

C-CAIA-Chlorogenic acid in coffee extracts exerts antioxidant, iron-binding and anti-platelet aggregation activity

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Abstract

Coffee (*Coffea arabica*) is world-wide popular drink along with psychoactive responses and health benefits; however, it may increase risks of cardiovascular diseases and osteoporosis. Chlorogenic acid (CGA), caffeic acid (CA) and caffeine (CF) are reported to be bioactive compounds in coffee and varied in their quantities due to speices, roasting process and temperature, and brew technique. We focus on investigating antioxidant, iron-binding and anti-platelet aggregation activities in different coffee extracts. Coffee beans were roasted, ground and extracted with hot water (80 °C) using conventional percolation and automatic coffee maker. HPLC/UV results showed CGA and CF contents were 8.83 - 9.44 and 42.31 - 49.13 µg/mg extract, respectively whereas CA was not detected in any coffee extracts. Total phenolic content (TPC) was found to be 125.9 - 141.1 mg gallic acid equivalent/g extract. Free-radical scavenging activity was 137 - 161 mg TEAC/g extract by ABTS method and IC50 value was 101 - 212 µg/g extract by DPPH method. The extracts as well as CGA was found to bind iron (Fe³⁺-NTA) in a dose-dependent manner at 62.5 and 125 µM giving the peaks at 585 and 615 nm, respectively and the binding was decreased at higher concentrations. Levels of CGA, CF, TPC, antioxidant and iron-binding activity were different among different coffee extracts. Surprisingly, inhibitory effect of collagen-induced platelet aggregation was observed with automatic drip coffee maker (61.9%), automatic coffee maker (55.6%), conventional percolation (48.2%) and CGA (12.7%) when compared without treatment. In conclusion, chlorogenic acid which is the most active compound in coffee extracts exerts free-radical scavenging, iron-binding and anti-

platelet aggregation effect.

Biography:

Nuntouchaporn Hutachok is a Ph.D candidate from department of Biochemistry, faculty of Medicine, Chiang Mai university, Chiang Mai, Thailand. Her thesis is related to natural product mainly focus on coffee and its effect on factors associated with hypercoagulation in thalassemia.

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