

Comparison of transcription profiles in lung tissues between PRRSV resistant and susceptible pigs

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Porcine reproductive and respiratory syndrome, caused by porcine reproductive and respiratory syndrome virus (PRRSV) is an infectious disease, characterized by severe reproductive deficiency in pregnant sows, respiratory symptoms in piglets and high lethal rate. In this study, using Affymetrix porcine microarray, we carried out to investigate changes in transcription profiles in lung tissues of Dapulian (DPL) and Duroc × Yorkshire × Landrace (DYL) pigs which are resistant and susceptible to PRRSV, respectively. Twenty-eight days after inoculation of PRRSV to six-week-old piglets, clinical signs including high fever, red body skin, periocular edema, nasal discharge, dyspnea, lethargy, peribronchial lymphoid hyperplasia in the peribronchial area and interstitial pneumonia were observed in DYL but not DPL pigs. A decrease in serum IL - 10 was also found in DYL. PRRSV copies were much higher in DYL than in DPL. Microarray results revealed 259 differentially expressed genes in lung tissues between DPL and DYL pigs. Cluster analysis showed that DPL and DYL pigs were classified in different clades. Go analysis indicated that these genes are mainly involved in cellular process, physiological process, developmental process and biological regulation process. By real-time RT-PCR, we analyzed the mRNA expression levels of 12 differentially expressed genes, the results showed that 11 of them were consistent with microarray, including six up-regulated genes (*ENPEP*, *TF*, *USP18*, *Scarb2*, *CACNA2D1* and *CYP3A29*) and five down-regulated genes (*GSTA2*, *CYP3A88*, *ATP1B1*, *LPL* and *MRC1*). The mRNA expression levels of *CYP3A29*, *USP18*, *IF* and *ENPEP* in DPL pigs were 9.09, 7.10, 6.24 and 5.43 times of those in DYL pigs, while for *CYP3A88* and *GSTA2*, only 1 % and 4 %. Together with expression analysis in controls, *ENPEP*, *TF*, *USP18* and *CYP3A29* were considered as genes underlying resistance, and *CYP3A88* and *GSTA2* as susceptibility to PRRSV infection in pigs.

Biography

Yunliang Jiang has completed his Ph.D at the age of 33 years from China Agricultural University and postdoctoral studies from Institute of Jacques Monod, Paris. He is the vice director of Shandong Provincial Key Laboratory of Animal Biotechnology and Disease Control and Prevention, a premier laboratory in Shandong province, China. He has published more than 25 papers in reputed journals.