



## SIRT3 and hepatic oxidative stress response to aerobic exercise in high-fat diet feeding rats

### Poster Presentation

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### Abstract

**Introduction:** High-fat diet (HFD) and inactivity-related liver disorders such as nonalcoholic fatty liver disease (NAFLD) is the most common liver disease worldwide and is associated with oxidative stress. The aim of this study was to evaluate the response of hepatic sirt3 gene expression and oxidative stress to aerobic exercise in high-fat diet-feeding rats.

**Methods:** Thirty-two male Wistar rats with an average weight of 180-200 g were randomly divided into four groups (n = 8). Standard Fat Diet (SFD), High-fat diet (HFD), Standard Fat Diet after High-fat diet (HFD-SFD), Aerobic exercise with Standard fat diet after high-fat diet (HFD-SFD-AEX). Hepatic and plasma oxidative stress indices such as nitric oxide metabolite (NO), reduced glutathione (GSH), total thiol content (T-SH), lipid peroxidation (malondialdehyde, MDA), ferric reducing antioxidant power (FRAP), protein carbonyl (PCO), and sirt3 gene expression were evaluated. Samples in the HFD group were taken after fatty liver induced and in other groups 48 hours after the eight weeks of aerobic training (four days per week) intervention.

**Results:** Results showed that after the HFD period in comparison with the SFD group, MDA and NO metabolites and PCO increased significantly (P=0.001). Whereas GSH, T-SH, and FRAP and sirt3 gene expression decreased significantly (P = 0.001). So, after the aerobic exercise intervention, the changes caused by HFD significantly modifies to the normal levels (P = 0.001).

**Conclusion:** These data suggest that aerobic exercise probably through an effect on the sirt3 gene expression, can ameliorate oxidative stress in the liver.

### Keywords

Sirt3; High-fat diet (HFD); Liver; aerobic exercise; Oxidative stress; nonalcoholic fatty liver disease (NAFLD)

