

3rd International

Veterinary Congress

August 18-20, 2016 London, UK

Heparan sulfate inhibits the replication of porcine reproductive and respiratory syndrome virus

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Porcine reproductive and respiratory syndrome virus (PRRSV) continues to cause substantial economic losses to the pig industry worldwide. Although vaccines are commercially available for the control of PRRSV infection, no vaccination regimen has been proved sustained success in terms of generating a protective immune response. Therefore, the development of novel antivirals is urgently needed. Here, we demonstrate heparan sulfate (HS) exhibits robust antiviral activity against PRRSV infection by suppressing virus RNA and protein synthesis in both Marc-145 cells and porcine alveolar macrophages (PAMs), the major target cell type of PRRSV infection in pigs *in vivo*. The inhibitory effect of HS occurred during viral attachment and the early period of viral entry into Marc-145 cells. HS also attenuated virus-induced apoptosis during the late phase of PRRSV infection and suppressed virus release in Marc-145 cells. Furthermore, in PAMs, HS was capable of inducing IL-6 expression, which might contribute to the inhibition of PRRSV infection. Collectively, our findings provide a new direction for the development of potential therapeutic drugs against PRRSV infection.

Biography

Chunhe Guo has completed his PhD and Postdoctoral studies from Sun Yat-sen University, China. He focuses on the pathogenesis and control of porcine reproductive and respiratory syndrome virus and has published more than 8 papers (total impact factor: 17.63) in reputed journals as the first author.

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