



***TLR4* gene expression in pig populations and its association with resistance to *Escherichia coli* F18**

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ABSTRACT. *TLR4* is the main recognition receptor of bacterial lipopolysaccharides, which play an important role in innate and adaptive immunity. We used real-time PCR to analyze the tissue expression profile and differential expression of *TLR4* in 4 pig populations (*Escherichia coli* F18-resistant Sutai, *E. coli* F18-sensitive Sutai, Large White, Meishan), in order to determine the role that the *TLR4* gene plays in resistance to *E. coli* F18. We found that *TLR4* expressed consistently in the 4 populations, with relatively high levels in immune tissues and the highest level in the lung. Generally, the expression of *TLR4* in *E. coli* F18-sensitive individuals was the highest, followed by that in *E. coli* F18-resistant, Large White and Meishan. In the spleen, lung, kidney, lymph nodes, and thymus gland, *TLR4* expression is significantly higher in the *E. coli* F18-sensitive than in the other 3 populations; there were no significant differences among *E. coli* F18-resistant Sutai, Large White, and Meishan. In addition, Gene Ontology and pathway analysis showed that *TLR4* takes part in the inflammatory response. We found that porcine *TLR4* has consistent tissue specificity in each breed, and downregulation of expression of the *TLR4*

gene is related to resistance to *E. coli* F18 in weaning piglets.

Key words: *Escherichia coli* F18; Pig; Real-time PCR; *TLR4* gene