

Anti-inflammatory Effect of Wild Indigo (*Baptisia tinctoria*) Root on Raw 264.7 Cells with Stimulated Lipopolysaccharide

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Abstract : This study tested the anti-inflammatory effect of wild indigo (*Baptisia tinctoria*) root in Raw 264.7 cells. We prepared two extracts of *B. tinctoria*; one in water and the other in 50% ethanol. Then we evaluated the toxicities of the *B. tinctoria* root extracts at 10 to 100 mg mL⁻¹ concentrations in raw 264.7 cells and observed 80% cell viability. The anti-inflammatory effect of *B. tinctoria* root extract in lipopolysaccharide (LPS)-stimulated Raw 264.7 cells were observed with concentrations at 10, 30, and 50 µg mL⁻¹. The results showed that 77.27-66.82% of nitric oxide (NO) production was inhibited by 50 µg mL⁻¹ *B. tinctoria* root extract. The protein expression of Inducible NO synthase (iNOS) expression dramatically decreased by 93.14% and 52.65% in raw 264.7 cells treated with water and ethanol extracts of *B. tinctoria* root, respectively. Moreover, cyclooxygenase-2 (COX-2) protein expression decreased by 42.85% and 69.70% in raw 264.7 cells treated with water and ethanol extracts of *B. tinctoria* root, respectively. Furthermore, the mRNA expression of pro-inflammatory markers, such as tumor necrosis factor-alpha, interleukin-1β, interleukin-6, monocyte chemoattractant protein-1, and prostaglandin E synthase 2, was significantly suppressed in a concentration-dependent manner. Additionally, the *B. tinctoria* root extracts effectively inhibited enzymes involved in physiological activities. The *B. tinctoria* root extracts showed excellent anti-inflammatory effects and can be used as a functional material for biological activities.

Keywords : cytokine, macrophage, pro-inflammatory, protein expression, real-time PCR

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