

Reduced inflammatory potential of HDL and lower mtDNA copy numbers in ME/CFS patients

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Overview MIRACLE study



An online questionnaire is used to collect comprehensive data on the symptoms and severity levels of patients with a confirmed or suspicious diagnosis of ME/CFS.



Participation in the survey is promoted through patient organizations and social media channels.



Patients are recruited for the study based on diagnostic criteria (CCC, DSQ-PEM, >6 months) and after exclusion of other causes.

UKGM

ME/CFS patients

100

Healthy controls

100

15

Severely ill (home visits)

GOAL:
400
TOTAL STUDY PARTICIPANTS

Severely ill (home visits)

15

UKR

ME/CFS patients

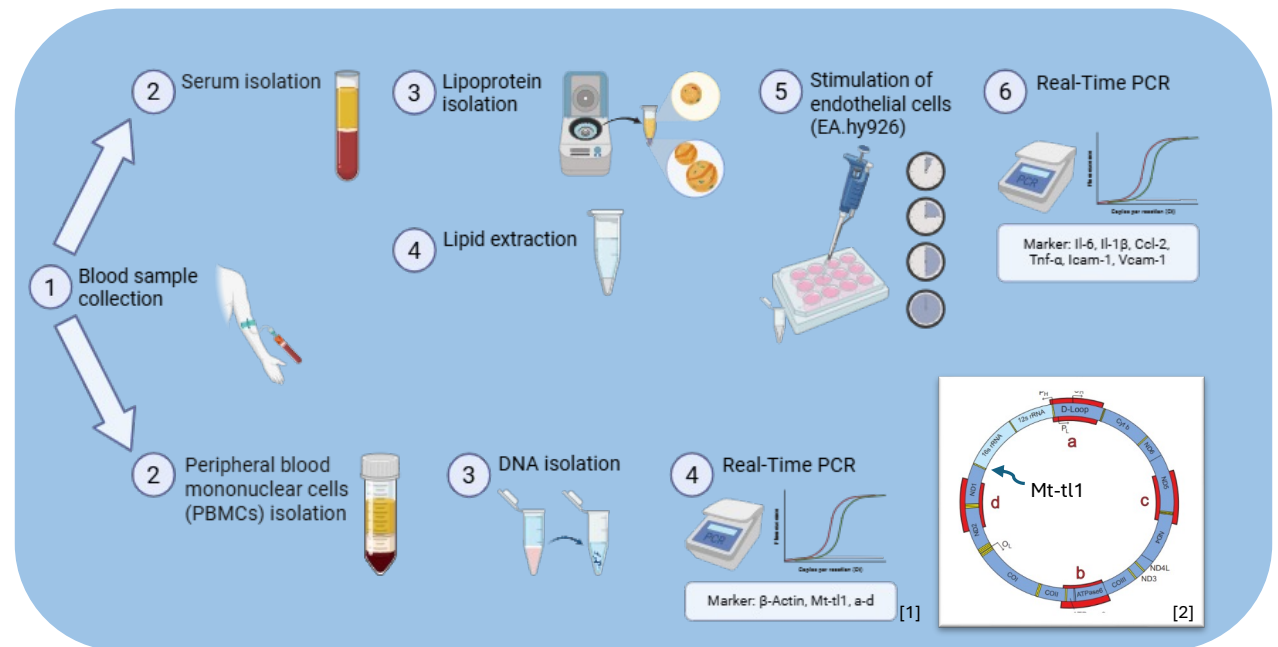
100

Healthy controls

100

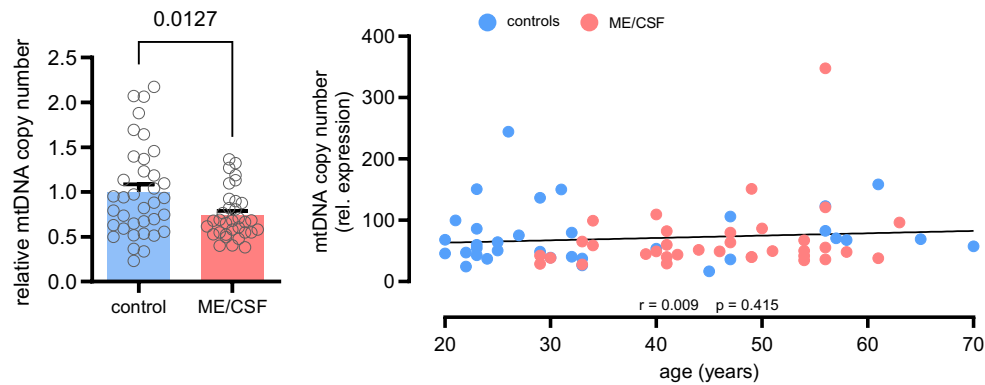
Introduction and Methods

- High-density lipoprotein (HDL) is part of the reverse cholesterol transport system
- HDL is primarily considered protective, as it is inversely associated with cardiovascular disease
- Lower or dysfunctional HDL is linked to the progression of cardiovascular disease
- The HDL proteome may reflect pathological processes in the body
- Investigation of the inflammatory potential of the HDL proteome from ME/CFS patients and controls, as well as the copy number and integrity of mitochondrial DNA (mtDNA)

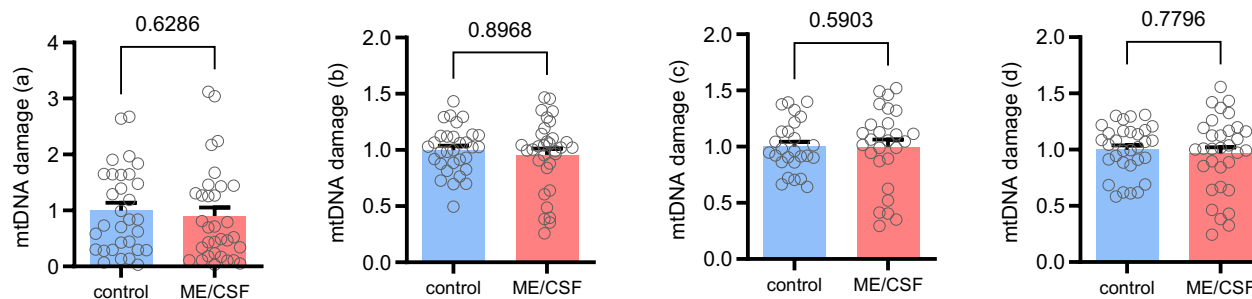


[1] Created with BioRender [2] Rothfuss O, Gasser T, Patenge N. Analysis of differential DNA damage in the mitochondrial genome employing a semi-long run real-time PCR approach. Nucleic Acids Res. 2010 Mar;38(4):e24.

Lowered mtDNA copy number in ME/CFS patients

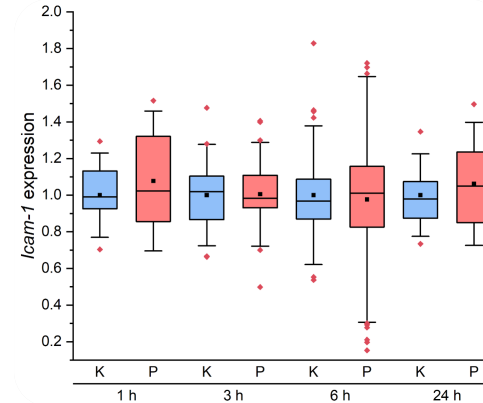
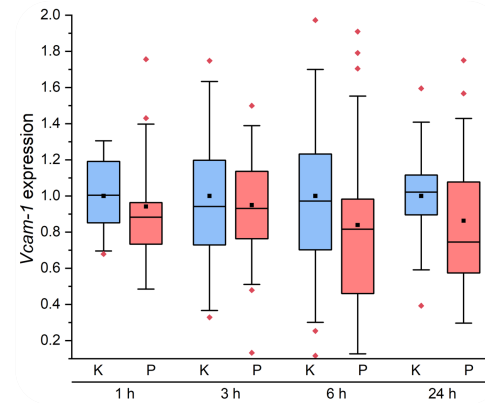
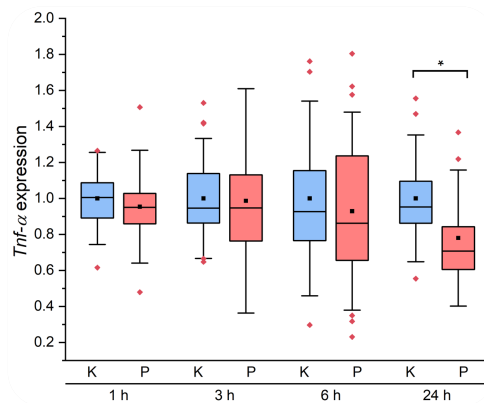
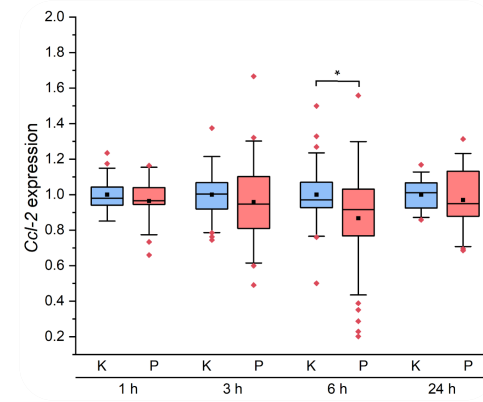
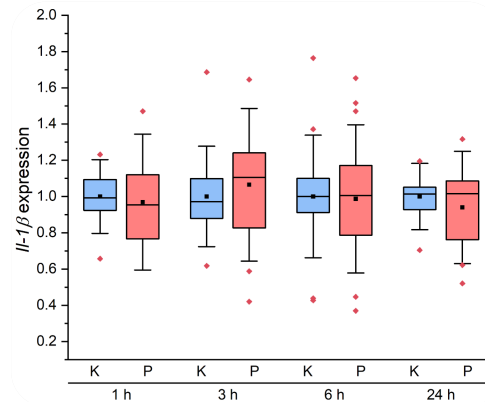
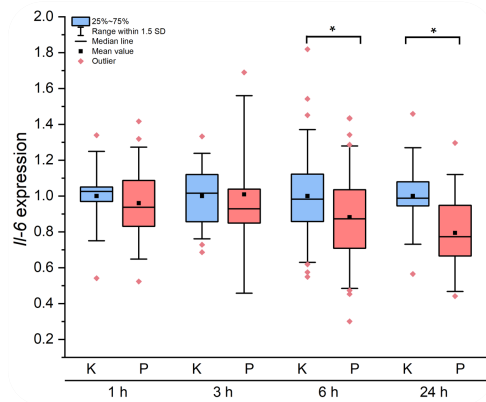


No differences in mtDNA integrity



n = 37/37

Reduced inflammatory potential of HDL from ME/CFS patients on endothelial cell



n = 1h: 18/18, 3h: 31/30 6h: 41/46 24h: 18/18

Conclusion



Marker	Findings in ME/CFS patients	Significance
mtDNA copy number	Significant reduction (-26%)	p = 0.0127
mtDNA integrity	No significant differences	p > 0.5
HDL inflammatory potential	Partially reduced potential (-12% to -22%)	p < 0.05

The results point to a suppressed immune response and a reduced energy supply in ME/CFS patients.