

Research and Development

New Research Seeks to Increase Effectiveness of Johne's Disease Control Programs



Johne's disease is a costly problem for dairy producers, lowering milk production and affecting the market access for Canadian dairy products. Caused by the bacterium *Mycobacterium avium* subsp. *paratuberculosis* (MAP), Johne's disease is estimated to cost the Canadian dairy industry around \$15 million per year. Unfortunately, diagnosing and eliminating Johne's disease is not an easy task. The disease is slow to show symptoms and MAP can survive on various surfaces for extended periods of time.

There are control programs for Johne's disease designed to prevent the disease, but there is room to make these programs more effective. Currently, these programs only try to prevent new infections of Johne's disease through prevention of oral uptake of bacteria, but MAP has also been recently detected in dairy farm dust.

In partnership with the Alberta Livestock and Meat Agency (ALMA), researchers from the University of Calgary's Faculty of Veterinary Medicine (UCVM) and the Netherlands' Utrecht University conducted a research project to determine if the respiratory system is another potential route of transmission for Johne's disease. Through this project, UCVM's Dr. Karin Orsel and her team evaluated the risks related to the inhalation of MAP bacteria.

The team infected two groups of calves, one through nasal spray and the other through injection directly into the trachea or windpipe. Then they collected tissue samples from various locations within the test calves, as well as from positive (infected) and negative (healthy) calf control groups. The team determined that MAP was indeed present in the test calves exposed to MAP. Furthermore, there was at least one positive sample for intestinal MAP for both the nasally-infected and tracheal-infected groups. Based on these results, Dr. Orsel hopes to see changes adopted in the control programs to account for dust and other airborne particles.

"A lot of progress has been made in controlling Johne's by limiting calves' exposure to known sources of infection. The problem is that we don't know all the sources of contamination yet. This research has revealed that MAP-contaminated dust could be another source of infection with Johne's disease, therefore, we need to adapt the practices in these control programs to prevent further infection through airborne inhalation," said Dr. Orsel.



about ALMA

ALMA provides ideas, information and investment to help Alberta's livestock and meat industry become more profitable, sustainable and internationally respected. Learn more at www.alma.alberta.ca. Contact: ALMA Communications, 780-638-1932 or email: nicole.paradis@almaltd.ca.

about RESEARCH & DEVELOPMENT

The Research and Development Program provides targeted grant assistance that drives innovations that will improve the competitiveness of Alberta's livestock and meat industry. The program encourages research initiatives complementary to ALMA's research priorities and helps develop and deliver technologies, solutions and knowledge to industry.

"Any project that can reduce the effects of Johne's disease on the Canadian dairy industry is worth doing. This is an animal health and welfare issue that affects our milk supply," said ALMA President and CEO, Gordon Cove. "More efficient control programs will lead to increased dairy production and better outcomes for our dairy cattle."

To learn more about current best management practices, please visit the Alberta Johne's Disease Initiative website. To find out more about this project, please contact Dr. Orsel directly at karin.orsel@ucalgary.ca.