عنوان مقاله:

Combined protective effect of zinc oxide nanoparticles and melatonin on cyclophosphamide-induced toxicity in testicular histology and sperm parameters in adult Wistar rats

محل انتشار:

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خلاصه مقاله:

Background: Cyclophosphamide (CP) has been known as an anticancer drug with several side effects on various organs such as a male reproductive system that can cause infertility. Objective: To evaluate the possible combined effects of zinc oxide nanoparticles (nZno) and melatonin (Mel) on sperm parameters and histopathological changes of the testis in CP-treated rats. Materials and Methods: 42 adult male Wistar rats were divided into six groups. GI: control, GII: 60 mg/kg/wk CP, GIII and GIV, 10 mg/kg/wk Mel and 5mg/kg/wk nZno and GV: 5 mg/kg/wk nZno and 10 mg/kg/wk Mel were given 2 hr prior to CP injection, respectively,GVI: 5mg/kg/wk nZno and 10 mg/kg/wk Mel simultaneously. After 8 wk of treatment, rats were sacrificed and testis and epididymis were harvested for further evaluation. Results: The CP-treated group showed significant decreases in the body, testes and epididymis weights and sperm parameters (sperm count, viability, motility) with an increase abnormal sperms when compared with the control ($p<0.001$), as well as many histological alterations included decreased diameters of seminiferous tubules and Johnsen's Testicular Score (with degeneration, desquamation, multi-nucleated giant cell formation), whereas combined treatment (GV), showed more protective effects on CP-induced reproductive system damage compared with groups III or IV ($p<0.001$). Conclusion: These results suggest simultaneous administration of Mel and nZno have .more effectively protections against CP-induced reproductive damage than Mel or nZno alone

کلمات کلیدی:

Cyclophosphamide, Zinc oxid, Melatonin, Toxicity, Sperm