

# Lipoprotein apheresis downregulates IL-1a, IL-6 and TNF-a mRNA expression in severe dyslipidaemia

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**Background and aims:** Dyslipidaemias are associated with cardiovascular mortality and morbidity, driven by unstable atherosclerotic plaques with inflammatory infiltrates. Levels of messenger RNA (mRNA) for pro-inflammatory cytokines have been positively correlated with atherosclerotic disease progression. Therapeutic lipoprotein apheresis (LA) reduces plasma lipid levels and reduces inflammation. We evaluated the effects of LA on expression of mRNA coding for key pro-inflammatory cytokines in patients with dyslipidaemia, homo-/hetero-zygous familial hypercholesterolaemia (HoFH, HeFH) or hyperlipoprotein(a)emia [hyperLp(a)] and associated coronary artery disease (CAD).

**Approach:** Ten patients (five males and five females, mean age  $47 \pm 9.2$  years) were enrolled, all with HyperLp(a) or confirmed genetic diagnoses of dyslipidaemia, HoFH, or HeFH; all had associated CAD. mRNA determinations were via reverse transcriptase polymer chain reaction (RT-qPCR).

**Results:** LA was associated with downregulation of mRNA expression for IL-1a, IL-6 and TNF-a, starting after the first LA session. The observed reduction was progressively enhanced during the interval between the first and second LA sessions to achieve a maximum decrease by the end of the second session (IL-1a: -49%,  $p < 0.001$ ; IL-6: -35%,  $p < 0.001$ ; TNF-a: -56%,  $p < 0.001$ ).

**Conclusions:** LA suppresses the expression of IL-1a, IL-6 and TNF-a mRNA in patients with dyslipidaemias. This may contribute to the arterial anti-inflammatory effect of LA.