Graduate Institute of Veterinary Microbiology

Inhibition of porcine circovirus type 1 and type 2 production in PK-15 cells by small interfering RNAs targeting the Rep gene

Advisor: 

Student: Yi-Ping Lin

Abstract

Porcine circovirus (PCV) is classified in the genus Circovirus of the Circoviridae family. The overall DNA sequence homology within the PCV1 or PCV2 isolates is greater than 90%, whereas the homology between PCV1 and PCV2 isolates is 68 to 76% (1). PCV1 is considered to be nonpathogenic whereas PCV2 is the causative agent of postweaning multisystemic wasting syndrome in pigs. This study used the eukaryotic expression vector pRep1-EGFP/pRep2-EGFP as a reporting system to monitor the function of the siRNAs on the expression of Rep. The siRNA expression vector used in this study is pSilencer4.1 with the cytomegalovirus (CMV) promoter. Transfection of these siRNAs into cultured PK15 cells caused a significant reduction in viral RNA production that was accompanied by inhibiting viral replication and protein synthesis in infected cells (2). The siRNA could not only significantly reduce its corresponding mRNA level but inhibited other viral gene transcription as well. The result showed that the recombinant plasmids pS-RepC is the most efficient siRNA plasmid that inhibits the expression of Rep protein and Cap protein (3).

References

