Effect of bamboo vinegar powder on the expression of the immune-related genes MyD88 and CD14 in weaning piglets

W.Y. Qin¹*,  L.N. Gan¹*,  L. Dong¹,  L.H. Yu¹,  S.L. Wu¹,²,  W.B. Bao¹,²

¹Key Laboratory for Animal Genetics, Breeding, Reproduction and Molecular Design of Jiangsu Province, College of Animal Science and Technology, Yangzhou University, Yangzhou, Jiangsu, 225009, China
²Joint International Research Laboratory of Agriculture & Agri-Product Safety, Yangzhou University, Yangzhou, Jiangsu, 225009, China

Abstract

The aim was to explore the feasibility of using bamboo vinegar powder as an antibiotics substitute in weaning piglets. Forty-five healthy Duroc × Landrace × Yorshire piglets (weight 6.74 ± 0.17 kg; age 31 days) were randomly divided into the control group (basic diet), ANT group (basic diet + 0.12% compound antibiotics), BV1 group (basic diet + 0.1% bamboo vinegar powder), BV5 group (basic diet + 0.5% bamboo vinegar powder) and BV10 group (basic diet + 1% bamboo vinegar powder). MyD88 and CD14 expression in immune tissues was examined using real-time PCR. MyD88 expression in the control group were significantly lower than that in other groups in all tissues (p<0.05), while CD14 expression showed the opposite trend. MyD88 expression was significantly higher in the BV10 group than in other groups in lung tissue (P<0.05), significantly higher in the ANT group than in the BV1 group in the kidneys (P<0.05), significantly higher in the BV10 group than in the BV1 group in the thymus (P<0.05), and significantly higher in the BV1 group than in the BV10 group in the lymphatic tissue (P<0.05). These differences between experimental groups were not observed for the CD14 gene (P>0.05). Thus, adding bamboo vinegar powder to the basic diet of weaning piglets had immune effects similar to antibiotics and the effect was dose-dependent. Moreover, the MyD88 and CD14 genes appear to play a role in these immune effects.

Key words: bamboo vinegar powder, pig, antibiotics, MyD88 gene, CD14 gene

*These authors contributed equally to this work and should be considered co-first authors.