



Bulk Milk Tank Testing For the Detection of BVDV Persistently Infected Lactating Cows **Edward J. Dubovi, Director – Virology Section**

Testing of milk from the bulk tank has been an accepted practice for many years particularly with respect to the detection of bacteria and mycoplasma. In 1995, Radwan, Brock, Hogan, and Smith at the Ohio Agricultural Research and Development Center published a report (Vet Microbiol 44:77-92) indicating that bulk milk samples may be a useful sample for detecting BVDV persistently infected animals in the lactating herd using polymerase chain reaction testing (PCR). Of the 136 herds that they tested, 33 were PCR positive, but none were found to positive by their virus isolation procedure using the somatic cells as the test sample.

We at the Animal Health Diagnostic Center were interested in this report, but we approached implementing this test with caution. We began limited testing using PCR, but we also did parallel testing by virus isolation. We were able to detect BVDV in somatic cells from the bulk milk sample by PCR, but we were also able to detect the virus by our standard virus isolation procedures. In >95% of the cases, we had agreement between PCR results and the virus isolation tests. This finding is in sharp contrast to Radwan et al. where all PCR positive samples were virus isolation negative. We still continue to use both tests on the somatic cells from the bulk tank because we recognize that no test works in all situations. Also, we do not have any data as to whether either test can detect acutely infected animals in the milking herd, so what may appear as a discrepancy between the two tests may have a basis outside of the laboratory. A positive test result is significant, but negative results must be interpreted with caution, particularly without information regarding the PI status of **non-lactating animals** in the herd. Testing for BVDV in the individual animal in the absence of hard evidence for its presence in the herd is expensive and may discourage future testing when a valid reason does exist. Bulk tank testing is one method to generate the needed “hard” evidence.

The bulk tank milk test done at the Animal Health Diagnostic Center requires the submission of approximately 150 mls of milk which must be shipped to the laboratory such that the somatic cells can be isolated, i.e., not frozen, fermented, or in preservative. Sample containers need not be sterile; tap water clean plastic soda bottles are fine. We do not support simply testing the fluid milk by PCR as we have detected samples that were PCR and virus isolation positive on the somatic cells, but PCR negative on the fluid milk sample. The number of animals represented by the sample should ideally be less than 400 even though dilution tests suggest that positive results can be obtained with 1 animal in 600. If the number of animals is large, we suggest taking several samples representing different groups of animals (string sampling has been used successfully). The number of animals represented by the sample should be included so that we can continue to evaluate the performance of the test.

We will report test results in 7-10 days mainly because of the virus isolation testing. **All animals represented in the bulk tank should be properly identified and all of the animals that leave the milking herd following the collection of the milk sample should be individually sampled.** This is to guard against the possibility that a PI animal is culled prior to testing the entire lactating group as indicated by a positive bulk tank test. The failure to find a PI animal under that circumstance would appear to represent a false positive test result when in fact the positive animal was culled prior to the herd test.

The fee for the bulk milk tank test is \$63 per sample. **Samples should be sent overnight to arrive in the laboratory on Tuesday, Wednesday, or Thursday.** Ship samples to: Animal Health Diagnostic Center, College of Veterinary Medicine, 240 Farrier Road, Ithaca, NY 14853.