Novel Multiplex Diagnostic Assays for Diagnosis of Porcine Respiratory Disease Complex

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Technology description

In aid of PRDC prevention and control, SDSU developed rapid, multiplex, cost effective diagnostic assays using oral fluid and serum samples. SDSU developed fluorescent immunomicrosphere assay (FMIA) for PRRSV antigen and antibody detection. SDSU further adapted and optimize PRRSV FMIA test for multiplex detection of SIV, PCV2 and other swine pathogens simultaneously.
Porcine Respiratory Disease Complex (PRDC) is a significant economic problem for swine producers. PRDC outbreaks can cause elevated mortality, decreased feed efficiency, higher cull rates, increased days to market, and increased treatment costs. This syndrome is caused by the interaction of multifactorial etiologies, including the participation of porcine reproductive and respiratory syndrome virus (PRRSV), swine influenza virus (SIV), and porcine circovirus (PCV2) in the disease progression.

Advantages

FMIA has several advantages over traditional ELISA test format, including improved sensitivity and the ability to multiplex (i.e., detects multiple pathogens in a single test sample simultaneously). Development of rapid, multiplex, cost effective diagnostic tests will be important in population-based epidemiological studies, which provide important data on the early identification of susceptible groups in the population and evaluation of vaccination and herd management strategies. In addition, oral fluid sampling has marked advantages over serum sampling, including lower labor and materials costs,noninvasive collection and lower biosecurity risks because samples can be collected by site personnel. This is more important in the PRDC surveillance program at a population level, which represents a significant breakthrough in our effort to control PRDC, because it will be a major improvement in our ability to cheaply, efficiently track infections in both populations and individual (crated) animals.

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