

## **Abstract**

### **IBDV detection in Northwestern Germany: Epidemiology and correlation to broiler performance**

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Infectious bursal disease virus (IBDV) leads to immunosuppression in young chickens and thus to high economic losses worldwide. Since recently, a comprehensive study proved the high prevalence of reassortant field IBD viruses in Europe.

The aim of this study was to conduct an epidemiological and phylogenetic investigation of the virus in broiler flocks in Northwest Germany and to connect these data to broiler performance. Samples were collected during routine veterinary monitoring from 53 broiler flocks. Flocks were vaccinated with live intermediate or intermediate plus vaccines between 12 to 18 days of life via drinking water. Animals have been sampled between day 24 and 43 being implemented in routine veterinary diagnostic work. Sampling included blood samples (n=20/flock) and bursae (at least 5/flock). Blood samples were analysed by using a commercial ELISA kit. Bursae were pooled and analysed by RT-PCR followed by sequencing. Results from the various screenings were compared with the performance data (weight at slaughter, daily weight gain, feed conversion ratio [FCR], condemnation rate, European Poultry Efficacy Factor [EPEF]) from the sampled cycles.

RT-PCR findings revealed about 53% negative bursa samples. Consequently, there are 47% positive samples, of which 48% were confirmed as field strains by sequencing. Vaccine strain was found in 25 % of total flocks. All field viruses are reassortant-strains belonging to genogroup A3B1 with 98% similarity to the reassortant genotype circulating in the Netherlands (reassortant strain D4320/6, genbank accession no. MN786768). Daily weight gain and weights at slaughter were lowest in the reassortant group compared to the vaccine group (66.5 g vs. 69.2 g and 2.59 kg vs. 2.71 kg). Additionally, the EPEF is lowest in the reassortant group, about 10 points compared to the vaccine group ( $p < 0.05$ ).

A recent study about the infections kinetics of the reassortant strain found the highest detection rate before 32 days of age. Taking the wide sampling window into consideration we can assume a higher prevalence of A3B1 virus infected flocks in the negative tested group (53% of flocks).

Strains which belong to the reassortant cluster lead to a subclinical form of Gumboro disease with broilers showing immunosuppression and loss of performance. Future vaccination programs should be adapted to the current epidemiological situation and might switch to in-ovo vaccination to improve animal welfare and health.