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The effect of plant polysaccharide extracts on the growth performance, the fecal microflora, and the concentration of inflammatory factor of postweaning pigs [1]

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Abstract

The purpose of this study was to evaluate the effects on the growth performance, intestinal microflora and anti-inflammation of postweaning piglets by adding 0.1% polysaccharide extracts respectively to the wheat bran, alfalfa meal or *Pennisetum purpureum* (Taishu No. 3). Experimental animals comprised 4-week-old LYD crossbred weaning pigs. A total of 32 piglets (male and female in half) were allocated into 4 groups by weight and gender and housed in 16 nursery pens; and each pen raised 1 male and 1 female for a 4-week experiment period. Basal diet, containing 18% crude protein and 3,500 kcal/kg digestible energy, was blended with 0.1% of the wheat bran, alfalfa meal or Taishu No. 3 polysaccharide extracts as experimental group. Polysaccharide extracts in plant sources were collected through hot water extraction. The polysaccharide content by dry matter content of polysaccharide extract from alfalfa meal was 9.0%, followed by wheat bran 11.6% and Taishu No. 3 17.9%. During the first week of experiment, pigs diet added with 0.1% Taishu No. 3 polysaccharide extract showed a significantly ($P < 0.05$) efficient feed conversion rate than adding 0.1% alfalfa meal polysaccharide extract. During the fourth week of experiment, the feeding of 0.1% Taishu No. 3 polysaccharide extract also showed a significantly higher daily gain than adding 0.1% wheat bran polysaccharide extract. Weaning piglets fed 0.1% polysaccharide extracts from Taishu No. 3, alfalfa meal and wheat bran in diets had three kinds of anti-inflammation factor respectively (IL-1β, IL-6 and IL-8), two kinds of anti-inflammatory factor (IL-6 and IL-8), and one kind of anti-inflammatory factor (IL-1β). In the gut microflora of postweaning piglet, pigs fed 0.1% polysaccharide extract from Taishu No. 3, significantly ($P < 0.05$) inhibited the number of piglets intestinal *E. coli* better than adding polysaccharide extract from alfalfa meal. On the 15th day, pigs fed 0.1% Taishu No. 3 polysaccharide extract also showed a higher amount in intestinal lactobacillus than control group. In conclusion, the results indicated that adding 0.1% Taishu No. 3 polysaccharide extract into postweaning pigs diet improves the average daily gain and feed conversion rate in the fourth week after weaning. It also increases the number of gut lactobacillus and reduce the concentration of inflammation factor.

Key words: Plant polysaccharide, Extract, Gut microflora.

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