Therapeutic effects of date palm (Phoenix dactylifera L.) pollen extract on cadmium-induced testicular toxicity

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Abstract
Cadmium (Cd) is a well-known testicular toxicant. This study was designed to explore the long-term effects of a single low dose of Cd on spermatogenesis, and testicular dysfunction and oxidative stress, and the therapeutic potential of date palm pollen extract (DPP) in averting such reproductive damage. Adult male Wistar rats received a single intraperitoneal injection of CdCl₂ (0 or 1 mg kg⁻¹). Twenty-four hours later, they started receiving DPP (0 or 40 mg kg⁻¹) orally, once daily for 56 consecutive days. Cd exposure caused significant reproductive damage via reduced weight of the reproductive organs, which includes spermatological damage (decreased sperm count and motility and increased rates of sperm abnormalities), increased oxidative stress (increased malondialdehyde and decreased reduced glutathione levels), histological alterations (necrosis, inefficient to completely arrest spermatogenesis and a reduced Johnsen’s score) and decreased serum testosterone level. DPP restored spermatogenesis and attenuated the toxic effects of Cd on the reproductive
system to the levels observed in the control animals. These findings support the hypothesis that the testis is particularly sensitive to Cd, which can cause testicular damage and infertility. Treatment with DPP can ameliorate the deleterious effects of Cd, probably by activating testicular endocrine and antioxidant systems.

**Keywords**

Cadmium—date palm (*Phoenix dactylifera* L.)
pollenlipid peroxidation—spermatogenesis—testicular toxicity

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