

DMPC (1,2-dimyristoyl-*sn*-glycero-3-phosphocholine)



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| Catalog nr | HC4044 (lot number and expiry date are indicated on the label) |
| Description | <p>1,2-dimyristoyl-<i>sn</i>-glycero-3-phosphocholine (DMPC) is a phospholipid normally present in mammalian cell membranes and lipoproteins in trace amounts. Can be used as an unoxidized control phospholipid in experiments utilizing oxidized 1-palmitoyl-2-arachidonoyl-<i>sn</i>-phosphatidylcholine (OxPAPC; cat. # HC4035/HC4036).</p> <p>OxPAPC is a prototypic biologically active oxidized phospholipid first isolated from LDL minimally modified by oxidation (MM-LDL). OxPAPC is an active principle of MM-LDL and mimicks several pro- and anti-inflammatory effects induced by oxidized lipoproteins.</p> <p>Oxidation of PAPC generates two groups of oxidized phospholipids containing either fragmented or oxygenated <i>sn</i>-2 residues. The best-characterized fragmented species contain a five-carbon <i>sn</i>-2 residue bearing omega-aldehyde or omega-carboxyl groups. Oxygenation of arachidonic acid residue produces phospholipids containing esterified isoprostanes. Both fragmented and oxygenated species can regulate immune reactions.</p> <p>Pro-inflammatory effects of OxPAPC induce stimulation of endothelial cells to bind monocytes and induction of tissue clotting factor, IL-8, MCP-1, G-CSF and other mediators of atherothrombosis. Anti-inflammatory effects of OxPAPC are mediated by induction of protective enzymes such as heme oxygenase-1 and suppression of innate immune responses to bacterial lipopolysaccharide (LPS) due to inhibition of LPS recognition by LPS-binding protein (LBP) and CD14. OxPAPC is active in vivo and was shown to protect mice from lethal endotoxin shock.</p> <p>Biological activities of OxPAPC are mediated by a variety of signal transduction mechanisms, including elevation of cAMP and Ca²⁺ levels, activation of MAP kinases, PI-3-kinase and small GTPases Rac-1 and Cdc42. OxPAPC-induced protein synthesis is mediated by transcription factors such as Egr-1, NFAT, CREB, PPARα, PPARγ, but does not involve NFκB-dependent transcription.</p> |
| Formulation | 5 mg dried synthetic DMPC, packed under argon. |
| Use | <p><u>1. For use of total amount in once:</u> Add buffer or medium used in the experiment and resuspend lipids by vigorous vortexing for at least 30 seconds. Optimal working concentrations are up to 100 μg/ml. Do not exceed concentrations of 0.5 mg/ml since DMPC is poorly soluble in water. Sonicate if necessary to ensure better resuspension of DMPC. DMPC is used as negative control for OxPAPC. The concentration range in which DMPC can be used is dependent on the cell type and should be equal to OxPAPC, usually below 100 μg/ml.</p> <p><u>2. For partially use of amount:</u> Add chloroform to the vial to obtain lipid concentration of 1 to 10 mg/ml and vortex. Aliquot DMPC solution into sterile glass (optimal) or polypropylene cell culture tubes. Before use check if the tubes are resistant to chloroform. Evaporate chloroform under a stream of nitrogen or argon gas with simultaneous vortexing in order to obtain a thin film of lipid on the tube walls. Continue according to 1.</p> |
| Storage and stability | After arrival product should be stored at -20°C or below. Under recommended storage conditions, product is stable for one year. Aliquots prepared in chloroform can be stored at preferably -20°C or below for a few months. 1,2-dimyristoyl- <i>sn</i> -glycero-3-phosphocholine (DMPC) is more polar, resistant to oxidation and better soluble in water than 1-palmitoyl-2-arachidonoyl- <i>sn</i> -phosphatidylcholine (PAPC, cat. # HC4043). |
| Precautions | For research use only. Not for use in or on humans or animals or for diagnostics. It is the responsibility of the user to comply with all local/state and Federal rules in the use of this product. Hycult Biotech is not responsible for any patent infringements that might result with the use of or derivation of this product. |
| References | 1. Birukov, K et al; Epoxycyclopentenone-containing oxidized phospholipids restore endothelial barrier function via Cdc42 and Rac. <i>Circ Res</i> 2004, 95: 892 |
| Also available | HC4035 Oxidized PAPC (OxPAPC), 1 mg HC4036 Oxidized PAPC (OxPAPC), 5 mg HC4043 PAPC (1-palmitoyl-2-arachidonoyl- <i>sn</i> -phosphatidylcholine), 5 mg |