

KEY WORD: GINGER/ ANTIOXIDANT/ CYCLIC VOLTAMMETRY/ ABTS ASSAY/ FI-ECD

ANGWARA POOLKASEM: ANTIOXIDANT ACTIVITY ANALYSIS OF GINGER

THESIS ADVISOR: ASST. PROF. RASAMEE CHAISUKSANT, Ph.D. 153 pp.

In this study, the antioxidant activities of ginger extracted by acetone : methanol : water (7:7:6 v/v) and ginger infusion in the temperature range of 40-80 °C were evaluated by cyclic voltammetry (CV) in parallel with 2,2'-azino-bis(3-ethylbenzothiazoline-6-sulfonic acid) cation radical-scavenging assay (ABTS assay). Total phenolic compounds were determined by Folin-Denis assay. Flow injection-electrochemical detection (FI-ECD) was developed to determine antioxidant activity based on electrochemical behavior of ABTS reagent. The antioxidant activities from all assays were expressed as gallic acid equivalent (GAE) in mg/ dried weight sample. Ginger rhizome flesh extracted with acetone: methanol: water (7:7:6 v/v) was found to have higher antioxidant activity than its peel. Ginger infusions by open system preparation resulted in about 1-4 times lower antioxidant activities than the close system preparation from all methods. No significant difference between the mean values of the antioxidant activity in GAE unit was found at infusion temperatures 50, 60, 70 °C but the GAE value decreased at 40 and 80 °C of ginger infusions by the open system preparation. The highest antioxidant activities of ginger infusion by the close system preparation were found at 70 and 80 °C. From this study the cyclic voltammetry and FI-ECD were found to be the promising alternative methods for antioxidant activity analysis.

Department of Chemistry Graduate School, Silpakorn University Academic Year 2008

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Thesis Advisor's signature