.0, containing 10% glycerol, 25 mM glutathione, and 2 mM DTT.

Precautions and Disclaimer

The product is for laboratory research only. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

PI 3-Kinase p85 C-terminal SH2 domain is shipped on dry ice and should be stored at $-70\text{ }^{\circ}\text{C}$. The product as supplied is stable for at least six months. Store the solution in single-use aliquots at $-70\text{ }^{\circ}\text{C}$ to avoid repeated freeze-thaw cycles that may result in loss of activity.

References

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3. O'Brien, R., et. al., Alternative modes of binding of proteins with tandem SH2 domains. *Protein Science*, **9**, 950 (2000).
4. End, P., et al., A biosensor approach to probe the structure and function of the p85 α subunit of the phosphatidylinositol 3-kinase complex. *J. Biol. Chem.*, **268**, 1066-75 (1993).
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