Definitive diagnosis of Cryptosporidiosis

Neonatal calf diarrhea also known as “scours” is a primary cause of illness and death in young, unweaned calves. Of the several viral, bacterial and protozoal intestinal pathogens associated with calf diarrhea, the most recognized pathogens include Cryptosporidium species, bovine coronavirus and bovine rotavirus group A¹. Prevalence of infections by these pathogens varies due to geographic locations, production type (beef/dairy), age, and sensitivity and specificity of the diagnostic tests used for detection.

Although there are four Cryptosporidium species that are known to infect cattle (Cryptosporidium parvum, Cryptosporidium bovis, Cryptosporidium andersoni, and the Cryptosporidium deer-like genotype), occurrence of these infections is primarily age-related. C. parvum is the only zoonotic species in cattle and it accounts for about 85% of the Cryptosporidium infections in preweaned calves and only 1% in postweaned calves. Cryptosporidium parvum infections in calves usually occur between 3-21 days of age but seldom occur after 3 months of age. C. bovis, C. andersoni and the Cryptosporidium deer-like genotype are usually known to infect the postweaned calves and old cattle².

TVMDL recommends 1-2 grams of fresh fecal/stool samples or fecal swabs to be collected during acute infection. Ideally, transport to the laboratory with cold packs in plastic leak-proof containers within 24 hours of collection³.

Multiple diagnostic tests are offered at TVMDL for detection of Cryptosporidium species:

- **Acid Fast (Ziehl-Neelsen) staining test** will detect fecal protozoal oocysts in air-dried fecal smears from freshly collected specimens of most clinically ill cases. ($7.00)

- **Giardia/Cryptosporidium FA** is a direct immunofluorescence test for detection of Cryptosporidium oocysts in conjunction with detection of Giardia cysts and can be carried out on fecal samples. ($16.00)

Oocysts might not be detectable in clinical specimens from all cryptosporidiosis cases. Absence of oocysts in repeated submissions of samples from symptomatic hosts does not necessarily rule out infection. In such cases, where the clinical suspicion is high, stool samples should be subjected to more sensitive methods of detection such as the nucleic acid based polymerase chain reaction (PCR) test.

- **Multiplex Real-time PCR test**, which can simultaneously detect three pathogens: Cryptosporidium species, bovine coronavirus and bovine rotavirus group A from bovine stool specimens. ($35.00)

The assay consists of a single protocol to detect these pathogens and also includes an internal positive control to monitor nucleic acid purification and amplification efficiency, enabling quick turnaround time. In addition, TVMDL professionals are available for interpretation and consultation on herd health diagnostics.

For more information on diagnostic testing, contact one of the full-service laboratories, or visit our website.

References: