Antioxidant effects of 14 Chinese traditional medicinal herbs against human low-density lipoprotein oxidation

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ABSTRACT

The relationship between the antioxidant activities and inhibitory effect of 14 Chinese medicinal herbs against oxidized low-density lipoprotein (LDL) formation was evaluated. Prolongation of the lag phase of LDL oxidation depended on the concentration of the herbs. The concentration of each herb that was able to prolong the lag time by about two-fold was calculated and expressed as doubling-time concentration. The lower the doubling-time concentration, the stronger the inhibitory effect exhibited toward LDL oxidation. Among them, Chrysanthemi Flos (Chrysanthemum morifolium ramat; 甘菊花 gān jú huā), Crataegi Fructus (Crataegus pinnatifida Bge. var. major N.E.Br.; 山楂 shān zhā), and Roselle (Hibiscus sabdariffa Linn.; 洛神 luò shén) showed significant inhibitory effects. Correlation coefficients between doubling-time concentration and radical-scavenging activities were high; the total phenolic content was also high. In conclusion, phenolic compounds contributed not only to antioxidant activities, but also to the inhibitory effect against LDL oxidation. Chrysanthemi Flos, Crataegi Fructus, and H. sabdariffa, with lower doubling-time concentrations, could be potent phytochemical agents to reduce LDL oxidation and prevent the progression of atherosclerosis.

Keywords: Chinese medicinal herbs low-density lipoprotein radical-scavenging activity total phenolics