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ANTI-INFLAMMATORY PROPERTIES OF HDL AFTER SHORT-TERM EXERCISE TRAINING WITHOUT ANY SPECIFIC DIET IN PATIENTS WITH METABOLIC SYNDROME

ACC Poster Contributions

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Background: Recent study showed that short-term exercise, associated with diet and weight loss, improved the anti-inflammatory properties of HDL in metabolic syndrome (MetS).

However, diet and weight loss, per se, can alter the functionality of HDL and, in real life, many patients do not follow the medical counseling of diet and exercise simultaneously.

We showed previously that the antioxidative characteristics and the capacity to accept lipids of HDL are early improved by short-term exercise training (Tr) with no diet associated.

We sought to verify whether the anti-inflammatory properties of HDL are affected by Tr, without any diet associated, in patients with MetS.

Methods: Forty sedentary persons (30 with MetS, 10 controls) were evaluated. Twenty of those with MetS were subjected to a 3 times/week training load (45 min/day) for 3 months on a bicycle ergometer.

Plasma high-sensitivity C-reactive protein (hs-CRP) was analyzed and HDL subfractions were obtained by plasma ultracentrifugation.

Endothelial cells were cultured, stimulated with TNF α and lipopolysaccharide, and cocubated with HDL subfractions obtained before and after Tr. Sequentially, those cultures of endothelial cells were cocubated with THP-1 cells labeled with a fluorescent marker. The labeled THP-1 cells that adhered on endothelial cells were counted under fluoroscopic microscope.

Results: Baseline plasma levels of HDL-C were lower in the MetS group compared to controls and Tr did not change neither HDL-C nor weight in MetS group. Hs-CRP plasma levels from patients with MetS were higher than controls (3.0 ± 1.5 vs 1.5 ± 1.5 mg/L respectively, $p < 0.05$) and did not change after Tr (3.0 ± 1.5 vs 2.8 ± 1.8 mg/L, before and after Tr respectively, $p > 0.05$).

The number of adhered labeled THP-1 cells cocubated with endothelial cells did not change significantly when mixed with HDL2a or 3b from patients with MetS after Tr, compared with HDL2a or 3b obtained before Tr.

Conclusion: Our results showed that Tr did not change an inflammatory serum marker (hs-CRP) and the adherence of THP-1 cells on endothelium cells, suggesting that the anti-inflammatory properties of HDL are not early improved by short-term exercise, when there is no diet associated.