Structure-Dependent Modulation of Alpha Interferon Production by Porcine Circovirus 2 Oligodeoxyribonucleotide and CpG DNAs in Porcine Peripheral Blood Mononuclear Cells

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Date: 2007.12.6

Phosphodiester oligodeoxyribonucleotides (ODNs) with central CpG motifs representing sequences found within the genome of porcine circovirus type 2 (PCV2) can either induce or inhibit the production of alpha interferon (IFN-α) by porcine peripheral blood mononuclear cells (poPBMCs) in vitro (2). It has been clearly demonstrated that a critical factor for the IFN-α regulatory role of the ODNs is the ability to form secondary structures (1, 3). When a poly (G) sequence was added to a stimulatory self-complementary ODN, high levels of IFN-α were elicited, and the induction was not dependent on pretreatment with the transfecting agent Lipofectin (4). Whereas the CpG motif is not essential for IFN-α inhibitory activity of ODN PCV2/1, and it inhibits IFN-α production induced by DNA control but not RNA controls. The PCV2 genome as a whole was demonstrated to induce IFN-α in cultures of poPBMCs, and the presence of immune modulatory sequences within the genome of PCV2 may, therefore, have implications with regard to the immune evasion mechanisms utilized by PCV2.

References: