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Evaluation of pathogenicity and immunity of type 2 porcine reproductive and respiratory syndrome virus in pigs

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Porcine reproductive and respiratory syndrome (PRRS) virus causes significant economic losses to swine industries. To develop an effective vaccine against PRRSV is a major challenge due to huge genetic variation in PRRSV isolates. However, modified live virus (MLV) vaccines are widely used for homologous protection though there have been safety issues as vaccine viruses reverted to virulent. Besides, the existence of both genotypes together in field facilitated to emerge new strains. Therefore, regular characterization of prevalent isolates is essential to enhance protective-efficacy against PRRSV isolates. In the present study, seven type 2 PRRSV strains (NA4, NA8, NA10, NA31, NA45, NA73 and 10D415) prevalent in Korea were characterized for their immunomodulatory effects and pathogenicity in pigs. Eight piglets were infected with each strain including VR2332 (prototype of type 2 PRRSV) and kept upto 28 dpi. Serum viremia and body weight were measured weekly. Pigs from each group were euthanized at 14 and 28 dpi. Pathological evaluation was conducted and various samples were collected. Various T cell responses were analyzed in peripheral blood mononuclear cells (PBMCs) and tissues collected from the pigs. In results, NA10 and 10D415 showed highest levels of virulence as they induced high body temperature, reduced weight gain and showed high mortality in challenged pigs though 10D415 induced lower viral loads in serum and nasal fluids. On the other hand, NA8 which shares highest sequence homology with VR2332 showed lowest virulence. Similarly, the viruses evaluated in the current study showed various levels of $\gamma\delta$ -T, Th1, Th17 and CTL responses in PBMCs or tissues. In conclusion, the present study suggested that type 2 PRRSVs in Korea showed a wide range of pathogenicity and immune responses and the information might be helpful in designing efficient vaccine platform against PRRSV infection.

Biography

Salik Nazki is currently pursuing PhD from Chonbuk National University, South Korea. He has completed DVM and Master's in Veterinary Microbiology and Immunology from SKUAST-Kashmir, India. The major focus of his research is on PRRSV and is well versed with the virological and immunological techniques. Previously, during his Master's degree, his research work was based on anaerobic bacteria and also has experience on other viruses. He has recently published some research articles in reputed journals.

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