Toxicology 2018 & Recycling 2018, Volume 2
DOI: 10.4066/2630-4570-C1-003

Impact of cadmium on the endocrine and exocrine sexual activity in the adult male and female wistar rats: Determination of an apoptotic process

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This study deals with the impact of chronic exposure to cadmium on male and female's fertility in rats. In fact, some male and female rats are given distilled water for drinking (T: controls), whereas the other ones are given distilled water enriched with chloride cadmium, either 10 (C1 group) or 20 mg/l (C2 group) for 1, 5, 10, 15, 30, 45, 60 or 90 days. In male rats, Cadmium, which induced a pathological change in spermatogenesis, is observed by histological studies: arrest of cell germ maturation, Then, an alteration of the structure of the seminiferous tubes with blockage of spermatogenesis (presence of male gametes without flagella or total absence of spermatozoa and destruction of the sertoli cells, testified by the presence of spans). Then, a decrease of the motility and the number of spermatozoa at the end of the treatment indicates the local cytotoxic effect of cadmium (Cd) on spermatogenesis, inducing an apoptotic phenomenon revealed by borated toluidine blue in the testicular cells, which affects the different stages of spermatogenesis. Serum testosterone level is found to be low at the beginning of the treatment, reaches a peak, then returns to the control values and even exceeds them in spite of the continuation of the treatment. It is therefore a hormonal adaptation to this pollutant. In female rats, the practiced vaginal smears revealed the oestrus phase in all the groups. Exposed females are mated to control males, and fertility is assessed later by counting the number of pregnancies. Fertility is found to be reduced in females of C1 and C2 groups as compared to control females (T group).

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