

Evaluation of Physiological Functionalities of *Codonopsis lanceolata* Root Extracts on the Storage Temperatures and Durations

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[Introduction]

The roots of *Codonopsis lanceolata* have been used as a tonic crude drug and an edible plant in Korea, and mainly contain triterpenoid saponins including codonolaside, codonolaside I - V, lancemaside A-G. Their saponins have shown anti-inflammatory effects such as bronchitis and cough, insomnia, and hypomnesia. *C. lanceolata* is well known to affect various pharmacological effects for human health and its consumption is increasing. This present study, therefore aimed at the evaluation of total polyphenol and flavonoid contents, reducing power and cytotoxicity of 30% ethanol extracts of *C. lanceolata* at various storage temperatures and durations.

[Materials and Methods]

Roots of *C. lanceolata* plant placed at different temperature conditions (5, 15, 25, 35 and 45 °C) and storage periods (0, 15, 30, 45, 60, 75 and 90 days) were freeze dried and then ground into a fine powder. The powder was stored at -20 °C for further experiments. Total phenols were determined by the modified method the Folin- Ciocalteu assay. Reducing power was determined by the modified method of Oyaizu (1986). The cytotoxicity of *C. lanceolata* on three human cancer cell lines were evaluated by the MTT assay. When cells were treated for 48 hrs with various concentrations (50, 100, 200, 400, 800 and 1,000 µg mL⁻¹) of 30% ethanol extracts.

[Results and Discussions]

Total polyphenol and flavonoid content of 30% ethanol extracts of *C. lanceolata* at various storage temperatures was no significant difference. In different storage period and storage temperature conditions, the reducing power of *C. lanceolata* extract promoted a concentration-dependent manner, and did not show a significant difference in different storage period. The cytotoxicity of extracts was significant differences in different storage temperature. That is, the cytotoxic effect against human cancer cell was higher at temperature below 25 °C. In particular, the cytotoxic effect in MCF-7 cell was relatively higher than in other cells. In different storage period conditions, the cytotoxic effect of extract promoted a concentration-dependent manner, and did not show a significant difference in different storage period, however, the cytotoxic effect in MCF-7 cell showed higher than in other cells. These results suggest that 30% ethanol extract from *C. lanceolata* can be used as a source of human health products.

[Acknowledgements]

This work was supported by Korea Institute of Planning and Evaluation for Technology in Food, Agriculture, Forestry(IPET) through High Value-added Food Technology Development Program, funded by Ministry of Agriculture, Food and Rural Affairs(MAFRA)(grant number 114036-04-3-SB010)

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