

# The effects of *Scutellaria baicalensis* Georgi and *Pueraria lobate* (Willd.) Ohwi on the anti-inflammatory activity in cultured macrophage cells and on the incidence of diarrhea for Holstein heifer calf<sup>(1)</sup>

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## Abstract

The purpose of this study was to evaluate the effects of *Scutellaria baicalensis* Georgi (SB) and *Pueraria lobate* (Willd.) Ohwi (PL) on anti-inflammatory activity of cells and on the incidence of calf diarrhea. The in vitro test of cell anti-inflammatory activity was to detect on macrophage cell line (mouse BALB/c macrophage RAW 264.7) treated by the water extracts of SB and PL. The results showed that the 10% SB water extract administration on cells could inhibit the production of nitric oxide (NO) and interleukin-6 (IL-6) by 47.8% and 81.6%, respectively. The tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ) was not affected. The 10% PL water extract administration inhibited the production of IL-6 by 24.1% and had no inhibitory effect on NO and TNF- $\alpha$  production. MTT assay showed that 10% concentration of SB and PL water extract administration had no significant effect on the survival rate of macrophages. A total of 20 calves (Holstein heifer) were randomly divided into two groups. Calves received diets with 0 (control group) or 5 g SB and PL powder administration (the ratio = 1:1) (treatment group) for 30 days. At start and end of the experiment, the hay intake, concentrate intake, body weight, fecal consistency score and the blood biochemical parameters were analyzed. The results showed that calves fed with SB and PL powder had a significantly ( $P < 0.05$ ) increased fecal consistency score ( $3.2 \pm 0.4$  vs.  $2.1 \pm 0.6$ ) compared to the control group. However, the hay intake, concentrate intake, body weight, aspartate aminotransferase, alanine aminotransferase, creatinine, uric acid and blood urea nitrogen showed no significant difference between control group and treatment group. In conclusion, the 10% concentration of SB and PL water extract administration can inhibit the production of cell inflammatory cytokines. The results suggested the SB and PL could be good dietary supplements to lower the incidence of diarrhea for dairy calves.

Key words: Cytokines, Diarrhea, Holstein heifer calf, *Pueraria lobate* (Willd.) Ohwi, *Scutellaria baicalensis* Georgi.

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