

Understanding the Phospholipids

Phospholipids are structural components of cell membranes in human body including brain cells¹

There are
5 major
phospholipids in
human milk²

1 Phosphatidylethanolamine (PE)

Found particularly in neural tissues including white matters of brain, spinal cord and nerves³

2 Sphingomyelin (SM)

Contributes to the formation of myelin sheaths that facilitate efficient signal transmission^{4,5}

3 Phosphatidylcholine (PC)

The most abundant phospholipids in membrane bilayers⁶

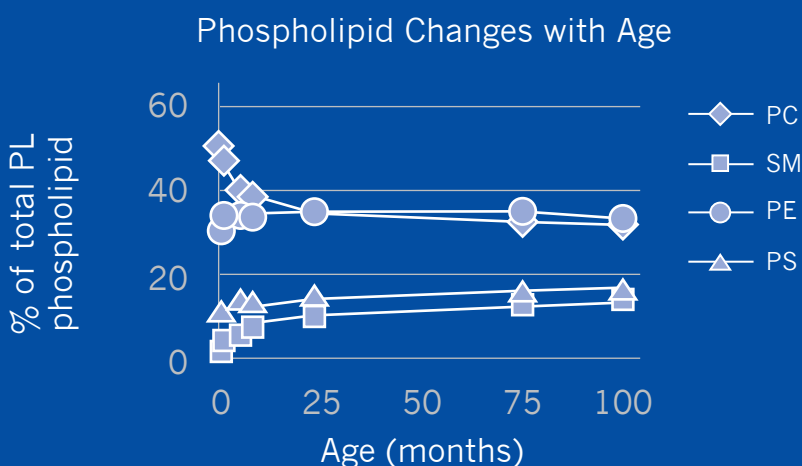
4 Phosphatidylserine (PS)

Brain PS has a high content of DHA⁷The most abundant phospholipids in membrane bilayers⁶

5 Phosphatidylinositol (PI)

Acts as a substrate of Phosphatidylserine (PS) synthesis⁷

The content of phospholipids including PC, PE, PS and SM in human brain changes with age:⁸



Sphingomyelin (SM) levels in the brain increase drastically from 2% to 15% postnatally, timing coincided with its role in the myelin sheath and mature membranes⁸



Food sources of phospholipids:⁹

Eggs, organ meats, lean meats, fish, shellfish, cereal grains, etc.

References: 1. Martinez M and Mougan I. *J Neurochem.* 1998;71:2528-2533. 2. Cilla A et al. *Crit Rev Food Sci Nutr.* 2016;56(11):1880-1892. 3. Stillwell W. An introduction to biological membranes (second edition). Elsevier. 2016 [Textbook]. 4. Kinney HC et al. *Neurochemical Research.* 1994;19(8):983-996. 5. Spigel I and Peles E. *Molecular Membrane Biology.* 2002;19:95-101. 6. Muller CP et al. *Biochemica et Biophysica Acta.* 2015;1851:1052-1065. 7. Kim HY et al. *Prog Lipid Res.* 2014;0:1-18. 8. Dawson G. *Biochim Biophys Acta.* 2015;1851(8):1026-1039. 9. Weihrauch JL and Son YS. *JAACS.* 1983;60(12):1971-1978.

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