

The effect of L-carnitine on histological and sperm parameters in obese rats induced by high fat-diet

Abstract

This study aimed to evaluate the protective effects of L-carnitine on obesity-induced testicular and epididymal oxidative stress (OS), sperm parameters, hormonal changes, and IL-6 overexpression in male Wistar rats subjected to a high-fat diet (HFD). Male rats were divided into three groups: control, HFD-induced obesity group (HFD-O), and HFD-obese group treated with L-carnitine (HFD-O+L-carnitine, 200 mg/kg daily). After 48 days, histological changes, total antioxidant capacity (TAC), oxidant status (TOS), glutathione peroxidase (GPX), glutathione reductase (GR), serum testosterone and leptin levels, sperm count, viability, DNA integrity, and IL-6 expression in testicular and epididymal tissues were assessed.

Histological analysis shows that while L-carnitine offers partial protection against oxidative stress and sperm damage, it does not fully improve obesity-induced hormonal imbalances or IL-6 overexpression in testicular and epididymal tissues.

Key words: Obesity, Oxidative stress, L-carnitine, IL-6, Leptin