

Curcumin or saikosaponin a improves hepatic antioxidant capacity and protects against CCl₄-induced liver injury in rats

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Abstract

Curcumin and saikosaponin a, the bioactive phytochemicals of turmeric and Bupleurum, act as antioxidants. This study investigated the effects of supplementation with curcumin and/or saikosaponin a on hepatic lipids and antioxidant status in rats with CCl₄-induced liver injury. Male Sprague-Dawley rats were randomly divided into control, CCl₄, CCl₄ + curcumin (0.005%; CU), CCl₄ + saikosaponin a (0.004%; SS), and CCl₄ + curcumin + saikosaponin a (0.005% + 0.004%; CU+SS) groups. CCl₄ (40% in olive oil) was injected intraperitoneally at a dose of 0.75 mL/kg once a week. Curcumin and/or saikosaponin a was administered orally 1 week before CCl₄ injection for 8 weeks. The pathological results showed that liver fibrosis was ameliorated in the SS and CU+SS groups. After 8 weeks, supplementation with curcumin and/or saikosaponin a significantly decreased plasma alanine aminotransferase and aspartate aminotransferase activities, as well as plasma and hepatic cholesterol and triglyceride levels. The CU+SS group showed reversal of the impaired hepatic superoxide dismutase activity and an increase in total glutathione level. Supplementation with curcumin and/or saikosaponin a significantly improved hepatic antioxidant status and suppressed malondialdehyde formation. Therefore, supplementation with curcumin and/or saikosaponin a protects against CCl₄-induced liver injury by attenuating hepatic lipids and lipid peroxidation and enhancing antioxidant defense. Curcumin and saikosaponin a had no additive effects on hepatoprotection except for greater improvement in the total glutathione level and antioxidant status.