

The effect of orally administrated *Bacillus coagulans* fermentation broth on weight gain, incidence of diarrhea and fecal bacteria in suckling pigs ⁽¹⁾

Fang-Chueh Liu ⁽²⁾⁽³⁾ and Yu-Chun Lin ⁽²⁾

Received: Jan. 22, 2024; Accepted: Mar. 15, 2024

Abstract

The purpose of this experiment was to investigate the effects of orally *Bacillus coagulans* fermentation broth on weight gain, incidence of diarrhea, fecal bacteria and complete blood count of suckling pigs. The preparation of *Bacillus coagulans* fermentation broth used *Bacillus coagulans* strain inoculated into commercial MRS medium, which underwent fermentation and was separated by centrifugation process for the supernatant fluid. The supernatant went through rotary evaporation to reduce the volume as 1/10 (v/v), followed by adding food-grade dextrose syrup to adjust the antimicrobial activity at 1 IU/mL. The experiment was conducted on 24 heads of the second parity of Landrace gestation sows (110th day of pregnancy), which were divided into three groups: the control group (newborn piglets not given antibiotics and *Bacillus coagulans* fermentation broth), the antibiotic group (newborn piglets given only one administration of oral antibiotics with 1 mL/dose), and the orally administrated *Bacillus coagulans* group (newborn piglets given the fermentation broth with 1 mL/dose/day for 7 consecutive days). The experimental results showed that when suckling pigs were given the oral antibiotics and *Bacillus coagulans* fermentation broth at the 2nd and 3rd weeks of age, the incidence of diarrhea in suckling pigs were lower than that in the control group. In terms of fecal bacteria, orally administrated *Bacillus coagulans* fermentation broth at 7 days of age significantly reduced the fecal *E. coli* counts of piglets compared with the control group. In terms of the complete blood count and percentage of different white blood cells at the 28th day, only the percentage of alkaliphilic white blood cells in the oral antibiotic group was significantly higher than that in the control group and the orally administered *Bacillus coagulans* fermentation broth. In conclusion, the oral administration of *Bacillus coagulans* fermentation broth for suckling pigs has the effect of reducing the incidence of diarrhea and fecal *E. coli* counts, but the weight gain was not affected by those treatments.

Key words: *Bacillus coagulans*, Diarrhea, Fermentation broth, Suckling pig.

(1) Contribution No. 2783 from Taiwan Livestock Research Institute (TLRI), Ministry of Agriculture (MOA).

(2) Animal Nutrition Division, MOA-TLRI, HsinHua, Tainan 71246, Taiwan, R. O. C.

(3) Corresponding author, E-mail: fcliu@mail.tlri.gov.tw.