

7- ARCH ARTICLE The ameliorative effect of atorvastatin on serum testosterone and testicular oxidant/antioxidant system of HFD-fed male albino rats

Abstract Background: There is a mutual effect between central obesity and low total serum testosterone. Moreover, oxidative stress acts as a bridge between obesity and its complications. Taken together, we aimed to evaluate whether atorvastatin (AS), a cholesterol-lowering drug, has protective potential against high fat diet (HFD)-induced low fertility, which was exemplified in serum testosterone determination. Moreover, we aimed to deduce a putative mechanism of action through evaluation of the testicular oxidant/antioxidant system. **Methods:** Adult male albino Wistar rats (*Rattus norvegicus albinus*) were divided into three groups: 1) normal control group, rats were fed a normal diet for four weeks; 2) HFD group, rats were fed an HFD for four weeks; and 3) AS group, rats were fed an HFD and 5 mg/kg/day atorvastatin for the last two weeks of the experiment. Serum atherogenic index, testosterone, and thyroid stimulating hormone were estimated. Moreover, testicular reduced glutathione and malondialdehyde contents, as well as glutathione-S-transferase, superoxide dismutase, and glutathione reductase activities were also determined. The statistical differences were analyzed using analysis of variance (ANOVA). **Results:** AS ameliorated the increased level of serum atherogenic index induced by an HFD, as well as testicular malonaldehyde and reduced glutathione levels. On the other hand, AS increased the depleted level and activity of serum testosterone and testicular glutathione reductase, respectively, induced by HFD. **Conclusion:** The ameliorative effect of AS on the deteriorated level of total serum testosterone induced by HFD might partially be due to oxidant/antioxidant disturbance. Further studies should be carried out to evaluate mTOR pathway contribution, which could enable researchers to deduce drugs targeting members of the oxidant/antioxidant system and/or mTOR pathway to ameliorate

Keywords HFD, atorvastatin, atherogenic index, testosterone, antioxidants, MDA, testis, male rats