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P-33

STUDY ON RAT OFFSPRING AFTER CADMIUM ADMINISTRATION IN VIVO DURING PREGNANCY: EFFECTS ON LIVER MORPHOLOGY

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Introduction:

Cadmium (Cd) is a common environmental pollutant. Both natural and anthropic sources have increased cadmium level in the biosphere. Cd has a very long biological half-life of 15–30 years, primarily because of its low rate of excretion from the body, and accumulates over time in the blood, kidney, and liver, where it has numerous undesirable effects on health. There is a wide range of research projects carried out within our Department of Biomedical Sciences about the environmental consequences caused by toxic heavy metals: we have demonstrated by *in vitro* experiments that cadmium can induce ultrastructural alterations, with different degree, in the structure of human fetal liver. The goal of this study was to develop our research testing *in vivo* in experimental animal model the results obtained.

Material and methods

Nine female adults rats were treated with 0,5 mg/Kg daily dose *per os* of CdSO₄. The administration has been carried out for a period of 30 days until the coupling, during pregnancy and suckling. Liver tissue samples

were taken 30 days after delivery. Light and electron microscopic examinations were performed on specimens. Morphological patterns were compared with morphological profiles of healthy controls.

Results

There was evidence of structural and ultrastructural alterations of the liver parenchymal caused by cadmium administration during ontogenesis: alterations in organules, inclusions of hepatocytes cytoplasm, cytolysis and overthrow hepatic plates. These results allow to confirm the previous data obtained *in vitro* and demonstrate later on teratogenetic effects of the cadmium.

Conclusions

The results of the present study suggested that Cd ingested during the gestation period leaks from the placenta and is taken up by the fetus. Additional research concerning the role of metal transporters is necessary to obtain a better understanding of the mechanism whereby Cd is transported between mother and fetus.