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Establishment of evaluation system of porcine intestinal barrier integrity and preliminary screening of candidate genes related to intestinal barrier

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The intestinal barrier is closely related to intestinal diseases. We selected 43 piglets to screen candidate genes, 16 piglets were removed by detecting serum D-lactate and DAO levels, then the remaining piglets were preliminary identified as the intestinal barrier-integrated and impaired groups. The integrity of intestinal barrier was further verified by scanning and transmission electron microscope observation combined with paraffin sections and several stainings. The results showed that the intestinal barrier was completed and structured in typical intestinal barrier-integrated piglets, the length and width of villus were significantly higher than impaired individuals and the outline of epithelial cells was clear and arranged in a regular manner with relatively abundant goblet cells. The intestine of typical impaired piglets appeared obvious lesions and villi fell away with lamina propria shedding, glandular atrophy and a few goblet cells. Finally, we obtained 10 integrated individuals and 12 impaired individuals. On this basis, we used real-time PCR to detect the expression differences of 25 candidate genes between the two groups. The results showed that most genes were significantly different between the two groups. Hierarchical clustering and correlation analysis revealed that there were two important candidate genes *GLP2* and *AQP3* with strong positive correlation. Finally, we successfully constructed the evaluation system of the intestine barrier integrity in piglets, which provided a valuable material for studying the intestinal barrier. In addition, we speculated that *GLP-2* and *AQP3* may play an important role in maintaining the integrity of intestinal barrier by affecting the expression of tight junction proteins.

Biography

Weiyun Qin is a Doctoral student of Yangzhou University and his research is mainly engaged in pig disease-resistant breeding and reproduction.

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