What is the effect of a Mediterranean compared with a Fast Food meal on the exercise induced adipokine changes? A randomized cross-over clinical trial.

Abstract

BACKGROUND:
Adipose tissue-derived adipokines are pro-inflammatory cytokines involved in metabolic-related diseases and can be influenced by diet and exercise. We aimed to compare the effect of a Mediterranean (MdM) compared with Fast Food (FFM) meal on the exercise induced adipokines changes.

METHODS:
In a double blinded cross over trial, 46 participants were randomly assigned to one of two standardized iso-energy pre-exercise meals: FFM or MdM-type. Three hours after each meal, participants completed a treadmill exercise test (EC). Serum adiponectin, resistin, PAI-1, lipocalin-2/NGAL and adipsin were determined by Luminex magnetic bead immunoassay. Wilcoxon signed rank test compared changes before/after meal and before/after EC and a linear mixed model evaluated the effect of meals on the adipokine response to exercise, adjusted for confounders.

RESULTS:
Thirty-nine participants (mean age of 25, with a standard deviation of 5 years) completed the trial (56% females). For both interventions, a significant reduction of adipsin after each meal and a significant increase of lipocalin, PAI-1, adipsin and resistin, after exercise was observed. When exercise was preceded by a MdM meal a higher increase in adipsin levels was seen.

CONCLUSION:
Acute exercise induced an increase of circulatory levels of adipsin, resistin, lipocalin and PAI-1, but not adiponectin. A pre-exercise Mediterranean meal potentiated the increase of adipsin after the exercise test, which possibly relates to the immune regulatory role of adipsin. These changes suggest a cross-talk between the immune and metabolic immediate response to exercise and its modulation by the pre-exercise diet composition.

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