A Comparison of Three Different Methods of Serological Testing for the Presence of Antibodies to *Neospora caninum* in Beef Cattle

Gail Cunningham; Cheryl Waldner; John Campbell; Eugene Janzen; Lydden Polley
Department of Large Animal Clinical Sciences, Western College of Veterinary Medicine, University of Saskatchewan, Saskatchewan, Canada S7N 5B4

Introduction

Several serological tests for the presence of antibodies to *Neospora caninum* are commercially available. These tests have all been used in current *N. caninum* research, but limited information is available on the level of agreement between them. This makes it difficult, to compare serological results from research projects that use different testing methods. The objective of this study was to test the level of agreement between three different commercially available serological tests for antibodies to *Neospora caninum*.

Materials and Methods

In August 2000, based on results from a previous enzyme-linked immunsorbent assay (ELISA) test, 250 *N. caninum* negative samples and 239 *N. caninum* positive samples were selected for comparison testing. All 489 samples were from beef cattle in western Canada that had been collected in fall 1999 and frozen at -20°C (-4°F). The samples were tested using three different methods: the ELISA they were originally tested with in April 2000, a second commercially available ELISA test, and an agglutination test. All three tests were carried out on the same sample on the same day. Kappa values were calculated to test for overall agreement beyond chance between the different testing methods. Regression methods were also used to determine whether the titer or reaction levels were similar for each sample on the different tests.

Results and Conclusions

There was very good agreement between the testing done in April 2000 and that done in August 2000 with the same ELISA test. Kappa value for the initial and repeated ELISA comparison was 0.96 (95% CI, 0.93 to 0.98). The kappa for the initial ELISA done in April 2000 and the second commercial ELISA was 0.74 (95% CI, 0.65 to 0.82). The kappa for comparison of the initial ELISA and the agglutination test was considerably lower with a maximum kappa value of 0.43 (95% CI 0.35 to 0.5). The kappa value for the two different ELISA tests run in August 2000 was 0.78 (95% CI, 0.69 to 0.87). The kappa value for comparison between the first ELISA and the agglutination test reached a maximum value of 0.46 (95% CI, 0.38 to 0.53). The kappa value for comparison of the second ELISA and the agglutination test reached a maximum value of 0.60 (95% CI, 0.52 to 0.69). Results of the regression analysis will also be presented.

These results show fairly good stability in the results of the testing for the initial ELISA in samples that had been stored at -20°C. The two different ELISA tests also showed good agreement in results with each other. The kappa values comparing the ELISA tests and agglutination tests were lower, indicating a lower level of agreement. These results do not reflect the overall accuracy of any of the tests, but only the level of agreement between them. This may be useful in interpreting the results of research projects that have used different testing methods.