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ImmunoComb® Antibody Test Kit for Bovine Neospora

Product Information

Background

Neospora caninum is a newly recognized protozoan parasite that has been reported in various species of livestock. Recently, neosporosis has been identified as an important cause of abortion in bovine. Neospora related abortions occur in both dairy and beef cattle; the most severe problems have been noted in dairy operations.

Two patterns of abortion, endemic and epidemic, are associated with neospora infection. In herds with endemic abortion, neospora seropositive cows are 2-3 times more likely to abort than their seronegative herdmates. The risk of abortion in an epidemic 'storm' can be 20-50 fold for neospora seropositive cows. Abortions typically occur in mid to late gestation (4 - 8 months).

Transmission

Vertical transmission from dam to fetus is the main route of transmission that has been described to date and is thought to account for up to 95% of seropositive cows in endemically affected herds.

Neospora caninum is genetically related to *Toxoplasma gondii* and may also infect cows via ingestion of contaminated feedstuffs and/or direct contact with aborted fetal tissues. Dogs are suspected to be a possible source of neospora contamination of cow feed.

Clinical Disease

No distinct clinical signs have been described in neospora infected cows other than abortion. The aborted fetuses are usually autolyzed with serosanguinous fluid in body cavities, sometimes with pale white focal lesions in skeletal or cardiac muscle. While cases of neurologic disease in infected calves have been reported, the majority of congenitally infected calves are born clinically healthy.

Diagnosis

1. Histology

Microscopic examination of fetal tissues is used to determine if the aborted fetus is infected. Neospora parasites can be identified in the brain by immunochemistry using specific anti-neospora antibodies. Histologic lesions may be found in the brain, and other organs such as heart, skeletal muscle and liver. Confirmation of infection in the fetus however, does not necessarily mean that the abortion was caused by *N. caninum*.

2. Serology

A significant association between neospora seropositivity and abortion has been demonstrated in several studies. Seropositivity alone however, does not necessarily confirm the cause of abortion in an individual cow. The sero-epidemiologic approach for evaluating the status of neospora infection in a particular herd is described in the "Neospora Herd Profile" section below.

Technology: The ImmunoComb®

Biogal's Neospora Antibody Test Kit is a user-friendly assay based on the dot-ELISA priniciple for determining antibody levels to *N. caninum* in bovine serum or whole blood. The test can be performed in both the laboratory and the field. No special instruments are required. Results, which are read by eye, are obtained in about 40 minutes. Each kit contains sufficient reagents for 30 tests.

The Neospora Herd Profile: Evaluating Serologic Results

The sero-epidemiologic approach can be used when considering the diagnosis of Neospora as a likely cause of a herd abortion problem. This is done by comparing rates of seropositivity between aborting and non-aborting cows. Serum samples are obtained from at least thirty cows in the herd (10 -15 from cows that have aborted.) The odds ratio and attributable proportion are statistical calculations, which estimate the proportion of the seropositive cows that actually aborted due to Neospora (Table 1).

Note: An ImmunoComb® value of 3 or greater indicates a seropositive result.

Table 1. Herd A

	# Aborting cows	# Non-aborting cows
Sero +	A (8)	B (1)
Sero -	C (5)	D (14)

Odds Ratio (OR) = (A/B) / (C/D); (8/1) / (5/14) = 22.4

Attributable Proportion = (OR-1)/OR; 21.4/22.4= 95.5%

Based on the above calculations, we can derive the following statistical conclusions:

1. A seropositive cow from Herd A has a 22.4 fold risk of abortion over its seronegative herdmate.
2. Ninty-five percent (95%) of the abortions in seropositive cows from this herd may be attributable to neospora.

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