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Product Information

Protein Kinase Cγ Isozyme
human, recombinant
expressed in baculovirus infected insect cells

Catalog Number **P9542**
Storage Temperature –70 °C

EC 2.7.1.37
Synonyms: PKC Gamma, Ca^{2+}-activated phospholipid-dependent serine-threonine kinase γ isozyme

Product Description

Protein Kinase C (PKC) is a serine/threonine kinase first characterized on the basis of its activation *in vitro* by Ca^{2+}, phospholipid (primarily phosphatidylserine), and diacylglycerol (DAG).[2] PKC is activated intracellularly by signal transduction pathways that produce DAG along with some lysophospholipids and fatty acids, from phosphatidylinositol diphosphate (PIP2) and phosphatidylcholine (PC) through the action of various activated phospholipases. Phorbol ester can also stimulate PKC, probably by a mechanism similar to that used by DAG and has, therefore, been a useful tool in the study of PKC.

PKC plays an important role in the regulation of diverse cellular functions. In humans at least 12 different PKC polypeptides have been identified. These isoforms can be grouped into three subfamilies and include alpha, beta I, beta II, gamma, delta, epsilon, zeta, eta, theta, mu, and iota. These isoforms differ in primary structure, tissue distribution, subcellular localization, mode of action *in vitro*, response to extracellular signals, and substrate specificity.[3] PKC alpha, beta I, beta II, and gamma form the first family and their activities are Ca^{2+} and phospholipid-dependent, while PKC delta, epsilon, eta, and theta comprise the second family and are Ca^{2+}-independent, but phospholipid-dependent. PKC zeta, mu, and iota form the third family and are not activated by phorbol esters or DAG.

This product is a human, recombinant protein produced by baculovirus-mediated expression in insect cells. This protein is purified to near homogeneity and, therefore, may behave differently from crude preparations. The product is supplied in a solution of 20 mM HEPES, pH 7.4, with 2 mM EDTA, 2 mM EGTA, 5 mM DTT, 250 mM NaCl, 0.05% TRITON® X-100, and 50% glycerol.

Activity is measured in a mixture containing 20 mM HEPES, pH 7.4, 10 mM $MgCl_2$, 100 μM $CaCl_2$, 500 μM ATP, lipid mix (100 μg/ml phosphatidylserine, 20 μg/ml diacylglycerol, 1 mM HEPES, pH 7.4, and 0.03% CHAPS), 200 μg/ml Histone H1 substrate, and trace [^{32}P]-γ-ATP.

Purity: >95% (SDS-PAGE)

Calculated molecular mass: 78.4 kDa
(apparent molecular mass: 77–84 kDa)[1]

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

Dilutions can be made in 10 mM HEPES (pH 7.4), 5 mM DTT, 0.01% CHAPS.

Storage/Stability

The product ships on dry ice and storage at –70 °C is recommended.

PKC Isozyme Reference Guide						
Isoform	**Type**	**Calcium Dependent**	**Phorbol stimulation**	**Predicited MW (kDa)**	**Apparent MW (kDa)**	**Suggested Substrates**
Alpha	Conventional	Yes	Yes	76.8	80–81	alpha pseudosubstrate peptide, Histone
beta I	Conventional	Yes	Yes	76.8	79–80	alpha pseudosubstrate peptide, Histone
beta II	Conventional	Yes	Yes	76.9	80	alpha pseudosubstrate peptide, Histone
gamma	Conventional	Yes	Yes	78.4	77–84	alpha pseudosubstrate peptide, Histone
delta	Novel	No	Yes	77.5	74–79	alpha and epsilon pseudosubstrate peptides
epsilon	Novel	No	Yes	83.5	89–96	alpha and epsilon pseudosubstrate peptides
eta	Novel	No	Yes	77.9	82–84	alpha and epsilon pseudosubstrate peptides
zeta	Atypical	No	No	67.7	76–80	alpha and epsilon pseudosubstrate peptides

References

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KAA,EWK,AC,MAM 06/08-1