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**Bee venoms downregulate TNF- $\alpha$  in macrophage cell line**

Sang-Mi Han, Kwang-Gill Lee, Joo-Hong Yeo, HawYong Kweon, Soon Ok Woo,  
Man-Young Lee, Young-Duck Chang<sup>1</sup> and Kwan-Kyu Park<sup>2</sup>

*Department of Agricultural Biology, National Institute of Agricultural of Science and Technology, Suwon, Korea, <sup>1</sup>College of Agriculture and Life Sciences, Chungnam National University, Dajeon, Korea, and <sup>2</sup>Department of Pathology, Keimyung University School of Medicine, Daegu, Korea*

Tumor necrosis factor- $\alpha$  (TNF) is a pleiotropic cytokine found intracellularly within most cells and thought to signify a nonspecific response to tissue stress. TNF- $\alpha$  exerts proinflammatory functions that may play an important role in initiating the fibrosis. In this studies, we tried to determine whether bee venom reduces lipopolysaccharide (LPS)-induced TNF- $\alpha$  from murine macrophage-like cell line RAW 264.7 cells. The results indicated that LPS increased TNF- $\alpha$  production from RAW cells by 20-35 - fold in a dose-dependent manner. Bee venom from *Apis cerana* or *Apis mellifera* inhibited LPS-induced TNF- $\alpha$  expression by 63% and 43%, respectively. Bumble bee venom markedly reduced TNF- $\alpha$  expression (by 78%). These results indicate that bee venom effectively suppress LPS-induced TNF- $\alpha$  expression, suggesting that the downregulatory effect of bee venom on proinflammatory cytokine TNF- $\alpha$  may represent a mechanism responsible for their beneficial effect in preventing inflammatory responses.

**Keyword** : Bee venom, TNF- $\alpha$ , LPS