

Early histological and functional effects of chronic copper exposure in rat liver

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Cu is an essential trace element capable of producing toxic effects in animals and man when ingested acutely or chronically in excess. Although chronic Cu exposure is increasingly recognized as a public health issue, its early effects remain largely unknown. We approached the significance of a moderate chronic Cu load in young rats to correlate early hepatic histopathological changes with functional alterations of liver cells. For this purpose, supplementation with 1200 ppm of Cu in rat food for 16 weeks was chosen. In these conditions, Cu load elicited a significant decrease in growth curves. There were mild light microscopy alterations in Cu-treated rats, although increasing intracellular Cu storage was correlated with longer Cu exposure both by histological and biochemical measurements. Ultrastructural alterations included lysosomal inclusions as well as mitochondrial and nuclear changes. Liver perfusion studies revealed higher rates of basal O₂ consumption and colloidal carbon-ind