IMPLICATIONS OF MICE IN THE EPIDEMIOLOGY OF PORCINE CIRCOVIRUS TYPE 2 (PCV2)

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SUMMARY

To date very little information is known about infection, replication and transmission of porcine circovirus type 2 (PCV2) in non-porcine species. Kiupel et al. (2001) demonstrated in an experimental infection that PCV2 could replicate in mice, however, Quintana et al. (2002) could not detect the PCV2 genome by in situ hybridization. The objective of this study was to investigate the susceptibility of mice to PCV2, and to study their possible role in maintaining and transmitting the virus. Forty 6-week-old NMRI mice were used in two sets of experiments. In the first experiment 14 mice were inoculated intraperitoneally with 5x10⁴ TCID₅₀ PCV2. In the second set of the experiments 24 mice were divided into 2 groups; the mice from group A (n=18) were inoculated by the oral route with 8x10⁴ TCID₅₀ PCV2; the mice in group B (n=6) were left untreated until day 12 p.i. when they were marked and transferred to group A. During the second experiment mice were investigated for their susceptibility to oral infection and for the shedding and transmission of PCV2 to non-inoculated mice. Samples from each mouse were analyzed by PCR using PCV2 specific primers. PCV2 was detected in intraperitoneally infected mice at day 2 p.i. in the lymph nodes, thymus and liver. Between days 4 to 10 p.i., PCV2 was not found in any of the investigated tissues. After day 12 p.i. PCV2 could be detected from lymph nodes, spleen and from the liver. In the second experiment 11 out of the 18 orally infected mice, and 5 out of the 6 in contact mice were positive for PCV2. Results of this study demonstrated that PCV2 could replicate in mice infected intraperitoneally or by the oral route and that the virus can be transmitted directly from mouse to mouse. Replication of PCV2 in mice was confirmed by the increasing presence of PCV2 in a variety of tissues beginning at 12 day p.i. According to the data presented here it is possible that mice might become infected throughout a natural route (orally) in an infected environment and also that mice can shed and transmit the virus among each other, representing an epidemiological risk in the cycle of PCV2 infections.