Application of repeated bulk milk testing for identification of *Neospora caninum* infection in Thai dairy herds

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Abstract

The protozoan *Neospora caninum* is well-recognized as a major cause of bovine abortion worldwide. To diagnose exposure to *N. caninum*, antibody assays are widely used and different tests have been developed for demonstration of *N. caninum* antibodies in serum, milk from individual cows, and bulk milk. In this prospective study, repeated bulk milk tests were evaluated to establish the *N. caninum* antibody status in Thai dairy herds. Bulk milk from 418 herds in northeast Thailand were collected at 3 consecutive samplings, December 2002 (Sampling 1), April (Sampling 2) and December 2003 (Sampling 3). All samples were analysed for presence of *N. caninum* antibodies by iscom ELISA and the optical density values were dichotomized at 3 different cut-offs. Herd status at either sampling 1 or sampling 2 was used to predict herd status at sampling 3. Changes in both sensitivity and specificity at the first samplings at all cut-offs were consistent with commonly seen patterns when evaluating performance of diagnostic tests. In addition, the predictive positive values (PPV) of herd status at each of the 2 samplings were more affected by time of sampling than choice of cut-off whereas the predictive negative values (PNV) increased with increasing cut-off. Herd status at the first samplings were also interpreted in combination, i.e. herds that were negative at both samplings were regarded as negative and positive otherwise in Sequence 1, while herds positive at both samplings were regarded as positive in Sequence 2. When using these combinations, Sequence 1 gave higher PNV but lower PPV than Sequence 2 at all cut-offs. It was concluded that repeated bulk milk testing at regular intervals provided better information about herd *N. caninum* status than a single test.