

Effects of frying oil and *Houttuynia cordata* Thunb on xenobiotic-metabolizing enzyme system of rodents

Ya-Yen Chen Chiao-Ming Chen Pi-Yu Chao Tsan-Ju Chang Jen-Fang Liu
Chen YY;Chen CM;Liu JF;Chao PU;Chang TJ

Abstract

AIM: To evaluate the effects of frying oil and *Houttuynia cordata* Thunb (*H. cordata*), a vegetable traditionally consumed in Taiwan, on the xenobiotic-metabolizing enzyme system of rodents. METHODS: Forty-eight Sprague-Dawley rats were fed with a diet containing 0%, 2% or 5% *H. cordata* powder and 15% fresh soybean oil or 24-h oxidized frying oil (OFO) for 28 d respectively. The level of microsomal protein, total cytochrome 450 content (CYP450) and enzyme activities including NADPH reductase, ethoxyresorufin O-deethylase (EROD), pentoxyresorufin O-dealkylase (PROD), aniline hydroxylase (ANH), aminopyrine demethylase (AMD), and quinone reductase (QR) were determined. QR represented phase II enzymes, the rest of the enzymes tested represented phase I enzymes. RESULTS: The oxidized frying oil feeding produced a significant increase in phase I and II enzyme systems, including the content of CYP450 and microsomal protein, and the activities of NADPH reductase, EROD, PROD, ANH, AMD and QR in rats ($P < 0.05$). In addition, the activities of EROD, ANH and AMD decreased and QR increased after feeding with *H. cordata* in OFO-fed group ($P < 0.05$). The feeding with 2% *H. cordata* diet showed the most significant effect. CONCLUSION: The OFO diet induces phases I and II enzyme activity, and the 2% *H. cordata* diet resulted in a better regulation of the xenobiotic-metabolizing enzyme system.