

# Understanding the Phospholipids

Phospholipids are structural components of cell membranes in human body including brain cells<sup>1</sup>

There are 5 major phospholipids in human milk, which are:<sup>2</sup>

## Phosphatidylethanolamine (PE)

Found particularly in neural tissues including white matters of brain, spinal cord and nerves<sup>3</sup>

## Sphingomyelin (SM)

Contributes to the formation of myelin sheaths that facilitate efficient signal transmission<sup>4,5</sup>

## Phosphatidylcholine (PC)

The most abundant phospholipids in membrane bilayers<sup>6</sup>

## Phosphatidylserine (PS)

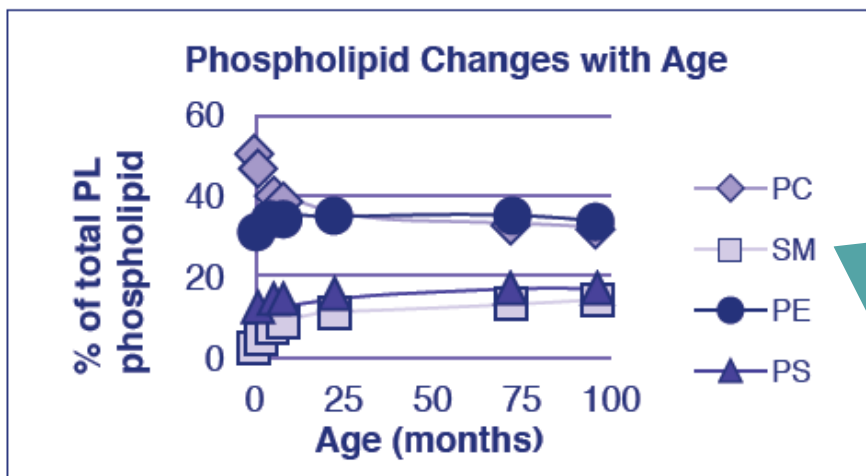
Brain PS has a high content of DHA<sup>7</sup>

## Phosphatidylinositol (PI)

Acts as a substrate of Phosphatidylserine (PS) synthesis<sup>7</sup>



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



Sphingomyelin (SM) levels in the brain increase drastically from 2% to 15% postnatally, timing coincided with its role in the myelin sheath and mature membranes<sup>8</sup>

## Food sources of phospholipids:<sup>9</sup>

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. Biochimica 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. Weihrach JL and Son YS. JAOCS. 1983;60(12):1971-1978.

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