To: (02) Virology, general; (09) Swine diseases
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Heterologous expression of full-length capsid protein of porcine circovirus 2 in Escherichia coli and its potential use for detection of antibodies
Journal of Virological Methods, 162, 133-141

A capsid protein of porcine circovirus 2 (PCV 2) serves as a diagnostic antigen for the detection of PCV 2-associated disease known as a postweaning multisystemic wasting syndrome (PMWS). In this report, a bacterial expression system was developed for the expression and purification of the full-length PCV 2 capsid (Cap) protein from a codon-optimized cap gene. Replacement of rare arginine codons located at the 5’ end of the cap reading frame with codons optimal for E. coli was found to overcome the poor expression of the viral protein in the prokaryotic system. The Cap protein was purified to greater than 95% homogeneity by using a single cation-exchange chromatography at a yield of 10 mg per litre of bacterial culture. Despite the failure of the E. coli-expressed Cap protein to self-assemble into virus-like particles (VLPs), the immunization of mice with recombinant Cap yielded antibodies with the same specificity as those raised against native PCV 2 virions. In addition, the antigenic properties of the purified Cap protein were employed in a subunit-based indirect ELISA to monitor the levels of PCV 2 specific antibodies in piglets originating from a herd which was experiencing PCV 2 infection. These results pave the way for a straightforward large-scale production of the recombinant PCV 2 capsid protein and its use as a diagnostic antigen or a PCV 2 subunit vaccine. (C) 2009 Elsevier B.V. All rights reserved

Porcine ulcerative dermatitis syndrome in sows: a form of vesicular cutaneous lupus erythematosus?
Veterinary Record, 165, 501-506

Severe ulcerative lesions were observed in the skin of two sows in a herd of 540 hybrid sows. Annular to polycyclic, severe crusting dermal ulcerations were found on the abdomen and flanks; moderate lesions were also found at the base of the tail and on the perineum. The lesions were histologically characterised as cell-poor interface dermatitis and folliculitis, basal cell vacuolisation, vesicle formation at the dermal-epidermal junction and serocellular crusts. A subepidermal mild to moderate band, characterised as a mixed inflammatory infiltrate, was present. A test for antinuclear antibodies was negative; however, immunofluorescence testing revealed a linear pattern of IgG precipitation in the skin. Staphylococcus hyicus was demonstrated in the serocellular crusts of one sow. Treatment with antibiotics, topical antiseptics and corticosteroids did not improve the sows’ condition. Porcine circovirus and porcine respiratory and reproductive syndrome virus were not isolated from samples taken at postmortem examination. The observed gross lesions, the absence of response to treatment and the exclusion of other skin diseases suggested that the sows were affected with porcine ulcerative dermatitis syndrome

Porcine Circovirus Type 2 and Porcine Circovirus-Associated Disease
Journal of Veterinary Internal Medicine, 23, 1151-1163

Porcine circovirus type 2 (PCV2) belongs to the viral family Circoviridae and to the genus Circovirus. Circoviruses are small, single-stranded nonenveloped DNA viruses that have an unsegmented circular genome. PCV2 is the primary causative agent of several syndromes collectively known as porcine circovirus-associated disease (PCVAD). Many of the syndromes associated with PCVAD are a result of coinfection with PCV2 virus and other agents such as Mycoplasma and porcine reproductive and respiratory syndrome virus. PCV2 infection is present in every major swine-producing country in the world, and the number of identified cases of PCVAD is rapidly increasing. In the United States, the disease has cost producers an average of 3-4 dollars per pig with peak losses ranging up to 20 dollars per pig. The importance of this disease has stimulated investigations aimed at identifying risk factors associated with infection and minimizing these risks through modified management
practices and development of vaccination strategies. This paper provides an overview of current knowledge relating to PCV2 and PCVAD with an emphasis on information relevant to the swine veterinarian.