Paratuberculosis Milk Test Change to IDEXX ELISA

In October 2013, CanWest DHI will make a change to the milk ELISA test kit for Paratuberculosis (Johne's Disease). While the Parachek ELISA has performed well, we feel that the IDEXX ELISA offers some advantages to producers, veterinarians and laboratory staff.

These advantages include:

1) A small increase in test sensitivity, based on a review of published and unpublished data comparing the current IDEXX ELISA, formerly the Pourquier ELISA, to other available test kits.

2) The IDEXX kit is currently in use by the Animal Health Laboratory of the University of Guelph for serum testing, so this will bring some degree of methodological consistency to testing options, at least in the province of Ontario.

3) This is the only Paratuberculosis milk ELISA for which Likelihood Ratios have been published. Likelihood Ratios (LR) allow us to use a broader range of test results to make inferences about individual cow test results. With the Parachek test we used a Positive cut-point of 0.1 and a High Positive cut-point of 1.0; the latter to identify cows at a very high risk of being fecal shedders of MAP. The LR guide published by Mike Collins (see below) offers more cut-points and thus makes test results potentially more informative.

4) The IDEXX kit offers some small advantages from a processing and interpretation perspective in the laboratory, which is likely to result in slightly less variability in individual test results.

The IDEXX test has a different set of cut-points for Suspect, Positive and High Positive results.

They are as follows:

	Old Test (Parachek)	**New Test (IDEXX)**
Negative	< 0.07	<= 0.30
Suspect	0.07 – 0.10	> 0.30 and < 0.40
Positive	> 0.10	>= 0.40
High Positive	>= 1.0	>= 2.0*

*based on an equivalency study by C. Innes and D. Kelton, 2012.

Likelihood Ratios (LR) have been calculated and published by Mike Collins (AABP Proceedings – Vol 43 – Page 208) for various cut-points using the IDEXX milk ELISA compared to fecal culture. These LR's are as follows:

IDEXX Milk ELISA	**Likelihood Ratio**
0.0 – 0.099	0.2
0.1 - 0.199	0.4
0.2 – 0.499	31.4
0.5 – 0.999	89.0
> 1.000	361.0

Interpretation of LR's: The LR associated with a particular test result is the likelihood (or probability) that this test result came from a fecal shedder rather than a non-shedder. A LR of 1 is neutral, meaning that the test result is just as likely to be from a shedder as a non-shedder. A LR <1 indicates that the test result is more likely to be from a non-shedder, while a LR>1 indicates that the test result is more likely to be from a shedder. The further the LR is from 1, the greater or lesser the probability.

For Example: a cow with a test result of 0.15 would have a LR of 0.4, meaning that the test result of 0.15 is 0.4 times more likely to come from a shedder than a non-shedder, which really means that this cow is likely a non-shedder.

For Example: a cow with a test result of 0.7 would have a LR of 89, meaning that the test result is 89 times more likely to come from a shedder than a non-shedder, indicating that there is a strong likelihood that the cow is shedding MAP.

Overall, this change in test kit has relatively small implications when interpreting test results, but does provide some enhancements.

For more technical information or questions:

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