Chronic copper treatment prevents the liver critical balance transcription response induced by acetaminophen

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The independent toxic effects of copper and acetaminophen are among the most studied topics in liver toxicity. Here, in an animal model of Cebus capucinus chronically exposed to high dietary copper, we assessed clinical and global transcriptional adaptations of the liver induced by a single high dose of acetaminophen. The experiment conditions were chosen to resemble a close to human real-life situation of exposure to both toxic stimuli. The clinical parameters and histological analyses indicated that chronic copper administration does not induce liver damage and may have a protective effect in acetaminophen challenge. Acetaminophen administration in previously non-exposed animals induced down-regulation of a complex network of gene regulators, highlighting the putative participation of the families of gene regulators HNF, FOX, PPAR and NRF controlling this process. This gene response was not observed in animals that previously received chronic oral copper, suggesting that this m