New research shows that livestock may not be the sole source of foodborne bacteria *Campylobacter jejuni*

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Continuing its support of the One Health premise that animals, humans and our environment are connected, ALMA recently helped fund a multi - institution project centered in Lethbridge. The project is designed to identify key reservoirs and transmission mechanisms of *Campylobacter jejuni*.

Dr. Douglas Inglis of Agriculture and Agri-Food Canada states, "The study will comparatively examine *C. jejuni* isolates from livestock, wildlife, humans [sick and healthy] and the main routes connecting them [e.g. water, food and sewage]. The research will help determine whether there is a connection between animal reservoirs and human disease."

Campylobacteriosis, primarily caused by the bacterium *C. jejuni*, is a very common intestinal disease in Alberta. Campylobacteriosis is primarily considered a foodborne disease and ingestion of poultry or other meat contaminated with C. jejuni is thought to be the main cause of human exposure. Infection by C. jejuni is also a risk factor for the development of irritable bowel syndrome and inflammatory bowel disease in humans.

Southern Alberta possesses one of the highest densities of livestock in North America, with large numbers of beef cattle. The team observed levels of C. jejuni in river water in southern Alberta that were substantially higher than the provincial and national averages. This has led Dr. Inglis' team to theorize that waterborne transmission of bacteria may contribute to the increased levels of campylobacteriosis in this region.

However, Dr. Inglis' team determined that strains of *C. jejuni* and other species of Campylobacter potentially unique to birds are in abundance in the region's waters. This suggests that C. jejuni from wildlife species contributes to the high levels of campylobacteriosis in southern Alberta. The research team recently detected no significant difference in C. jejuni infection rates between southern Albertans living in urban vs. rural settings. This supports Dr. Inglis' theory of a wildlife source for Campylobacter because differences would be expected if rural livestock are the sole source for these bacteria.

This research project is positive news for industry. It demonstrates that the livestock industry is proactively examining the possible effects of livestock production on human health. Moreover, the research shows that current farming practices do not increase the risks of Campylobacter infection in humans.

"This research can help the beef industry," says Dr. Reynold Bergen, Beef Cattle Research Council Science Director. "The results could counter a common misconception regarding the effects of livestock production on public health, and develop proactive solutions to help reduce the risk."

"One Health is an initiative that ALMA strongly supports," says Gordon Cove, ALMA CEO and President. "Research in this area will help meet consumer demands for food safety."

The project involves collaboration between Agriculture and Agri-Food Canada, Alberta Health Services, the Public Health Agency of Canada, and the Universities of Alberta and Calgary, and will apply modern molecular epidemiological methods to answer critical questions.