ORIGINAL RESEARCH

Evaluation of Pituitary-Testicular Axis and Lipid Profile Levels in Male Wistar Rats Administered Extra Virgin Olive Oil Versus Oleic Acid with a Normal Diet

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ABSTRACT

Background: Dietary fats impact male reproductive functions. The effect of consumption of normal rat chow with the Mediterranean main fat, extra-virgin olive oil (EVOO), and its major component, oleic acid (OA) in non-metabolic disease states on reproductive hormonal functions is however unknown.
Objectives: This study investigated the effect of EVOO and OA in normal diet feeding on reproductive hormones and lipid profiles.
Methods: Eighteen male Wistar rats were divided into 3 groups and fed as follows: Group I (Control) fed the normal rat chow. Group II (extra-virgin olive oil: EVOO) fed the normal diet plus 1 ml/kg/day EVOO. Group III (oleic acid: OA) fed the normal diet plus 1 ml/kg/day OA as previously described. After 4 weeks of the experimental period, reproductive hormones, lipid profile, glucose, and total protein levels were assessed.
Results: The serum luteinizing hormone (LH) level was significantly increased in both EVOO and OA groups, with no significant difference in serum testosterone (T) levels. The testicular T and serum oestradiol levels were significantly decreased in the EVOO groups but were significantly increased in the OA groups when compared to the control. There was a significant increase in the serum LDL-C in both EVOO and OA groups when compared to the control. The serum HDL-C levels were significantly decreased ($p < 0.05$) in both EVOO and OA groups when compared to control.
Conclusion: The administration of EVOO and OA in normal diet feeding resulted in diminished serum testosterone levels and serum HDL-C levels.

Keywords: Extra-virgin olive oil (EVOO); Oleic acid (OA); Lipid profile; Testosterone; Oestradiol; Prolactin