

Tanasak Sae-leaw 2009: Effect of Drying on Phenolic Compounds and Antioxidant Capacity of Fingerroot (*Boesenbergia pandurata* (Roxb.) Schltr.). Master of Science (Food Science), Major Field: Food Science, Department of Food Science and Technology. Thesis Advisor: Assistant Professor Wannee Jirapakkul, Ph.D. 106 pages.

In this study, effects of extraction solvents (acetone, 80% methanol, 80% ethanol and water) and different dried fingerroots (freeze dried, oven dried at 60°C, oven dried at 70°C compared with commercial dried fingerroot and commercial fingerroot powder) on total phenolic content, total flavonoid content, some major phenolic compounds as well as antioxidant capacity. Some major phenolic compounds were measured using High Performance Liquid Chromatography (HPLC) and antioxidant capacities were tested using 2, 2'-azino-bis (3-ethylbenzothiazoline-6-sulfonic acid) (ABTS) radical scavenging and 2, 2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity assays. Antioxidative efficiency to inhibit oxidation of different dried fingerroots in cooked ground pork were also investigated using hexanal and pentanal contents. The results suggested that acetone extract showed the highest total phenolic, total flavonoid content and amount of some major phenolic compounds (pinocembrin and pinostrobin) and followed by those prepared with 80% ethanol, 80% methanol and water, respectively. The 80% ethanol and acetone extracts exhibited the highest antioxidant capacity (ABTS and DPPH assays). Freeze dried and oven dried (60°C) fingerroots exhibited the highest total phenolic, total flavonoid content, ABTS and DPPH radical scavenging activities and pinostrobin content, whereas the greatest pinocembrin content was found in commercial dried fingerroot. Different dried fingerroots and BHA could retard oxidation in cooked ground pork during refrigerated storage at 5°C for 6 days. Hexanal and pentanal contents of cooked ground pork in the control sample had significantly higher than those treated with various types of fingerroots or BHA throughout refrigerated storage ($p \leq 0.05$). At the end of storage (day 6), treatment with added BHA was the most effective in retarding oxidation in cooked ground pork. Freeze dried, oven dried (60°C) and oven dried (70°C) fingerroots were not significantly different in reducing hexanal and pentanal formation at the end of storage. On the basis of the results obtained, fingerroot would be served as a potential source of natural antioxidant.

Student's signature

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