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Product Information

Phospholipase A_2 from honey bee venom (*Apis mellifera*)

Catalog Number **P9279**
Storage Temperature –20 °C

CAS RN 9001-84-7
EC 3.1.1.4
Synonyms: Phosphatidylcholine 2-acylhydrolase, Lecithinase A, PLA2

Product Description

Molecular mass:[1] 14.5 kDa (amino acid sequence)
pI:[2] 10.5 ± 1.0

Phospholipase A_2 reacts stereospecifically with most *sn*-3-phosphoglycerides. The fatty acid ester bonds are hydrolyzed at the C-2 position. This reaction requires calcium for catalysis. The general reaction catalyzed is:

phosphatidylcholine + H_2O →
1-acylglycerophosphocholine + fatty acid

Phospholipase A_2 is inhibited *in vitro* by both calpactin I and calpactin II. The calpactins sequester the phospholipid substrate. There is no direct interaction between the calpactins and phospholipase A_2.[3]

Quinacrine has also been described as an inhibitor of phospholipase A_2 (IC_{50} = 17 μM).[4]

Phospholipase A_2 is a single polypeptide chain of ~123 amino acids containing seven disulfide bridges. The crystal structure of phospholipase A_2 from bee venom, complexed with a phosphonate transition-state analogue compound, has been reported.[5]

Precautions and Disclaimer

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

Preparation Instructions

Sigma-Aldrich tests the solubility of this product at 1.0 mg/mL in water. One publication reports the preparation of stock solutions of this product at the equivalent of 17.5 mg/mL in an aqueous buffer that contains 10 mM MOPS, pH 7.2, 0.5 mM EGTA, 100 mM HCl, and 4 mM $CaCl_2$.[6]

References

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3. Davidson, F.F. *et al*., Inhibition of phospholipase A2 by "lipocortins" and calpactins. An effect of binding to substrate phospholipids. *J. Biol. Chem.*, **262(4)**, 1698-1705 (1987).
4. Magolda, R.L. *et al*., "Novel Synthesis of Potent Site-Specific Phospholipase A2 Inhibitors", from *Prostaglandins, Leukotrienes and Lipoxins* (J.M. Bailey, ed). Plenum Press (New York, NY), pp. 669-672 (1985).
5. Scott, D.L. *et al*., Crystal structure of bee-venom phospholipase A2 in a complex with a transition-state analogue. *Science*, **250(4987)**, 1563-1566 (1990).
6. Bollinger, J.G. et al., Improved method for the quantification of lysophospholipids including enol ether species by liquid chromatography-tandem mass spectrometry. *J. Lipid Res*., **51(2)**, 440-447 (2010).

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