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

Wu SJ, Lin YH, Chu CC, Tsai YH, Chao JC.

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 CCl(4)-induced liver injury. Male Sprague-Dawley rats were randomly divided into control, CCl(4), CCl(4) + curcumin (0.005%; CU), CCl(4) + saikosaponin a (0.004%; SS), and CCl(4) + curcumin + saikosaponin a (0.005% + 0.004%; CU+SS) groups. CCl(4) (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 CCl(4) 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 CCl(4)-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.