

Effect of porcine *CD14* gene RNAi on the expression of toll-like receptor 4 pathway-related genes, the level of pro-inflammatory cytokines and adhesion ability to *Escherichia coli*

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Three full-sib individuals of the resistance and susceptibility to *E. coli* F18 in Meishan piglets were obtained by challenging with the pathogens through feeding F18ab and F18ac strains and then the transcriptome sequencing of intestinal tissue in sensitive and resistant pigs to *E. coli* F18 was analyzed. The pig small intestinal epithelial cell line (IPEC-J2) with *CD14* gene silencing were established by *Lentivirus*-mediated RNAi and the transcription and protein expression level of TLR4 pathway-related genes (*MyD88*, IFN- α , IL-1 β , *TLR4* and TNF- α) were detected; the levels of proinflammatory cytokines IL-6, IL-8, IL-12, MIP-1 α and MIP-1 β in cell culture supernatants were measured; the *E. coli* F18ab and F18ac's adhesion ability to IPEC-J2 were detected. The transcriptome sequencing results revealed that toll-like receptor 4 (TLR4) signaling pathway especially *CD14* gene played important roles in immune process of *E. coli* F18-invasion. After *CD14* gene silencing, the transcription and protein expression levels of IFN- α , IL-1 β , *TLR4* and TNF- α were significantly down-regulation ($P < 0.05$); the levels of IL-6 and IL-12 in cell supernatants were significantly reduced ($P < 0.05$); the *E. coli* F18ab's adhesion to IPEC-J2 enhanced highly significantly ($P < 0.01$). In summary, the establishment of IPEC-J2 cell line with *CD14* gene silencing stably mediated by *Lentivirus* offered important material for mechanism research of *CD14* gene and TLR4 signal pathway. These results suggested that *CD14* gene played an important role in not only TLR4 signaling pathway but also regulating the immune process of *E. coli* F18-invasion.

Biography

Chaohui Dai is currently a Postgraduate student of Yangzhou University, China. She is mainly engaged in pig disease-resistant breeding and reproduction.

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