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The surveillance and control programme for enzootic bovine leukosis (EBL) in Norway

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All milk and blood samples tested in 2010 were negative for antibodies against bovine leukaemia virus (BLV).

Introduction

Enzootic bovine leukosis (EBL) is caused by bovine leukaemia virus (BLV), in the genus retrovirus. Most infections are subclinical, but approximately a third of cattle over 3 years old develop persistent lymphocytosis, and a smaller proportion develop lymphosarcomas in various internal organs. EBL is classified as list B disease in Norway and is notifiable to the Office International des Epizooties.

The disease had never been reported in Norway until antibodies against BLV were detected in eight dairy herds in samples collected through the surveillance and control programme in 1995 (1). No new herds have tested positive since 1997 (2), except a single positive bulk milk sample in one herd in 2002, and one blood sample from one of the cows in that herd. After extensive follow up, it was concluded that the positive antibody results were due to false positive reactions (3).

Free status from EBL was granted to Norway by the EFTA Surveillance Authority in 2007.

The Norwegian Food Safety Authority is responsible for carrying out the surveillance and control programme for EBL. The Norwegian Veterinary Institute is in charge of planning the programme, collecting the bulk milk samples from the dairies, and performing the tests. Official inspectors from the Norwegian Food Safety Authority collected the blood samples from the beef herds.

Aims

The aim of the surveillance and control programme for EBL in 2010 was to document freedom from the infection in Norway according to Council Directive 64/432/EEC as amended and to contribute to the maintenance of this favourable situation.

Materials and methods

The surveillance and control programme included both dairy and beef herds. Bulk milk samples from the dairy herds were provided by the dairies. From the beef herds, individual blood samples were collected on the farms from maximum ten animals older than 24 months.

The target population of dairy herds consisted of all cattle herds delivering milk to dairies during the sampling period. In 2010, bulk milk samples from 1,265 randomly sampled dairy herds were tested. The target population of beef herds was all beef herds receiving governmental support according to recordings of July 2010. A total of 4,020 individual blood samples from 507 beef herds were analysed in herd pools. The sampled herds represented approximately 11.6% of the Norwegian cattle herds (Table 1).

Bulk milk samples and blood samples were examined by an indirect enzyme-linked immunosorbent assay (ELISA; Svanova Biotech AB, Uppsala, Sweden) at the Norwegian Veterinary Institute in Sandnes (4). For verification and for follow-up of suspect cases, LACTELISA BLV Ab and SERELISA BLV Ab from Synbiotics Corporation (Kansas City, MO, USA) would be used.

Table 1. Numbers of dairy herds and beef herds within the frame of the Norwegian surveillance and control programme for EBL in 2010

Herd category	Total no. of cattle herds*	No. of herds tested	% tested of the total no. of herds
Dairy herds**	11,150	1,265	11.3
Beef herds	4,200	507	12.1
Total	15,350	1,772	11.6

* Based on data from the Register of production subsidies as of 31 July 2010.

** Cattle herds delivering milk to dairies.

Results

All bulk milk samples and blood samples tested in 2010 were negative for antibodies against BLV. Table 2 shows the results of the testing during the period from 1995 to 2010.

Table 2. Results of antibody testing in the surveillance and control programme for EBL in the Norwegian bovine population during the period 1995-2010

Year	Dairy herds	Beef herds		No. of positive samples
	No. of bulk milk samples tested	No. of beef herds sampled	No. of individuals tested	
1995	25,131	1,532	9,354	8 (bulk milk)
1996	2,278	303	1,523	1 (bulk milk)
1997	26,903	2,214	16,741	0
1998	23,581	2,191	17,095	0
1999	19,933	2,382	18,274	0
2000	1,590	340	2,892	0
2001	2,564	434	3,453	0
2002	2,308	462	3,693	1 (bulk milk)
2003	1,845	449	3,901	0
2004	1,573	402	3,364	0
2005	1,919	484	4,766	0
2006	1,673	479	4,624	0
2007	1,575	412	4,241	0
2008	1,422	444	4,616	0
2009	1,315	435	5,038	0
2010	1,265	507	4,020	0

Discussion

The requirement from the EU for granting an EBL free-status is that the herd prevalence must be lower than 0.2 %, which represents 31 herds out of the total number of 15,350 herds.

No new cases have been reported since 1997, and the continuous surveillance since 1995 shows that the Norwegian cattle population is free from EBL according to the requirements (2, 3). Initially, all cattle herds were tested annually. Since 2000, a minimum of 10 % of dairy and beef cattle herds have been tested each year.

Together with the possible isolation period of six months and the testing protocol for imported animals, the surveillance and control programme for EBL should be an effective means to detect introduction of new infection.

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The Norwegian Veterinary Institute (NVI) is a nationwide research institute in the fields of animal health, fish health, and food safety. The primary mission of the NVI is to give research-based independent advisory support to ministries and governing authorities. Preparedness, diagnostics, surveillance, reference functions, risk assessments, and advisory and educational functions are the most important areas of operation.

The Norwegian Veterinary Institute has its main laboratory in Oslo, with regional laboratories in Sandnes, Bergen, Trondheim, Harstad og Tromsø, with about 360 employees in total.

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The NFSA comprises three administrative levels, and has some 1300 employees.

The NFSA advises and reports to the Ministry of Agriculture and Food, the Ministry of Fisheries and Coastal Affairs and the Ministry of Health and Care Services.

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