

Curcumin reduces hepatic and renal toxicity of acetaminophen in rats

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Acetaminophen is one of the worlds most popular analgesics that can be obtained over the counter. Overdose of acetaminophen, however, can cause severe damages to liver and kidneys. In this study we investigated the effects of curcumin, derived from *Curcuma Longa*, on the acetaminophen toxicity, and the possibility of combining therapy of curcumin and N-acetyl cysteine (NAC) to treat the damage caused by acetaminophen. The experiments were conducted on 72 male Sprague-Dawley rats randomly divided into 12 groups. Control group was left without treatment, and the other groups were treated with different combinations of acetaminophen, curcumin and NAC. Blood levels of Aspartate Aminotransferase (AST), Alanine Aminotransferase (ALT), Blood Urea Nitrogen and Creatinine were determined 18 and 42 h after acetaminophen injection. One week later, left kidney and the caudate lobe of liver were harvested to assay Glutathione Peroxidase, Catalase and Malondialdehyde. Right kidney and the remaining lobes of liver were used for histopathology. Analysis of organ function and oxidation parameters showed that curcumin significantly reduced toxic effects of acetaminophen on liver and kidneys in a dose-dependent manner and significantly potentiated the protective effects of NAC. These findings were confirmed by histopathology. It is concluded that curcumin can protect liver and kidney from the damage caused by acetaminophen overdose. Moreover, curcumin has the potential to be used in a combination therapy with NAC, significantly decreasing the therapeutic dose of NAC and therefore its side effects.