

Competitive Agricultural Systems in a Global Economy *Clostridium perfringens*

Issue

Clostridium-perfringens-induced intestinal diseases cause serious livestock losses annually in the U.S. and abroad. The organism is found wherever there are domestic animals, and infections are almost always lethal. Diagnosing the disease can be difficult because the bacterium exists as five types producing four different major toxins. The pathogen must be isolated and tested to determine which toxins are involved. Several earlier detection methods have yielded false negatives, false positives, and other problems. To assist veterinarians and livestock producers, a more practical diagnostic method was needed.

What has been done?

Veterinary scientists at the University of Arizona developed a PCR (multiplex polymerase chain reaction) assay that allows simultaneous detection of all the major toxin genes in one test. This represents a major breakthrough, since individual tests were previously needed for each toxin. The test has been up and running since 1994. The UA lab has used it to diagnose thousands of *C. perfringens* related illnesses at the request of community and scientific professionals. They have typed more than 6,000 isolates on request, from all across North America, and have published instructions for veterinarians who wish to run the test themselves.

Impact

The PCR assay allows rapid diagnosis, which enables veterinary practitioners to quickly and logically institute control programs in affected herds. This method is cheaper than running individual tests for the four major toxins, and more accurate. It is approximately \$100 cheaper per test than the old method. Furthermore, this assay does not require the use of laboratory animals, unlike the assay it replaces. It has become the standard, most accepted laboratory method for diagnosing clostridial diseases; by 2000 it had been adopted in 20 states and Canada.

Funding

USDA
Bayer Animal Health
Boehringer Ingelheim Animal Health
Colorado Serum Company
Morris Animal Foundation

Contact

Glenn Songer, professor
Department of Veterinary Science and Microbiology
Building 90, Room 218
The University of Arizona,
Tucson, AZ 85721
Tel: (520) 621-2962, FAX (520) 621-6366
Email: gsonger@u.arizona.edu