

**Inhibitory effect of *Acer tegmentosum* ethanol extract on the production of inflammatory mediators in LPS-activated macrophage**

School of Bioscience and Biotechnology, Kangwon National University

Tao Yu, Ting Shen, Dae Sung Yoo, Min Ho Kim, and Jae Youl Cho \*

**Objectives**

*Acer tegmentosum* is known to have a strong anti-oxidant and anti-inflammatory activities. In this study, the 70% ethanol extract of *Acer tegmentosum* was prepared and examined its modulatory effects on the functional activation of macrophages under lipopolysaccharide(LPS) treatment. since its molecular immunomodulatory mechanisms are poorly characterized yet.

**Materials and Methods**

○ Materials

The ethanol extract of *Acer tegmentosum*(L6) is prepared by conventional method. 3-(4,5-Dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT), Griess reagents, and lipopolysaccharide (LPS, E. coli 0111:B4) were purchased from Sigma (St. Louis, MO). RAW264.7 cells were obtained from ATCC (Rockville, MD, USA). Fetal bovine serum (FBS) was obtained from Hyclone (Hyclone, South Logan, UT, USA). All other chemicals were Sigma grade.

○ Methods

To do these experiments, macrophage-mediated immunological functions such as cytokine production, nitric oxide(NO), tumor necrosis factor (TNF- $\alpha$ ) and prostaglandin E<sub>2</sub>(PGE<sub>2</sub>) production, cell-cell adhesion and RT-PCR were tested according to previous methods using murine macrophage cell line (RAW264.7 and U937 cells).

**Results**

*Acer tegmentosum* significantly suppressed the production of proinflammatory mediators (nitric oxide [NO], tumor necrosis factor [TNF- $\alpha$ ]) and prostaglandin E<sub>2</sub>[PGE<sub>2</sub>](Fig.1) in the RAW264.7 cells, stimulated by lipopolysaccharide (LPS, 2  $\mu$ g/ml). The mRNA expression levels of inducible nitric oxide synthase (iNOS), TNF- $\alpha$  and cyclooxygenase (COX)-2 were also diminished after treatment of *Acer tegmentosum* extract(Fig.2),Moreover, the *Acer tegmentosum* extracts down-regulated the functional activation of  $\beta$ 1- integrins(CD29) assessed by U937 homotypic aggregation(Fig.3). Therefore, these data suggest that *Acer tegmentosum* may have the ability to modulate macrophage-mediated immune responses, thus contributing to its anti-inflammatory activity.

This Study was supported by Technology Development Program for Agriculture and Forestry, Ministry for Agriculture, Forestry and Fisheries, Republic of Korea

.....  
Corresponding autho : 조재열 E-mail : jaecho@kangwon.ac.kr Tel : 033-250-6488

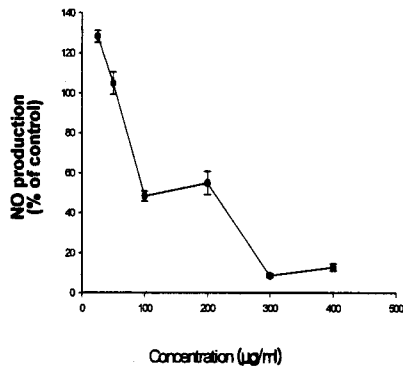


Fig.1A Effect on NO production

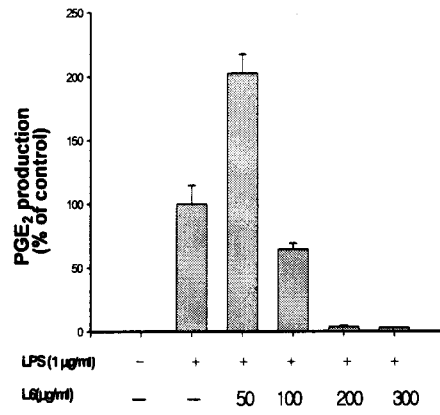


Fig.1B Effect on PGE2 production

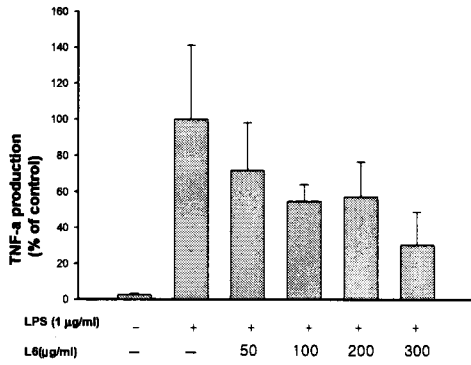


Fig.1C Effect on TNF-α production

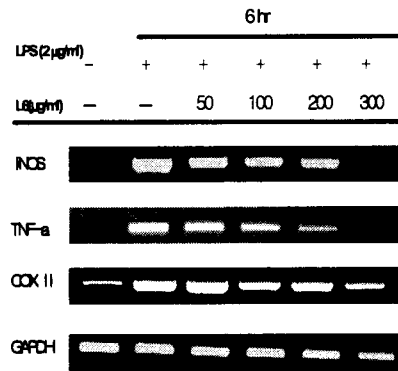


Fig.2 Effect on cytokine production

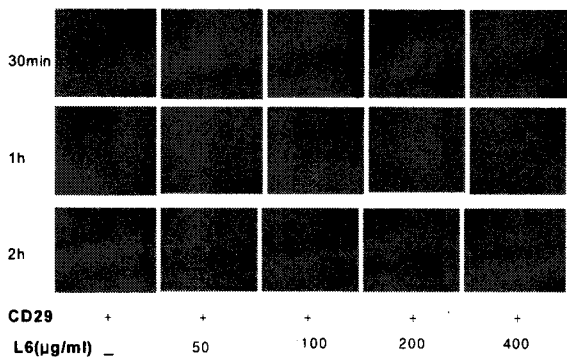


Fig.3 Effect on cell-cell adhesion