



IBV Qx SEROTYPES

(Following Dr Brice ROBINEAU communication at French Veterinary Medicine Academy)

Distribution

Infectious bronchitis coronaviruses are known to be the most frequent contaminant in poultry industry.

Pathology

It has been shown, since 1950, that despite their respiratory system affinity, these viruses are able to infect genital tract, causing eggs production drop or eggs abnormalities. Recently, kidney or intestine cells affinity has also be put in evidence.

The genetic diversity of avian respiratory coronaviruses is linked to their high mutation frequency. In this article, we will focus on the Qx variant strain of IBV, the aetiological agent of “false layers”.

Clinical signs

Qx strains are often associated to oviduct lesions. This phenomenon is known as “false layers” to design layers with normal secondary sexual characters but that are unable to lay due to their oviduct abnormalities. Since 1950, many authors have shown reproductive disorders associated to IBV. The conclusion of all these studies are :

- IBV strains are able to multiply in the genital tract of poult
- Lesions are more significant in birds with poor humoral passive immunity
- Broiler breeders are more susceptible than layer breeders

Diagnosis

Seroneutralization test was the most useful test to discriminate between the different serotypes of IBV. This methodology has put in evidence that some virus strains were not neutralized by the reference sera and might then spread in the field despite the use of vaccines. Nevertheless, this test is fastidious and is often restricted to reference laboratories.

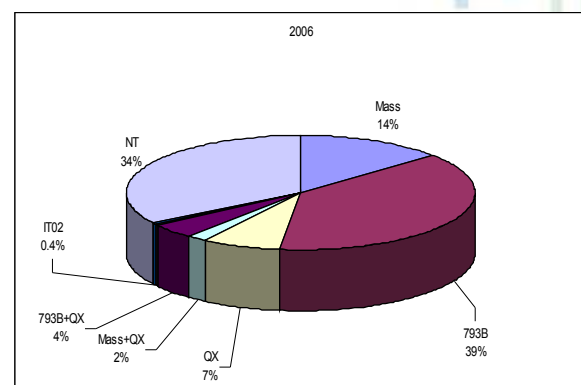
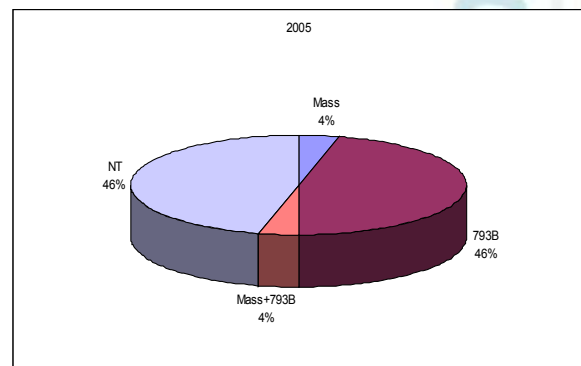
More recently, PCR tests have been developed to detect and identify avian coronaviruses. In this study, we will discuss the results obtained using the PCR methodology used in Labofarm laboratory. First, primers that are able to detect avian respiratory coronaviruses, based on the N protein gene, have been designed and validated in Labofarm. In case of positive result, specific primers (derived from Cavanagh) are used to discriminate the

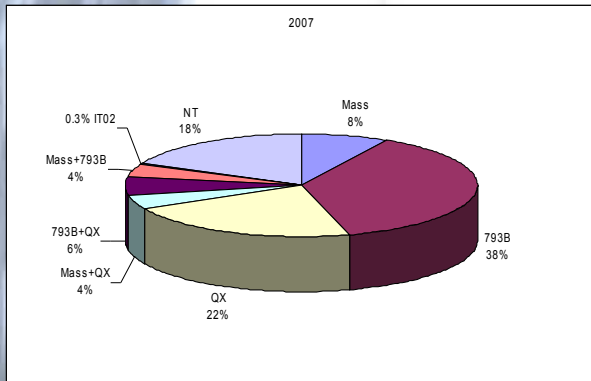
strains. Moreover, specific primers have been designed to identify Qx strains.

IBV serotypes course in France in the last 3 years

Samples coming from broilers and layers flocks were analysed using PCR in Labofarm. 45 to 55% of the samples were found positive regarding IBV: most of the sampling were realized following clinical signs of IBV at the farm or at necropsy, or following positive or doubtful serological test. It's important to notice that vaccine strains (especially in broilers) can be detected by PCR.

Results of the last 3 years have put in evidence the high prevalence of 793/B strains and the emergence of Qx strains. This last serotype is not included in any vaccine and is becoming more and more significant in France since 2004, and one of the predominant serotype in the field in 2007.





Prophylactic policy

Air borne contamination can be prevented using air filters, especially in “high value breeders” farms. At the production level, it seems difficult to prevent contamination, especially in high density poultry areas.

The lack of protective maternal antibodies might explain the rapid spread of the Qx virus in the north of Europe. The fact that the breeders were not immunized against this new variant make the issues very sensitive to the infection.

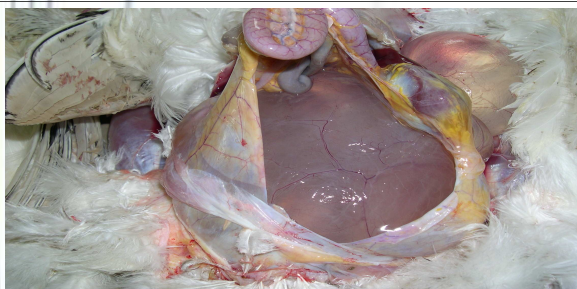
The opinion of the veterinarians in European countries is that the immunity of the breeders flocks has now been enhanced, leading to a decrease of clinical cases in the field.

Some trials have been conducted to associate Mass and 793/B strains vaccination. This has shown a good protective effect against early respiratory lesions but the protective effect on oviduct has not been well established.

Conclusion

The numerous pathological cases observed in layers has shown the increasing prevalence of IBV Qx serotype in western Europe. It seems evident that these viruses are responsible of important economical losses ; therefore discriminating diagnostic tests must be used to give producers informations for good sanitary and prophylactic measures.

[Order analysis](#)



False layers oviduct at necropsy : see distended abdominal cavity with distended oviduct.



Suspicious lesions following Qx IBV infection (26 weeks layers)