

PRODUCT INFORMATION



Phospholipase D (*Streptomyces* sp., native)

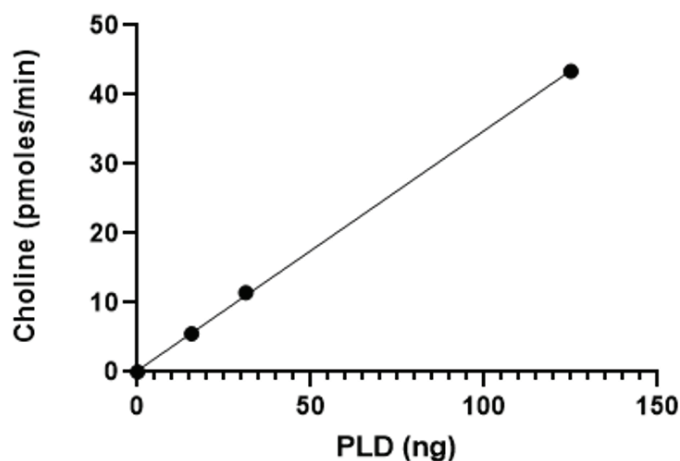
Item No. 42050

Overview and Properties

Synonyms:	Phospholipase D-like Domain-containing Protein, PLD
Source:	Native PLD purified from <i>Streptomyces</i>
Amino Acids:	1-537
Molecular Weight:	57.16 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Supplied in:	10 mM sodium citrate buffer, pH 5.5
Activity:	<i>batch specific</i> U/ml
Specific Activity:	<i>batch specific</i> U/mg
Unit Definition:	One unit is defined as the amount of enzyme required to release 1 nmol of choline per minute at 37°C in 50 mM Tris-HCl, pH 8.0, containing 0.66 mM calcium chloride and 104 μM of phosphatidylcholine.

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Specific activity of PLD (*Streptomyces* sp., native) was determined using Cayman's Phosphatidylcholine Colorimetric Assay Kit (Item No. 10009926) with 104 μM phosphatidylcholine as the substrate in 50 mM Tris-HCl, pH 8.0, containing 0.66 mM calcium chloride.

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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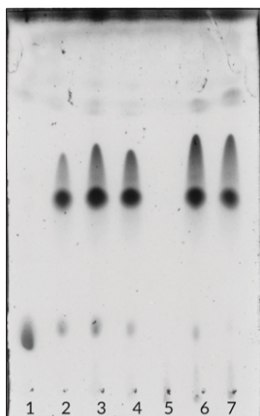
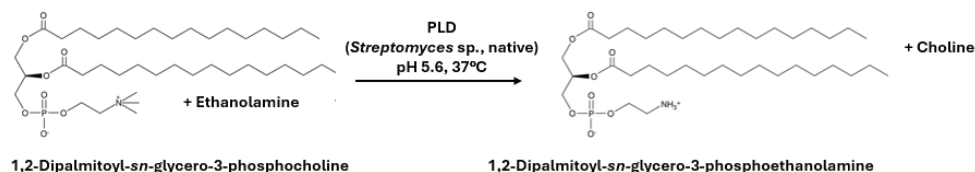
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Lane 1: No enzyme DPPC control
Lane 2: Assay, 5 μg PLD (*Streptomyces* sp., native)
Lane 3: Assay, 10 μg PLD (*Streptomyces* sp., native)
Lane 4: Assay, 25 μg PLD (*Streptomyces* sp., native)
Lane 5: No substrate, 100 μg PLD (*Streptomyces* sp., native), and buffer
Lane 6: Assay, 75 μg PLD (*Streptomyces* sp., native)
Lane 6: Assay, 100 μg PLD (*Streptomyces* sp., native)

TLC analysis of DPPC transphosphatidylation to DPPE by PLD (*Streptomyces* sp., native). In vitro conversion of 1,2-dipalmitoyl-*sn*-glycero-3-phosphocholine (DPPC; Item No. 10009473) (5 mM) to 1,2-dipalmitoyl-*sn*-glycero-3-phosphoethanolamine (DPPE) was performed using increasing concentrations of PLD (*Streptomyces* sp., native) in 500 μl assay buffer (PBS, pH 5.6, containing 0.2 M ethanolamine, 1.5 M sodium acetate, and 0.5 M calcium chloride). The analysis was performed using a solvent system containing chloroform, methanol, and water at a ratio of 80:20:2. The plate was visualized using 5% sulfuric acid in methanol.

Description

Phospholipase D (PLD) enzymes are hydrolases found in mammals, plants, and bacteria.¹ PLD enzymes contain at least one copy of a His-x-Lys-xxxx-Asp sequence called the HKD motif, which is central to their catalytic activity. *Streptomyces* PLDs typically contain two HKD motifs and two additional conserved regions. PLD hydrolyzes phosphatidylcholine to generate choline and phosphatidic acid or, in the presence of an alcohol acceptor, catalyzes transphosphatidylation to produce choline and a phosphatidyl alcohol, such as phosphatidylethanol. PLD-mediated transphosphatidylation activity is higher than hydrolytic activity for several Actinomycetes PLDs, including those from *Streptomyces*, but the ratio of these activities varies among enzymes.^{2,3} PLD transphosphatidylation has been used at research and industrial scales to produce natural and unnatural phospholipids.^{1,4} Cayman's Phospholipase D (*Streptomyces* sp., native) can be used for the transphosphatidylation of phospholipids and for enzyme assay, SDS-PAGE, and Western blot applications.

References

1. Uesugi, Y. and Hatanaka, T. Phospholipase D mechanism using *Streptomyces* PLD. *Biochim. Biophys. Acta* **1791**(9), 962-969 (2009).
2. Nakazawa, Y., Uchino, M., Sagane, Y., *et al.* Isolation and characterization of actinomycetes strains that produce phospholipase D having high transphosphatidylation activity. *Microbiol. Res.* **164**(1), 43-48 (2009).
3. Selvy, P.E., Lavieri, R.R., Lindsley, C.W., *et al.* Phospholipase D: Enzymology, functionality, and chemical modulation. *Chem. Rev.* **111**(10), 6064-6119 (2011).
4. Damjanović, J. and Iwasaki, Y. Phospholipase D as a catalyst: Application in phospholipid synthesis, molecular structure and protein engineering. *J. Biosci. Bioeng.* **116**(3), 271-280 (2013).

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