

Comparison Of Commercial ELISA Tests For Johne's Disease In Beef Cattle Herds

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Introduction

The prevalence of Johne's disease throughout the United States has prompted the development of several USDA approved ELISA kits. These test kits are widely used in diagnostic labs throughout the country. As numbers of beef producers utilizing these ELISA tests to detect Johne's disease increase, it becomes important to critically evaluate the performance of these diagnostic tests specifically in beef cattle

The aim of this study was to evaluate the specificity and agreement between the three commercially manufactured ELISA tests for Johne's in beef cattle herds. Two-thousand fifty-four sera samples were collected from six beef herds in Iowa, South Dakota and Georgia. The samples were ran according to manufacturer's recommendations. The results were evaluated based upon specificity in negative herds, and kappa statistics were calculated for both positive and negative herds. The specificities ranged between 90.48 and 9.41%. Agreement between tests ranged from $k=0.394-0.061$ in negative herds and $k=0.503-0.310$ in positive herds. These data indicate a significant difference between commercial ELISA tests.

Materials and Methods

Sera from 2054 head of beef cows in six beef cow herds located in South Dakota, Iowa and Georgia were collected on animals greater than six mo. of age. Three different commercial ELISA tests (CLS Veterinary

Paracheck® Johne's Absorbed EIA, Idexx laboratories Herdcheck® M. pt., Synbiotics Corp. Serelisa® Para TB) were used on the sera sample according the manufacturer's recommendations.

Negative herds were used to calculate specificity and agreement was determined using Kappa statistics. Kappa's are used to evaluate the agreement among tests beyond chance. The statistical significance of specificity differences was assessed using pair wise comparisons.

Results

Specificity between the three tests was statistically significant when evaluated using pair wise comparisons. Kappa statistics showed only slight to fair agreement (0.394 - 0.061) between the three ELISA kits in negative herds and fair to moderate agreement (0.503 - 0.310) between positive herds tested.

Significance

These data in beef cattle indicate the specificity in the three commercial ELISA tests is similar to the results of research performed in dairy cattle. Paracheck® ELISA had the highest specificity (99.41%) and the Serelisa® (90.48%) had the poorest specificity. This is most likely attributed to the absorption step eliminating cross reactivity. The three ELISA tests seem to have higher agreement in positive herds.