Development and evaluation of an indirect in situ polymerase chain reaction for the detection of porcine circovirus type 2 in formalin-fixed and paraffin-embedded tissue specimens
Veterinary Microbiology, 138, 225-234

Taking advantage of the high sensitivity of polymerase chain reaction (PCR) and the cell-localizing ability of in situ hybridization (ISH), an indirect in situ PCR (ISPCR) method was developed for detecting the distribution of porcine circovirus type 2 (PCV2) in formalin-fixed and paraffin-embedded inguinal lymph nodes obtained from clinically healthy PCV2-carrier pigs and postweanling multisystemic wasting syndrome (PMWS)-affected pigs. Comparisons of the relative sensitivity of indirect ISPCR with other routinely used diagnostic methods for PCV2 indicated that nested PCR was the most sensitive method followed by indirect ISPCR, conventional PCR, ISH, and immunohistochemical (IHC) staining. Although indirect ISPCR, ISH, and IHC staining all revealed a similar signal distribution pattern of PCV2, using indirect ISPCR allowed specific amplification and detection of previously uneasily detected PCV2 signal than by routine ISH or IHC staining, particularly in those cells within the germinal center in clinically healthy PCV2-carrier pigs. Furthermore, six different PCV2 signal expression patterns in conjunction with the correlated lymphoid lesion stages were classified to describe the tissue morphological changes and viral infection. The result indicates that indirect ISPCR is a more effective, cell-based diagnostic tool with good specificity to detect limited PCV2 infection in formalin-fixed and paraffin-embedded tissue specimens and it would be a useful tool for further exploring the pathogenesis of PCV2 infection. (C) 2009 Elsevier B.V. All rights reserved

Induction of porcine post-weaning multisystemic wasting syndrome (PMWS) in pigs from PMWS unaffected herds following mingling with pigs from PMWS-affected herds
Veterinary Microbiology, 138, 244-250

In this paper we present the results from two experimental studies (I and II) investigating whether post-weaning multisystemic wasting syndrome (PMWS) can be induced in pigs from PMWS unaffected herds by mingling with pigs from PMWS-affected herds and to observe whether transportation and/or mingling of healthy pigs from unaffected herds could induce PMWS. The studies comprised pigs from 12 different herds. Eight herds had PMWS while four were unaffected. All 12 herds were found to be infected with PCV2. Pigs from PMWS-affected herds were mingled with pigs from unaffected herds in four separate compartments in both study I and study II. In addition, in study II, four groups of pigs from unaffected herds were included. Two groups with pigs transported and mingled from unaffected herds and two groups with pigs which were only transported. The PMWS diagnoses on the individual pigs were based on lymphoid depletion, histiocytic proliferation and the presence of giant cells or inclusion bodies together with the demonstration of PCV2 in lymphoid tissue. Healthy pigs, in both studies, developed PMWS 4-5 weeks after mingling with pigs clinically affected with PMWS. None of the pigs from unaffected herds which had no contact with pigs from PMWS-affected herds developed clinical signs of PMWS. Transportation and mingling of pigs from PMWS unaffected herds in combination or alone was insufficient to provoke PMWS. (C) 2009 Elsevier B.V. All rights reserved

Bordetella bronchiseptica aroA mutant as a live vaccine vehicle for heterologous porcine circovirus type 2 major capsid protein expression
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Porcine circovirus type 2 (PCV2) infections cause important respiratory diseases in the pig industry and are associated with many bacterial, mycoplasmal, and viral complications. In this study, a heterologous PCV2 major capsid protein (MCP) was expressed in the Bordetella bronchiseptica aroA mutant strain (BBS-MCP) and used as
a live vaccine vehicle. Mice and pigs were immunized with live BBS-MCP via the intranasal route. The antibodies against MCP were induced successfully in the serum as determined by ELISA. In the PCV2 challenge experiment, viral DNA was removed successfully from the lymph nodes of pigs vaccinated with live BBS-MCP. Overall, BBS-MCP is believed to be a good candidate for the development of a live-attenuated vaccine against PCV2 infections. (C) 2009 Elsevier B.V. All rights reserved