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Anabolic androgenic steroids (AAS) are defined as synthetic derivatives of the endogenous sex hormone testosterone. These compounds have been clinically used to treat many diseases as hypogonadism, anemia, and protein deficiency as well as severe weight loss associated with chronic diseases (Kurling-Kailanto et al., 2010). AAS are also one of the most commonly used drugs among athletes to improve physical performance, lean body mass, muscle size and strength (Sinha-Hikim et al., 2002; Evans, 2004; Kanayama et al., 2010).

Anabolic androgenic steroids are usually abused by athletes to achieve rapid increase in muscle mass and by non-athletes to improve their personal appearance (Angell et al., 2012). The abuse of AAS may be a serious problem all over the world as the number of AAS users increased more than 2000% in the world during the past 2 decades (Arazi et al., 2017).

According to the National Institute on Drug Abuse, it was reported that nandrolone is one of the most used anabolic derivative of testosterone, because of its moderate androgenic potential associated with the good anabolic properties (Andreato et al., 2013). Previous studies reported many serious side effects resulted from abusing these anabolic drugs which include cardiovascular disorder which can lead to sudden death, acute hepatitis, jaundice, testicular dysfunction with subsequent infertility, hypertension and behavioral disorders (Al-Kennany & Al-Hamdany, 2014). Moreover, reduction of immune cell number and function were also reported (Marshall-Gradisnik et al., 2009). Evidence of side effects affecting the kidney and the renal function is sporadically emerging from clinical reports of renal

disorders among AASs users, especially with high doses and prolonged use (Daher et al., 2009; Herlitz et al.

, 2010). It was proved that diets rich in vegetables and fruits reduced the risk of various diseases. The main role of these phytonutrients is not only providing the body with fibers, indoles and phenols but also reducing oxidative stress, as they contain natural nutrient antioxidants like carotenoids, flavanoids, vitamin C, vitamin A and vitamin E (Singh et al., 2012). Lycopene is considered the most prevalent antioxidant carotenoid diet present in the Western countries.

It is present in several red fruits as tomatoes, watermelon and pink grapefruit (Story et al., 2010). Consumption of tomatoes or its products usually leads to increased blood levels of lycopene and reduction of oxidative damage of DNA, proteins and lipids (Palabiyik et al.

, 2017). Recent studies have reported that the supplementation of lycopene rich diets is associated with reduced risk of many chronic diseases, cancer, heart diseases, a reduction in blood pressure, diabetes, ageing and other degenerative diseases in humans (El-Gerbed, 2014). Considering that anabolic steroids are widely used in humans to improve athletic performance and knowing that their overuse may cause lesions in many organs, we have designed this research to study the histological changes in the kidney of adult male albino rats under the effect of anabolic steroid (nandrolone decanoate) and role of lycopene in alleviating these changes.