RESEARCH ABSTRACT

SWINE HEALTH

Title: Peptide ELISA for serodiagnosis of PRRSV. **NPB # 03-013**

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II.Abstract

I have developed indirect and competition ELISAs using synthetic peptides of the N-protein of porcine reproductive and respiratory syndrome virus (PRRSV) to measure anti-N-protein Ab responses in PRRSV in infected pigs and to characterize the epitopes by the pig Abs and by a battery of anti-N-protein mAbs. Four linear epitopes recognized by mAbs have been identified in the most hydrophilic segment of the N-protein (AA25-57). Similarly, at least four linear epitopes in this segment are immunogenic in PRRSV-infected pigs, but only one corresponds to one recognized by one of the mAbs (AA36-45). Most infected pigs generate Abs that bind to both peptides and HerdChek plates, which are commonly used in the sero-diagnosis of PRRSV infections, but the time courses of formation of peptide binding Abs and Abs that react with HerdChek plates differ greatly in individual pigs. This suggests that, although the peptide and HerdChek ELISAs may detect Abs to some of the same epitopes, they also seem to detect Abs to epitopes that are uniquely expressed by one and not the other. Some mAbs fail to bind to HerdChek ELISA plates and this is also the case for certain pig Abs. By peptide ELISA I have detected four herds in which most or all pigs possessed N-protein peptide binding Abs, even though they were HerdChek ELISA sero-negative and exhibited no other signs of PRRSV infection. Thus PRRSV infections may be more widespread than presently realized involving strains that cause asymptomatic infections. It will be important to identify such PRRSV strains since they may impede eradication of PRRS and may be the source of virulent strains. Thus the peptide ELISA should be used as an adjunct to the HerdChek ELISA or it could replace it since I have encountered only two serum samples among 450 tested that were HerdChek ELISA positive but peptide ELISA negative. The peptide ELISA is also considerably cheaper than the HerdChek ELISA.