A dose-dependent pharmcokinetic study on caffeic acid in rabbits after intravenous administration. Biopharm.

許光陽
Uang YS and Hsu KY

Abstract

The dose-dependent pharmacokinetics of caffeic acid (CA) were studied in rabbits. Three different doses (5, 10, and 25 mg kg-1) were administered intravenously to six rabbits each. The concentration-time profiles for CA could be fitted by a two-compartment model for each dose. The results showed that total-body clearance and elimination rate constant from the central compartment (k10) after a 5 mg kg-1 dose were greater than those after the other two doses. Furthermore, the terminal elimination half-life (beta half-life) and mean residence time (MRT) after a 5 mg kg-1 dose were less than after the other doses. The AUC value increased linearly with dose within the range of 10-25 mg kg-1. Most of the unchanged caffeic acid was excreted in the urine within 2 h. The percentage of unchanged caffeic acid excreted in the urine was 63.4, 60.0, and 55.4% after doses of 5, 10, and 25 mg kg-1, respectively, which was not significantly different. However, significant differences in the renal clearances and renal excretion rate constants were observed with a 5 mg kg-1 dose compared to the other doses. On the other hand, nonrenal clearances and nonrenal excretion rate constants showed no dose-related differences. The differences observed in total-body clearance, k10, beta half-life, and MRT between a 5 mg kg-1 dose and the other doses can be explained on the basis of the differences in renal clearance and renal excretion rate constants.