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The Effect of Bee Venom in the Mouse Models of Atherosclerosis

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Objectives

Atherosclerosis is a progressive inflammatory disease leading to the accumulation of lipid and fibrous element in the arteries. Bee venom has been used traditionally for the control of pain and inflammation in various chronic inflammatory diseases. We investigated the effects of bee venom regulated the biochemical change, proinflammatory cytokines and histological analysis in the atherosclerosis mouse model.

Materials and Methods

C57BL/6 male mice were injected intraperitoneally with lipopolysaccharide (LPS, 2 mg/kg). Mice were fed with an atherogenic diet containing 15% fat, 1.25% cholesterol and 0.5% cholic acid for 12 weeks. 0.1 mg/kg of bee venom (BV) was injected into the celiac twice a week. All animals of each group were sacrificed, body weight, lipid level of plasma, activities of proinflammatory cytokines and histological analysis were measured.

Results

Biochemical analysis showed that body weight, total cholesterol and triglyceride (TG) levels significantly decreased in LPS+fat+BV group, but high-density lipoprotein (HDL) cholesterol levels significantly higher in LPS+fat+BV group than LPS+fat group. The expression of tumor necrosis factor-α (TNF-α) and interleukin-1β (IL-1β) were significantly reduced LPS+fat+BV group compared with LPS+fat group. H&E staining has showed that liver, heart and artery were significantly recovered by 0.1 mg/kg of BV, compared with LPS+fat group. These results demonstrate that bee venom has an anti-atherogenic effect by suppressing proinflammatory cytokines.

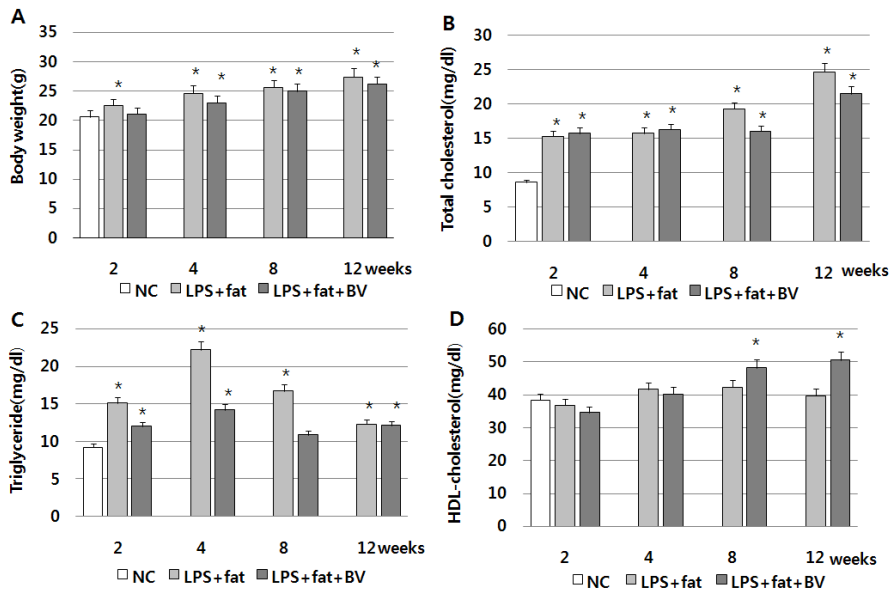주저자 연락처 (Corresponding author) : 박관규 E-mail : kkpark@cu.ac.kr Tel : 053-650-4149

Fig. 1. Biochemical analysis.
   A: Body weight, B: Total cholesterol, C: Triglyceride, D: HDL-cholesterol.
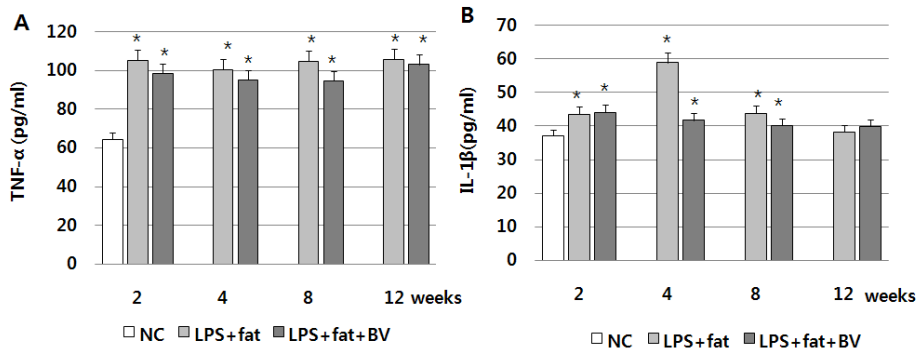   *: Represents $p < 0.05$ compared to the negative control.

Fig. 2. The expression of proinflammatory cytokines.
   A: TNF-α, B: IL-1β.
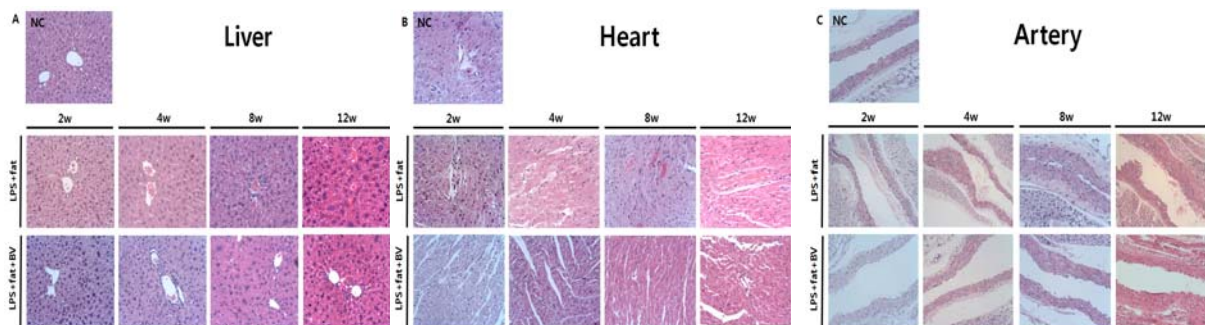   *: Represents $p < 0.05$ compared to the negative control.

Fig. 3. H&E staining.
   A: Liver section, B: Heart section, C: Artery section.