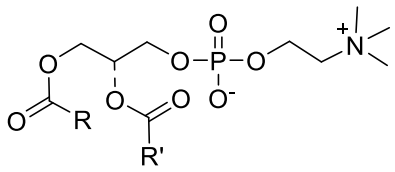
PRODUCT DATA SHEET

Lecithin, bovine

Catalog number: 1070
Common name: Phosphatidylcholine; PC
Source: natural, bovine
Solubility: chloroform, ethyl ether
CAS number: 8002-43-5

Molecular Formula: $C_{44}H_{84}NO_8P$
Molecular Weight: 787 (oleoyl)
Storage: -20°C
Purity: TLC >98%; identity confirmed by MS
TLC System: chloroform/methanol/DI water, (65:25:4 by vol.)
Appearance: liquid



Application Notes:

This product is a high purity phosphatidylcholine (PC) containing a natural mixture of fatty acids acylated to the sn-1 and sn-2 positions. PC is a major component of biological membranes, especially in the outer leaflet, often composing almost 50% of the total phospholipids.[1] It is a vital component in membrane bilayers and is the main phospholipid circulating in plasma. PC plays an important role in membrane-mediated cell signaling by generating diacylglycerols and phospholipids.[2] Phospholipase D is an enzyme that cleaves off the choline head group, converting PC to phosphatidic acid, while phospholipase C cleaves off the phosphate group leaving diacylglycerol. PC is the biosynthetic precursor of sphingomyelin, phosphatidylethanolamine, *lyso*-phosphatidylcholine, and platelet-activating factor. The choline headgroup is an essential nutrient in animals although it can be synthesized by methylating phosphatidylethanolamine to phosphatidylcholine and then cleaving the headgroup with phospholipase D.[3] Tumor cells appear to have increased synthesis of PC and this may be a potential target for cancer therapy. Another function of PC is the activation of enzymes such as the enzyme 3-hydroxybutyrate dehydrogenase which must be bound to phosphatidylcholine before it can function optimally. In bovine phosphatidylcholine has been demonstrated to protect *beta*-lactoglobulin from simulated gastrointestinal proteolysis, possibly due to the lipid binding to a secondary fatty acid binding site in *beta*-lactoglobulin, thus blocking the action of proteases for steric reasons.[4]

Selected References:

1. M. Billah and J. Anthes "The regulation and cellular functions of phosphatidylcholine hydrolysis" *Biochemistry Journal*, Vol. 269 pp. 281-291, *1990*
2. J. Exton "Signaling through Phosphatidylcholine Breakdown" *The Journal of Biological Chemistry*, Vol. 265(1) pp. 1-4, *1990*
3. Z. Li and D. Vance "Phosphatidylcholine and choline homeostasis" *Journal of Lipid Research*, Vol. 49 pp. 1187-1194, *2008*
4. G. Mandalari et al. "Physiological phosphatidylcholine protects bovine beta-lactoglobulin from simulated gastrointestinal proteolysis" *Mol Nutr Food Res*, vol. 53 pp. S131-S139, *2009*