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ProductInformation

L-α-Phosphatidylcholine

Product Number **P 3644**
Storage Temperature -0 °C

Product Description

CAS Number: 8002-43-5
Synonyms: L-α-Lecithin, 3-*sn*-Phosphatidylcholine,

Typical lots of pure soybean phosphatidylcholine have fatty acid contents of approximately 13% C16:0 (palmitic), 4% C18:0 (stearic), 10% C18:1(oleic), 64% C18:2 (linoleic), and 6% 18:3 (linolenic) with other fatty acids being minor contributors This would calculate to an average molecular weight of approximately 776.

Product No. P 3644 has the following fatty acid content in selected lots tested. Fatty acid contents of approximately 17% C16:0 (palmitic), 4% C18:0 (stearic), 9% C18:1 (oleic), 60% 18:2 (linoleic) and 7% 18:3 (linolenic) were found with other fatty acids being minor contriutors.

Product No. P 3644 is prepared from Product No. P 5638 by solvent extraction and precipitation procedures. The major phospholipids as assayed by TLC are typically an average of 55%(42-63%) phosphatidylcholine and 20%(10-32%) phosphatidylethanolamine. Other trace components such as carbohydrates and and other lipids are not routinely quantified. Each of the lipids present would contribute to the total fatty acid distribution and content.

Phosphatidylcholine is the major membrane phospholipid in eukaryotic cells. In addition to being the major structural component of cellular membranes, phosphatidylcholine serves as a reservoir for several lipid messengers. It is the source of the bioactive lipids lysophosphatidylcholine, phosphatidic acid, diacylglycerol, lysophosphatidylcholine, platelet-activating factor, and arachidonic acid.[1] An understanding of the control and regulation of the several metabolic pathways involved in the formation of these bioactive lipids is an ongoing science.

Phosphatidylcholine is used for preparation of vesicle suspensions commonly called liposomes or as monolayers. There have been several books published on liposomes and their applications.[2,3] Monolayers have been formed using a solution of 1% soybean phosphatidylcholine in hexane.[4]

Valinomycin induced changes in membrane potentials of red blood cell and phospholipid (phosphatidylcholine from egg yolk plus cholesterol) vesicle suspensions have been measured using positively-charged, cyanine dyes that fluorimetrically responded to the change in potential.[5]

Purified rhodopsin has been incorporated into soybean phosphatidylcholine vesicles.[6]

A procedure for determination of the amount of oxidation of egg phosphatidylcholine in a liposome preparation by measurement of the oxidation index has been published.[7] The oxidation index is the ratio of the absorbance at 233 nm to the absorbance at 215 nm. The latter wavelength was chosen since there is little contribution of the fatty acid carbonyl to the absorbance at this wavelength, allowing Beer's Law to be followed. A method of determining choline content has been published.[8]

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

Purified egg L-α-phosphatidylcholine is soluble (100 mg/ml) at room temperatue in chloroform, ethanol, and hexane containing 3% ethanol. These solubility characteristics should generally apply to other purified natural product phosphatidylcholine products such as from egg, soybean, and brain that contain unsaturated fatty acids. Product No. P 3644 has a current solubility specification of a clear to slightly hazy yellow to orange solution (100 mg/ml) in chloroform.

References

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4. Cassia-Moura, R., Bioelectrochemistry and Bioenergetics, **32**, 175-180 (1993).
5. Sims, P. J., et al., Studies on the mechanism by which cyanine dyes measure membrane potential in red blood cells and phosphatidylcholine vesicles. Biochemistry, **13(16)**, 3315-3330 (1974).
6. Guy, P. M., et al., Rhodopsin-stimulated activation-deactivation cycle of transducin: kinetics of the intrinsic fluorescence response of the alpha subunit. Biochemistry, **29(30)**, 6954-6964 (1990).
7. Klein, R. A., The detection of oxidation in liposome preparations. Biochim. Biophys. Acta., **210(3)**, 486-489 (1970).
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