B116

Immunomodulatory effect of total methanol extract from *Codonopis lanceolata*

School of Biotechnology and Bioengineering, Kangwon National University
Yong Gyu Lee, Se Eun Byeon, Byung Hoon Kim, Joo Young Kim,
Ji Yeon Lee and Jae Youl Cho*

Objectives

Codonopis lanceolata is known to have a strong anti-cancer and anti-inflammatory activities. In this study, the immunomodulatory effects of total methanol extracts (TME) from roots or leaves of *Codonopis lanceolata* on macrophage functions were examined, since its molecular immunomodulatory mechanisms are poorly characterized yet.

Material and Methods

○ Materials

The total methanol extracts (TME) of *Codonopis lanceolata* were purchased from Plant Diversity Reasearch Center (Daejeon, Korea). FITC-dextran, 3-(4,5-dimethylthiazol-2-yl)-2.5-diphenyltetrazlium bromide (MTT), Griess reagents, and lipopolysaccharide (LPS) were purchased from Sigma Chem. (St. Louis, MO, USA). RAW264.7 cells were obtained from ATCC (Rockville, MD, USA). Fetal bovine serum, penicillin and streptomycin were obtained from GIBCO (Grand Island, NY, USA)

○ Methods

To do these experiments, macrophage-mediated immunological functions such as cytokine production, nitric oxide (NO) production, phagocytosis and cell-fibronectin adhesion were tested according to previous methods (Cho et al., 2000; 2001; 2005) using murine and human macrophage cell lines (RAW264.7 and U937 cells).

Results and Discussion

Treatment of root TME (r-TME) enhanced U937 cell-fibronectin adhesion mediated by beta1-integrins, up to 175% (Fig. 1A) and also up-regulated IL-3 expression assessed by RT-PCR analysis (Fig. 1B). In contrast, leaf TME (l-TME) and r-TME significantly blocked NO production in lipopolysaccharide-activated RAW264.7 cells (Fig. 1C), without affecting iNOS expression. Interestingly, r-TME and l-TME showed different modulatory pattern on phagocytic activity of RAW264.7 cells toward FITC-labeled dextran (Fig. 1D). Thus, r-TME increased RAW264.7 cell's phagocytic ability, while l-TME did not. However, TMEs did not alter the expression of other cytokines and chemokines such as TNF-α and MCP-1. Therefore, our data suggest that *Codonopis lanceolata* may be a good immunomodulatory enthnopharmacological herbal with different immune-regulatory functions.

Corresponding author : 조재열 E-mail : jaecho@kangwon.ac.kr Tel : 033-250-6562

* Fig. 1. Effect of total methanol extract (leaf : l-TME and roots : r-TME) from *Codonopis lanceolata* on cell-fibronectin adhesion, cytokine production, NO production and phagocytic uptake in activated macrophage/monocytes.