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## **GLOMERULAR AND TUBULAR CELLS OF THE RAT KIDNEY: MORPHOLOGICAL CHANGES INDUCED BY CADMIUM.**

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### **Introduction**

Because of its high rates of soil-to-plant-transfer, Cd is a contaminant found in most human foodstuffs, which renders diet a primary source of exposure among non-smoking, non-occupationally exposed populations. A safe intake limit of 7 µg cadmium/week/kg body weight was set based on the critical renal cadmium concentration of between 100 and 200 µg/g wet weight. The aim of our research was to study Cd effects on morphology of the glomerular and tubular cells of kidney in experimental animal.

### **Materials and Methods**

Wistar rats were divided into two groups: a control (4 rats) and a treated group (16 rats): 60 mg/l of Cadmium Acetate in drinking water for six weeks was administered to the treated group under controlled environmental conditions: twelve hours of artificial light exposition; temperature of 24 +/- 1°C; humidity between 60% and 65%; free access to food and water. The rats, at the end of the experiments, were sacrificed under diethyl ether anesthesia, then samples kidney were processed for light and electron microscopy.

### **Results**

It was possible to see endothelial and mesangial iperplasia in cadmium-exposed rats. TEM analysis showed anomalous shapes with high spherical elements, so-called "humps", on epithelial-side of basal lamina and in glomerular of Bowman's space. The podocytes morphology was normal, but they showed electrondense inclusions inside their cytoplasm and among foot processes. The Bowman's capsule has an outer parietal layer with a basal lamina thickened. The epithelial cells of proximal tubule had an irregular shape and a vacuolated cytoplasm. TEM analysis revealed spaces between adjacent cells.

### **Conclusions**

Our findings provide strong support for consideration of this metal as kidney disease risk factor. Although additional prospective studies are needed to fully characterize the impact of level metal exposure on the development and progression of kidney disease, these data underscore the need to monitor and reduce cadmium exposure.