

AGRI-FACTS

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Malignant Catarrhal Fever in Bison and Sheep

Malignant catarrhal fever (MCF) is an infectious, viral disease of many ruminants, including bison. It occurs worldwide and is generally sporadic although herd outbreaks have been reported.

Cause of the disease

MCF is caused by a group of viruses that belong to the herpes virus family. In Africa the wildebeast carries alcelaphine herpes virus-1 (AHV-1), which causes MCF in susceptible species on that continent. In North America, MCF is caused by ovine herpes virus-2 (OHV-2), which infects sheep with no ill effects and spreads to susceptible species like bison.

Recently, a new herpes virus was discovered that causes MCF in white tailed deer. It is likely there are other undiscovered members of the malignant catarrhal fever virus group in ruminant populations that may or may not cause disease and/or interfere with diagnostic tests.

OHV-2 infection in sheep

All sheep should be presumed to be carriers of the OHV-2 virus. It does not cause any disease in sheep. Generally lambs are born virus-free, but by five to six months, almost all of the lambs are carriers. This implies that lambs are infected through contact with the adult members of the flock.

The virus is shed primarily in the sheep's nasal and eye secretions and transmitted through either direct or indirect contact. The significance of mechanical transmission (spread of the virus on boots, clothing, vehicles, etc.) is unknown.

OHV-2 infection in bison

When OHV-2 is spread from sheep to a susceptible ruminant species, MCF disease occurs. Bison tend to be very susceptible, and deaths are frequent in exposed animals.

The disease has an incubation period (time between exposure and clinical disease) of seven to twenty-five weeks.

Stress appears to play a significant role (i.e. transport, handling and confinement) in the development of the disease. **Stressed** bison appear more likely to be affected. Clinical signs are usually of short duration, between one to seven days, and the outcome is always fatal.

Bison with MCF show the following symptoms:

- severe depression
- reluctance to eat or drink
- separation from herdmates
- fever
- nasal discharge
- clouding or ulceration of the eyes
- respiratory problems
- painful or difficult urination
- erosions in the mouth and upper respiratory tract

In many bison cases, the stomachs and intestine may become inflamed, causing bloody diarrhea. Lesions in affected animals may also include inflammation of the brain (encephalitis) or bladder (cystitis) and enlarged lymph nodes.

*Contact between
bison and sheep is
not recommended*

Scientific opinion varies on how bison become infected with OHV-2. Although most outbreaks of MCF are associated with exposure to sheep, outbreaks of MCF in bison have been reported in which there was no known history of contact with sheep. Spread of the virus amongst bison does not appear to occur readily.

Diagnosis

Other diseases such as BVD (bovine viral diarrhoea), Johne's and Salmonellosis can be mistaken for MCF. Therefore, all suspect cases should be confirmed with proper laboratory diagnostic tests.

Exposure to the virus can be shown through the detection of antibodies in the blood (serum) of ruminants. The problem with this test is that it does not distinguish between the different MCF herpes viruses, and therefore the results can be difficult to interpret.

Newer, more accurate tests (PCR – polymerase chain reaction – testing for DNA) are available that allow the detection of viral genetic material. In live animals, MCF is diagnosed by performing the PCR on a blood sample. In dead animals, MCF is diagnosed by detecting typical microscopic lesions in the carcass and is confirmed using PCR tests on the tissues. The PCR test does not work well when tissues are decomposed.

Treatment and control

There is no effective treatment for MCF. Isolation of affected animals is usually recommended, although this probably does not influence the course of the outbreak. Since **stress** appears to play an important role in the development of the disease, minimizing **stress** in both bison herds and sheep flocks may help reduce the incidence of MCF.

Sheep are important carriers of the virus, and for that reason, bison should not be grazed near sheep. Contact between bison and sheep is not recommended. Severe losses have occurred following exposure of bison to sheep, even with short contact at sales barns. A buffer zone is advised to reduce contact between the two species. Extra caution should be taken during times of high **stress** such as birthing and weaning.

Currently there is no MCF vaccine available, as the virus has not been isolated. The reasons for this include the limited knowledge of the virus itself, the small size of the bison industry that makes it unattractive for pharmaceutical companies to conduct research, and previous failures in manufacturing a vaccine for the wildebeest MCF (AHV-1).

Conclusion

For the health of Alberta bison herds and Alberta sheep flocks, **stress** should be minimized and contact between bison and sheep is not recommended.

Developed through a joint venture between the Bison Centre of Excellence and the Alberta Sheep and Wool Commission

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