



A Plasma Metabolomic Signature of the Exfoliation Syndrome Involves Amino Acids, Acylcarnitines, and Polyamines

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Purpose: To determine the plasma metabolomic signature of the exfoliative syndrome (XFS), the most common cause worldwide of secondary open-angle glaucoma.

Methods: We performed a targeted metabolomic study, using the standardized p180 Biocrates Absolute IDQ p180 kit with a QTRAP 5500 mass spectrometer, to compare the metabolomic profiles of plasma from individuals with XFS (n = 16), and an age- and sex-matched control group with cataract (n = 18).

Results: A total of 151 metabolites were detected correctly, 16 of which allowed for construction of an OPLS-DA model with a good predictive capability (Q²_{cum} = 0.51) associated with a low risk of over-fitting (permQ² = -0.48, CV-ANOVA P-value <0.001). The metabolites contributing the most to the signature were octanoyl-carnitine (C8) and decanoyl-carnitine (C10), the branched-chain amino acids (i.e., isoleucine, leucine, and valine), and tyrosine, all of which were at higher concentrations in the XFS group, whereas spermine and spermidine, together with their precursor acetyl-ornithine, were at lower concentrations than in the control group.

Conclusions: We identified a significant metabolomic signature in the plasma of individuals with XFS. Paradoxically, this signature, characterized by lower concentrations of the neuroprotective spermine and spermidine polyamines than in controls, partially overlaps the plasma metabolomic profile associated with insulin resistance, despite the absence of evidence of insulin resistance in XFS.

Résumé en anglais

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Liens

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- [31] <http://okina.univ-angers.fr/publications?f%5Bkeyword%5D=12401>
- [32] <http://okina.univ-angers.fr/publications/ua18493>
- [33] <http://dx.doi.org/10.1167/iovs.17-23055>
- [34] <https://iovs.arvojournals.org/article.aspx?articleid=2673180>
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