

# Porcine parvovirus-7 (PPV7) has frequent co-infections with porcine circovirus 3 (PCV3) in sows with reproductive failure and may promote PCV3 viremia

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## Abstract

Porcine parvoviruses (PPVs) and porcine circoviruses (PCVs) infect pigs worldwide, with PPV1-7 and PCV2 infections common in pigs. Although PPV7 was only identified in 2016, co-infection of PPV7 and PCV2 is already common and PPV7 may stimulate PCV2 replication. PCV3, a novel type of circovirus, is prevalent worldwide and believed to cause reproductive disorders and dermatitis nephrotic syndrome. In recent studies, pigs were commonly infected with both PCV3 and PPV7. Our objective was to investigate co-infections between PPV7 and PCV3 in samples from swine on farms in Hunan, China, and assess potential impacts of PPV7 on PCV3 viremia. A total of 399 porcine serum samples, negative or positive for PCV3, were subjected to real-time PCR to detect PPV7; of these samples, 190 were from farms with long-standing histories of reproductive failure (RF) and were selected to determine whether PPV7 affected PCV3 viremia. Among 209 serum samples, 23% (48/209) were positive for PPV7 and the PPV7-positive rate was significantly higher in PCV3 positive serum (31.4%) than negative serum (14.4%). Among 190 serum samples, 45.1% (28/62) were positive for PPV7 and PCV3 and the PPV7-positive rate was significantly higher in PCV3 positive RF-serum (51.2%) than in non-PCV3 RF-serum (34.8%); furthermore, there was a higher PPV7 prevalence (55%) in PCV3-positive aborted fetus samples. In addition, the Ct value of PCV3 in PPV7 positive samples was significantly lower than that in PPV7 negative serum samples. Based on our findings, we concluded that PPV7 may stimulate PCV3 replication.

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