

Effects of Xenobiotics on Animal Reproduction *in Vivo*: Microscopical Examination

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Pollution of the environment and contamination of animals is serious problem in many countries [1]. Target of this study was to estimate the effects of various environmental factors on animal reproductive functions [2,3]. The experiments were conducted on laboratory animals (females: rabbits for Cd; males: mice for Cd, Ni, rats for Pb, hamsters for Co). Animals were kept in cages, at standard conditions and fed with granular feed mixtures [4]. Drinking water was available for all animals ad libitum. Females: Cd (CdCl₂; Sigma Chemicals Company, St. Louis, MO): rabbits Hyla line (n=15; age=4 month); single i.p. dose 1.5 mg/kg b.w. (group A); killed after 48 h; p.o. dose for 5 months 1.0 mg/kg (group B); control; untreated animals (group K); Males: Cd (CdCl₂; Sigma): ICR mice (n=32; age=3 month); single i.p. dose 0.25 mg CdCl₂/kg (group A); 0.5 mg/kg (group B) killed 48 h after Cd administration; control; untreated animals (group K); Pb (PbNO₃, Sigma): Wistar rats (n=17; age=6 month); single i.p. 50 mg/kg (group A); 25 mg/kg (group B); 12.5 mg/kg (group C) killed after 48 h; control; untreated animals (group K); Ni (NiCl₂, Sigma): ICR mice (n=15; age=3 month); single i.p. 20 mg/kg (group A); 40 mg/kg (group B) killed after 48 h; control; untreated animals (group K); Hg (HgCl₂, Sigma): Wistar rats (n=20; age=6 month); single i.p. 20 mg/kg (group A); 10 mg/kg (group B); 5 mg/kg (group C) killed after 48 h; control; untreated animals (group K); Co (CoCl₂, Sigma): syrian hamsters (n=21; age=6 month); single i.p. 20 mg/kg (group A); 10 mg/kg (group B); 5 mg/kg (group C) killed after 48 h; control; untreated animals (group K). For ovary and testis observation, experimental animals were killed on appropriate days. Samples of ovary and testis were fixed, dehydrated, saturated and embedded into paraffin. Blocks of samples were sectioned on a microtome and stained with heamatoxylin and eosin. Qualitative and quantitave parameters were analyzed on microphotographs (Olympus Provis AX, Japan) and for quantitative analysis morphometrical image analyser software (Image ProPlus, Media Cybernetica, NY) was used [5]. In ovaries cadmium causes decrease of the relative volume of growing follicles and the number of atretic follicles is significantly increased. The most frequent ultrastructural alterations are undulation of nuclear membrane, dilatation of perinuclear cistern and endoplasmic reticulum. In testes, the administration various xenobics results in undulation of basal membrane, dilatation of blood vessels in interstitium and occurrence of empty spaces in germinal epithelium. All studies confirm decrease of spermatozoa motility and alterations of cell integrity.

References:

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