

Reversal of Testicular Damage and Subfertility by Resveratrol

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Abstract : This effect of Resveratrol (RES) against CdCl₂- induced toxicity in the rat testes was investigated. Seven experimental groups of adult male rats were formulated as follows: A) Controls + NS, B) Control+ vehicle (saline solution of hydroxypropyl cyclodextrin), C) RES treated, D) CdCl₂ +NS, E) CdCl₂+ vehicle, F) RES followed by CdCl₂ and M) CdCl₂ followed by RES. At the end of the protocol, serum levels of FSH, LH, and testosterone were measured in all groups. Testicular levels of TBARS and Super Oxide Dismutase (SOD) activity were also measured. Epididymal semen analysis was performed and testicular expression of Bcl-2, p53 and Bax were assessed by RT-PCR. Also, histopathological changes of testes were examined microscopically and described. Pre and Post administration of RES in cadmium chloride-intoxicated rats improved semen parameters including count, motility, daily sperm production and morphology, increased serum concentrations of gonadotropins and testosterone, decreased testicular lipid peroxidation and increased SOD activity. Not only RES attenuated cadmium chloride induced testicular histopathology but was also able to protect against the onset of cadmium chloride testicular toxicity. Cadmium chloride downregulated the anti-apoptotic gene Bcl2 and upregulated the expression of both pro-apoptotic genes p53 and Bax. Resveratrol protected from and partially reversed cadmium chloride testicular via upregulation of Bcl2 and down regulation of p53 and Bax gene expression. Antioxidant activity of RES protects against cadmium chloride testicular toxicity and partially reverses its effect via upregulation of Bcl2 and downregulation of p53 and Bax expression. These findings have far reaching implications on subfertility and impotency frequently seen in hypertensive as well as metabolic syndrome patients.

Keywords : resveratrol, cadmium, infertility, sperm, testis, metabolic syndrome

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