

Endurance training induces depot-specific changes in IL-10/TNF- α ratio in rat adipose tissue #13

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White adipose tissue (WAT) is the source of pro- and anti-inflammatory cytokines and recently, it recognized as an important source of interleukin 10 production (IL-10). Acute physical exercise induce an anti-inflammatory cytokine profile. However, the effect of chronic physical exercise in the production of IL-10 by the WAT has never been examined. IL-10 and TNF- α were assessed in WAT of rats engaged in endurance training. Animals were randomly assigned to either a sedentary control group (S, n=7) or an endurance trained group (T, n=8). Trained rats ran on a treadmill for 5 days/wk for 8 wk at 55-65% of the VO_{2max}. Detection of IL-10 and TNF- α protein (by ELISA) and mRNA expression (by semi-quantitative PCR), as well as the mRNA of PPAR γ , and immunocytochemistry to detect mononuclear phagocytes were carried out. A reduction in absolute retroperitoneal adipose tissue (RPAT) weight in T (44%; $p < 0.01$), when compared with S was observed. IL-10 and TNF- α concentration were increased (60% $p < 0.05$; 40%, $p < 0.05$, respectively), in the mesenteric adipose tissue (MEAT) from the trained group, while no change related to training was observed in RPAT. In MEAT, IL-10/TNF- α ratio was increased for T group when compared with S (30%; $p < 0.05$). PPAR- γ mRNA was increased in T (1.1 fold; $p < 0.01$) when compared with S in the same adipose depot. No monocyte infiltration was found. In conclusion, exercise training induced increased IL-10 expression in the mesenteric depot, resulting in a modified IL-10/ TNF- α ratio. We also conclude that WAT presents a depot-specific response to endurance training.

Key words: Endurance training; adipose tissue; IL-10; TNF- α ; PPAR- γ .