Surveillance and control programmes for terrestrial and aquatic animals in Norway
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The surveillance and control programme for *Brucella abortus* in cattle in Norway

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Brucella abortus *in cattle was not detected in 2009.*

Introduction

Eradication of bovine brucellosis in Norway was achieved in 1950 (1, 2).

Since 1994, the EFTA Surveillance Authority (ESA) has recognised Norway as a state officially free from brucellosis as described in ESA Decision 66/94/COL, later replaced by ESA Decision 227/96/COL.

A surveillance and control programme for *Brucella abortus* was launched in 2000. All samples were negative in 2000, 2001, 2003 and 2004 (2, 3, 4). In 2002 however, two bulk milk samples were antibody positive. Further investigation did not confirm these positive results and it was concluded that the positive serological results most likely were false positive reactions. (5).

Since 2005 the programme has consisted of passive clinical surveillance.

The Norwegian Food Safety Authority is responsible for carrying out the programme. The National Veterinary Institute is in charge of planning the programme, performing the analyses and reporting the results. The samples are collected by inspectors of the Norwegian Food Safety Authority.

Aim

The aim of the programme is to document freedom from *Brucella abortus* in cattle according to demands in Directive 64/432/EEC with amendments, and to contribute to the maintenance of the present favourable situation.

Material and methods

Herd criteria for submission of clinical material are:
- abortions occurring between the fifth month of pregnancy and 14 days before expected birth
- at least two abortions within this pregnancy period the last twelve months

Material for submission:
- foetus and the foetal membranes
- blood sample from the cow at the time of abortion and a second blood sample collected 14-21 days later

Post-mortem investigations

Foetuses are subjected to a full autopsy. Specimens from lungs, myocardium, liver, kidneys, (whole) brain, and foetal membranes are fixed in 10 % neutral phosphate-buffered formalin. The specimens are processed according to a standard routine protocol, sectioned at 5 µm and stained with haematoxylin and eosin.

Bacteriological investigations

Foetal membranes and organs from the aborted foetus (liver, spleen and stomach contents) are sampled. Direct smears from these materials are examined following Gram and Modified Ziehl-Neelsen staining. Samples are cultured on selective *Brucella* agar containing 5 % horse serum, Amphotericin B, Bacitracin, Polymyxin B and Vancomycin at 37 °C in a 10 % CO_2 atmosphere. The media are examined regularly and incubated for up to 14 days. Suspicious bacterial colonies are tested for motility, nitrate reduction, and for the production of catalase, indol, cytochrome oxidase, and urease. Non-motile, nitrate-reducing, indol-negative, and catalase-, cytochrome oxidase- and urease-producing isolates are sent to a reference laboratory for further identification.

Photo: Hanne Mari Jordsmyr

Table 1. Number of foetuses and cows examined for brucellosis in the Norwegian cattle population during the years 2000-2009.

Year	Material	Dairy cattle		Beef cattle		Total	
		Animals	Herds	Animals	Herds	Animals	Herds
2000	Foetuses					17	14
2001	Foetuses	21	18	0	0	21	18
2002	Foetuses	18	17	10	6	28	23
2003	Foetuses	30	25	4	3	34	28
2004	Foetuses	25	21	2	2	27	23
	Cows	28	19	2	2	30	21
2005	Foetuses	16	14	8	7	24	21
	Cows	48	26	8	4	56	30
2006	Foetuses	11	11	0	0	11	11
	Cows	19	13	1	1	20	14
2007	Foetuses	11	10	1	1	12	11
	Cows	14	11	1	1	15	12
2008	Foetuses	20	17	2	1	22	18
	Cows	42	19	5	2	47	21
2009	Foetuses	14	11	5	3	19	15
	Cows	19	11	7	3	26	10

Serology

Individual, paired blood samples are tested for antibodies against *Brucella abortus* in an indirect ELISA (Svanova®). The initial screening is performed using a single well per sample, and doubtful or positive reactions are retested in duplicates. If the result is negative when retested, the sample is concluded to be negative for antibodies against *Brucella abortus*. If the result still is doubtful or positive, the sample is tested with a competitive ELISA (C-ELISA, Svanova®). Positive samples in this test are subjected to a complement fixation test (CF). If the CF test is also positive, the result is reported with recommendation of a new blood sample from the suspected animal four to six weeks after the initial sampling. If this is positive, or if there should be a need for immediate follow-up, the animal is tested with an intracutane test using brucellin (INRA).

Results and discussion

A total of 19 foetuses from 14 different herds and 47 blood samples from 26 cows (paired samples from 21 cows and 5 single samples) were analysed in 2009 (Table 1).

Post-mortem investigations of foetuses in 2009 did not reveal pathological changes indicative of brucellosis, and all bacteriological and serological investigations were negative for *Brucella abortus*.

In conclusion, there was no detection of *Brucella abortus* in cattle in Norway in 2009. With the exception of a single relapse in 1953, bovine brucellosis has not been detected in Norway since 1950 (1,2).

References

1. Sandvik O. Animal Health Standards in Norway. A historical perspective and assessment of the existing situation. Næss B (editor). Oslo: The Royal Ministry of Agriculture; 1994.

2. Sviland S, Kampen AH, Djønne B, Bratberg B, Tharaldsen J, Hopp P. The surveillance and control programme for *Brucella abortus* in cattle in Norway. In: Brun E, Hellberg H, Sviland S, Jordsmyr HM (editors). Surveillance and control programmes for terrestrial and aquatic animals in Norway. Annual report 2007. Oslo: National Veterinary Institute; 2008. p. 61- 4.

The National Veterinary Institute (NVI) is a nation-wide 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 National 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 Norwegian Food Safety Authority (NFSA) is a governmental body whose aim is to ensure through regulations and controls that food and drinking water are as safe and healthy as possible for consumers and to promote plant, fish and animal health and ethical farming of fish and animals. We encourage environmentally friendly production and we also regulate and control cosmetics, veterinary medicines and animal health personnel. The NFSA drafts and provides information on legislation, performs risk-based inspections, monitors food safety, plant, fish and animal health, draws up contingency plans and provides updates on developments in our field of competence.

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 Affaires and the Ministry of Health and Care Services.

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