

Presence of *M. avium* spp *paratuberculosis* in free-ranging caribou

Karin Orsel

Susan Kutz, Herman Barkema, Jeroen De Buck

Abstract *Mycobacterium avium* subspecies *paratuberculosis* (MAP) causes Johne's disease in cattle; a disease that can cause chronic wasting and diarrhea. Clinical disease is also reported in several deer species and in semi-domesticated reindeer. The role of wildlife as reservoirs of this disease has been discussed in literature. Whether the pathogen is transmitted between wildlife and livestock has never been reported. Fecal samples collected within the CARMA project were cultured for MAP detection. To date, positive animals were detected in 3 out of 6 herds tested, with 15 out of 47 samples testing positive in one herd. This might have implications for spread of the disease amongst species and with regard to translocation of animals. But it might also be a human treat, since Crohn's disease is also linked to the presence of MAP.

Introduction

The presence of MAP in both wild cervids and bovids is increasingly being reported, although the epidemiology and impact in wild species is not understood. Johne's disease is a concern for human health too, due to its zoonotic potential. MAP has been linked in several reports to Crohn's disease in humans. A special concern is the consumption of (raw) intestines of cervids by indigenous people, because intestines may contain a high MAP load.

Materials & Methods

Within the CARMA project fecal samples were collected from hunted caribou in Northern Canada and Greenland. If possible, information was collected on gender, female with or without calf, estimated age and GPS latitude of capture location. Fecal samples were sent to the lab at UCVM. All fecal samples were decontaminated to eliminate fungi, spores and non-mycobacterium spp. After 56 days of growth within the TREK system, Map can be detected and confirmed using a nested PCR.

Preliminary results

	# samples	
	total	MAP pos
Greenland	47	15
Bathurst	37	1
Bluenose West	8	1
Cape Bathurst	13	0
Tukt. Peninsula	6	0
Boreal W Caribou	10	0

Conclusion

MAP is present in free-ranging caribou. At this point in time the impact of these findings is not fully understood. Further investigations on the implications are needed. Focus should be on detection of transmission of disease within herds and between herds, contact structure analysis of the herd under investigation and culture of the MAP bacterium for strain typing.

Contact research team UCVM
 Karin.orsel@ucalgary.ca.

Future perspective

- Determine the prevalence of MAP in free-ranging ungulates in Northern Canada and in the Arctic.
- Evaluate the risk of transmission of disease within a herd and between herds of the same and different species
- Determine whether MAP in caribou is a species-specific strain (strain typing)
- Determine virulence factors in different hosts; clinical versus non-clinical presentation
- Validate and optimize PCR on fecal samples of caribou

