

# The Validity of the Bovine Fecal Smear in a Clinical Setting

S Lawson, R Callan

Department of Clinical Sciences, Colorado State University

Enteritis, or calf scours, is the most common clinical disease of pre-weaned dairy calves and accounts for nearly 60% of dairy calf mortality. Multiple nutritional factors and infectious agents are associated with calf scours. The lack of agent specific clinical signs makes it difficult to determine presumptive etiologies and prescribe specific treatment. Changes in the fecal microflora and the presence of fecal white blood cells are observed in calves with enteritis. The hypothesis for this study was that alterations in the fecal microflora and/or the presence of fecal white blood cells are related to enteric disease signs in dairy calves and may provide useful clinical information.

The objectives of this study was to evaluate fecal direct smears for the presence of enteric microflora and fecal white blood cells and compare this information with the presence of enteric disease signs in dairy calves. Fresh fecal samples were collected twice weekly from 20 Holstein calves (5 d to 2 wk) over a period of 6 weeks from two dairies. Calves were selected as the 10 youngest heifer calves at each dairy at the time of initiation of the study. During the collection process the calves were examined for clinical signs consistent with enteric disease including overall mentation and fecal consistency. Gross assessment of each fecal sample was recorded based on color, consistency and the presence of mucus or blood. Each sample was prepared for direct smear microscopic evaluation using 3 simple staining techniques. The Gram stain technique was used to determine the bacterial type and population quantity, the Ziehl-Nielsen acid-fast stain technique was used to identify *Cryptosporidium* spp, and the Wright-Giemsa stain technique was used to detect the presence of fecal white blood cells.

Semiquantitative grading scores were made for the presence of gram-negative rods, gram-positive rods, gram-positive cocci, *Cryptosporidia* oocysts, and fecal white blood cells.

Wide variation in the bacterial microflora were observed in the calves over the period of study. *Cryptosporidia* spp were observed in nearly 70% of the calves on at least one sampling period. Fecal white blood cells were present in 50% of the calves on at least one sampling period. Chi Square analysis shows that both clinically normal calves and calves with clinical evidence of enteritis had similar variability in microflora populations. The presence of fecal white blood cells was associated with clinical disease signs.

These data suggest that fecal bacterial microflora are highly variable in both normal and diseased calves. Fecal white blood cells appear to be related to clinical disease and may indicate more severe mucosal damage and inflammation.