

## **Abstract:**

**Background:** Cadmium (Cd) is one of the causative agents of oxidative damage in the testicle. People in the community may be exposed to this metal through food, drinking water, inhalation of gases, particles in dust and smoke. *Moringa Peregrina* has a nutritional value and various medicinal properties, and the antioxidant properties of selenium nanoparticles have been proven.

**Objective:** The purpose of this study was to investigate the antioxidant and Anti inflammatory effects of *Moringa Peregrina* seed extract on cadmium-induced oxidative damage on testis in rats And also comparing its effect with the effects of selenium nanoparticles on oxidative stress indices, pre-inflammatory enzyme levels, Histopathological changes and testicular morphology, as well as examination of sperm parameters.

**Materials and Methods:** Thirty male rats were randomly divided into five groups: control group, cadmium chloride group (1 mg / kg bw, IP), group (3) selenium nanoparticles (0.5 mg / kg bw, IP) with cadmium (1 mg / kg bw, IP), group 4 of *Moringa Peregrina* seed extract (200 mg / kg bw, IP) and group 5 of *Moringa pegerina* seed extract (200 mg / kg bw, IP) with cadmium (mg / kg bw, IP 1). All injections were performed within 16 days and with a time interval of 48 hours. On the 17th day, the Animals are killed morally and sperm count, sperm count, testicular weight and epididymis were recorded, MDA, SOD and CAT enzymes activity, and TNF $\alpha$  and IL-1 $\beta$  levels in rats were measured, then the tissue sections of the testicles Histological studies and cell counting were prepared.

**Results:** extract of *Moringa Peregrina* and Selenium nanoparticles can significantly improve the damaging effects of cadmium in reducing testicular weight, epididymal weight, the number of sperms and their survival percentage (P <0.05). Also due to antioxidant properties, it significantly decreased MDA and increased activity of SOD and CAT enzymes compared to cadmium group (P <0.05). However, there was no change in the level of pre-inflammatory enzymes in these groups (P > 0.05). In histological studies, *Moringa Peregrina* seed extract and selenium nanoparticles improved cadmium-induced damage, as well as the diameter of the seminal tubes and the number of spermatogonial cells, spermatocytes, round mature spermatids, late spermatids, and sertoli in comparison with the cadmium group in many cases Were significantly increased (P <0.05).

**Discussion:** *Moringa Peregrina* seed extract controls oxidant stress due to the presence of antioxidant compounds such as flavonoids and polyphenols, and selenium nanoparticles due to their presence in the structure of enzymatic antioxidants by reducing or eliminating the free radicals produced by cadmium.

**Keywords:** *Moringa Peregrina* Seed, Selenium Nanoparticle, Cadmium, Oxidative Stress, Spermatogenesis, Male Rat



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**Effect of *Moringa Peregrina* seed and Selenium nanoparticle  
extract on cadmium-induced oxidative damage on rat testis**

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