

## **PW16 Alterations in human lens membrane phospholipids with age**

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Phospholipids are altered in the nuclear region of the human lens with age.

The lens is a vital component of the eye, allowing light to be focussed on the retina for visual processing. There are two regions to the lens, the nucleus, which is the central region of the lens present at birth and the cortex, composed of cells produced over the remaining lifespan. Cells in the nucleus lose metabolically active components in the cytoplasm, leaving tightly-packed membranes containing phospholipids and proteins. There is no protein turnover in the human lens and with age, these proteins become oxidised, leading to age-related nuclear cataract. Little is known about the phospholipid component of the human lens and the effects of age on its profile. The aim of this study is to investigate the effects of age on phospholipids in the nuclear region of the human lens. Lenses ranging from 13 to 81 years of age were sectioned into nucleus and cortex, total lipids extracted [1] and phospholipids analysed by ESI-MS using a triple quadrupole mass spectrometer. Preliminary results show that phosphatidylcholine molecules significantly decrease after 50 years of age, with phosphatidylethanolamine molecules demonstrating a similar trend. In contrast, dihydrosphingomyelin molecules remained constant with age. This data suggests an increase in membrane order and may be associated with increases in lens stiffness that has been linked with pathologies such as presbyopia [2].

[1] JM Deeley, TW Mitchell, X Wei, J Korth, JR Nealon, SJ Blanksby, RJW Truscott, *Biochimica et Biophysica Acta* (2008) 1781: 288-298.

[2] KR Heys, SL Cram, RJW Truscott, *Molecular Vision* (2004) 10: 956-963.