

A Comparison of Serologic Responses to Type 1 and 2 Bovine Viral Diarrhea Viruses in Naturally Exposed Dairy Cattle

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Introduction

The two genotypes of bovine viral diarrhoea viruses (BVDV) are designated as types 1 and 2. Type 1 BVDV can be further subdivided into types 1a and 1b. Although the differences between types 1 and 2 are based on the viral genome, there are also antigenic differences. Veterinarians routinely use serology as a tool to diagnose BVDV infections, but it is unclear if serologic testing for antibody against a type-1 BVDV will reliably detect cattle exposed to a type-2 BVDV. In 1999 in Ontario, 50% of BVDV isolated from diagnostic samples were type-2 BVDV (1). This study was undertaken to evaluate serologic response to a type-1 and a type-2 BVDV following natural exposure in dairy heifers.

Materials and Methods

In 1999, serum samples were collected from 224 dairy cattle from 45 dairy herds in Ontario. The cattle had not been vaccinated and were at least six months old. The serum samples were evaluated for neutralizing antibody against Singer BVDV (type 1) and NVSL 125c BVDV (type 2) at the Animal Diseases Research Institute, Lethbridge, Alberta and Animal Health Laboratory, Guelph, Ontario, respectively.

Results and Conclusions

Results of serology are summarized below. All cattle that were seropositive at >1:2 to the type-1 BVDV

were also seropositive to the type-2 BVDV. Cattle tended to have higher titres against type-1 BVDV than against type-2 BVDV. All herds that had cattle with type-2 BVDV titres >1:64 also had cattle with type-1 BVDV titres of >1:64. Only one herd had cattle with type-2 BVDV titres that were greater than type-1 BVDV titres. If presence of seropositive cattle (at either >1:2 or >1:64) had been used to determine whether a herd had evidence of natural exposure to BVDV, type-1 (BVDV) serology alone would have been sufficient.

Reference

1. Animal Health Laboratory Newsletter, 4(1):35, March 2000.

Table 1. Serum samples evaluated for neutralizing antibody against Singer BVDV (type 1) and NVSL 125(c) BVDV (type 2).

	Type 1 BVD virus	Type 2 BVD virus
Cattle with VN titre >1:2	36.2%	17.8%
Cattle with VN titre >1:64	15.0%	7.6%
Herds with seropositive cattle (>1:2)	53%	31%
Herds with seropositive cattle (>1:64)	29%	13%