Survey of infectious bronchitis in western Europe

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Infectious bronchitis (IB) virus in chickens was first described in the USA in 1931 and by the early 1960s was reported all over the world. The virus continues to be a major cause of respiratory disease in chickens of all ages and breeds.

The disease has been controlled by high quality live and killed vaccines for many years. Due to the nature of the coronavirus, mutation or recombination easily occurs, possibly leading to novel pathogenic variants.

Despite the development of vaccines that contribute to the control of the clinical disease syndrome, the emergence of novel field virus variants ensures that IB remains a moving target that is difficult to control.

In order to better understand and react to changing field conditions, Fort Dodge Animal Health conducted a pan-European survey on IB strains.

The disease

The causative agent, a coronavirus, can infect birds of all ages and breeds.

Depending on the characteristics of the strain, such as tropism and virulence, and, characteristics of the host, such as immune status or age, the symptoms of the disease will vary.

Most strains have a tropism for the respiratory tract causing respiratory disease, whereas others can have tropism for the genital tract or the kidneys as well.

Strains with tropism for the genital tract will cause egg drops and shell defects when infection occurs during lay, or cause permanent damage when infected at a young age.

Recently, such a strain with tropism for the genital tract called Chinese QX arose in various Western European countries leading to the so called false layer syndrome.

Immune status of the host is very important in the outcome of an infection – local and systemic immune responses will protect the birds to high degrees.

These immune responses will be triggered by previous infections or vaccinations or carried over by maternal antibodies.

Table 1. Distribution of samples tested by Fort Dodge Animal Health between March 2002 and the end of 2007.

Country	Submissions
UK	1886
France	992
Netherlands	697
Germany	877
Spain	187
Others	201
Belgium	342
Total	**5182**

	Total	793B	FR-94	Ital-02	QX	D1466	Other
Total	960	90	92	330	310	98	40
				Percentage detected (%)			
UK	293	14	1	71	0	9	5
France	165	10	26	18	38	2	6
Germany	151	5	9	3	65	17	1
Holland	171	10	9	12	53	14	2
Belgium	65	3	3	5	60	28	1
Spain	50	2	0	94	2	2	0
Other	65	9	26	18	28	2	17

Table 2. Strains of IBV detected.

Pan-European survey

A reverse transcriptase nested polymerase chain reaction (RT-PCR) was used to detect infectious bronchitis virus (IBV) in tracheal swabs and tissues, usually from flocks with clinical symptoms.

The IBV oligonucleotide primers used were common for all of the known strains of infectious bronchitis virus, spanning a region of the S1 gene.

The section of the gene within the primers contained the hypervariable region of the virus. This is the area that is considered to confer biological properties specific to each bronchitis subtype.

Products from positive samples were sequenced and these were then compared to published database sequences in order to identify the strain of IBV detected.

Between March 2002 and the end of 2007 Fort Dodge Animal Health tested a total of 5182 samples. The distribution is shown in Table 1.

Overall, the most common field strains detected were Italy-02 and QX-like, followed by 793B types and D1466.

Remarkable evolving situations are noticed in time and region, where Italy-02 is the most dominant field strain in the UK and Spain and QX is the most dominant strain by far now in Benelux, Germany and France.

More recently, a remarkable reappearance of the 'good old' D1466 has been noticed in Benelux, Germany and the UK, seemingly with a great tropism for laying birds.

Quarterly Index

Fort Dodge undertook the research using 5,000 flocks of poultry to develop a pan-European view of IB strains.

The study was initiated as part of the company's efforts to support the European poultry industry, both in monitoring the scale of the disease across the region and also in adopting appropriate preventive measures.

Building on this study, the company issues a quarterly update – the Quarterly Fort Dodge IB Index – to help the poultry industry access the latest disease risk assessment information and plan for appropriate control measures, including vaccination, based on the level of risk. ■