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Comparison of a Newly Adapted RT-PCR-based Diagnostic Test (Taqman™) with Current Diagnostic Tests for the Detection of Porcine Reproductive and Respiratory Syndrome Virus (PRRSV) in Tissues from Diagnostic Cases

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Several diagnostic test are available to detect PRRSV in tissue samples. Virus isolation (VI) is currently a universally test for diagnosis of infectious virus levels in PRRSV-infected tissue, while PRRSV antigen is detected by fluorescent antibody (FA) and/or immunohistochemistry (IHC), and microscopic lesions are detected by histopathology. Previously, we adapted a fluorogenic-based probe RT-PCR assay (Taqman™) for the detection of PRRSV RNA that had a nearly two-fold increase in sensitivity over VI (58% versus 33%, respectively) and had 100% specificity. The objectives of this study were to compare the current diagnostic tests (VI, FA, IHC, histopathology) available to detect PRRSV and determine whether Taqman™ is a feasible addition to these tests. A retrospective study of 229 diagnostic cases from October 1997 through April 1998 was performed. Test results from VI and Taqman™ were compared in all 229 cases and a statistically significant difference in sensitivities, found to be 41. 9% and 94.6%, respectively. VI, Taqman™, FA and histopathology test results were available for 144 of these cases and IHC was subsequently performed on 42 of these cases. Of the initial 144 cases, Taqman™ results were statistically different from VI, FA, and histopathology and Taqman™ detected the highest number of positive cases (35.7%) when compared to VI, FA and histopathology (19.5%, 15.6%, 29.2%, respectively). Discrepant analysis of Taqman™, VI, FA, and histopathology yielded sensitivities of 94.4%, 64.7%, 72.7%, respectively. A comparison between Taqman™ IHC test results of the 42 cases demonstrated that there was a statistically significant difference between the results (p-value < 0.05) and that Taqman™ detected nearly twice as many positive samples than IHC (52.3% versus 28.5%, respectively). Taqman™ also seems to be significantly more sensitive than VI (100% versus 12.5%, by discrepant analysis, respectively) in detection of PRRSV in 54 tissue samples of the original 229 cases found to be of fetal/stillborn piglet origin. The results shown here demonstrate that Taqman™ is more sensitive compared to current diagnostic tests available for PRRSV detection in tissue samples. This increased sensitivity, in conjunction with the rapid result reporting indicates that the fluorgenic 5' nuclease Taqman™ assay should be included in diagnostics from porcine tissue samples.