

## **PT20 Lipids in tears and on contact lenses: a shotgun lipidomic analysis**

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Shotgun lipidomics is effective for analysis of lipids in tears and deposited onto contact lenses.

The human tear film features an outer lipid layer which is important in the prevention of excessive evaporation and drying out of the eye. Contact lenses disrupt this layer, which could account for the increased incidence of dry eye in contact lens wearers. Shotgun lipidomics is a contemporary technique based on electrospray ionisation tandem mass spectrometry (ESI-MS/MS) whereby lipid extracts are analysed directly without prior derivatization or separation. The aim of this study is to identify lipids in tears and quantify their deposition onto contact lenses. Lipids were extracted from tears and spiked contact lenses before analysis of both neutral (positive ions) and acidic (negative ions) phospholipids by ESI-MS/MS. Cholesterol was analysed by direct insertion electron impact mass spectrometry (DI/EI-MS). More than 20 phospholipids were identified, including a number of sphingomyelin and phosphatidylcholine molecules. The lipid profile was found to be consistent between tears and contact lens deposits. The concentration of the latter was shown to be affected to differing degrees by commercially available cleaning solutions.