June 2006

poultry focus technical bulletin

business news for the poultry industry

intervet

Italian 02 – Intervet Has The Solution

Introduction

While Italian 02 might sound like one of those football tournaments where the English team was knocked out in the semis (again!), it is in fact a new strain of infectious bronchitis that was first isolated at the Italian Animal Health Institute in Forli, and named 4682/FO.

The new strain was first isolated from SPF eggs in 1999 and originated from a broiler flock exhibiting respiratory disease symptoms. It was sent to Russia for sequence analysis where it received the code name IT02.

The strain is now widespread throughout Europe and is associated with production related problems in broilers and layers, although it is still not clear whether it is a primary cause or acts as a secondary agent in association with other viruses or bacteria.

A laboratory-based challenge study has compared the efficacy of different IB vaccination programmes against the IT02 strain.

Diagram 1 - Poor Egg Quality

Experimental Design

The challenge study compared different vaccination protocols and timings in birds challenged with IT02 at either 36 or 56 days. A comparison was made with non-vaccinated, challenged, and non-vaccinated, unchallenged birds as per table 1.

Table 1 : Trial Protocol

Age of bird (days)	Treatment protocol				
	A	B	C	D	E
0	Nobilis IB Ma5	Nobilis IB Ma5 + Nobilis IB 4/91	Nobilis IB Ma5		
14	Nobilis IB 4/91		Nobilis IB 4/91		
36	IT02 challenge	IT02 challenge		IT02 challenge	
40	TOC	TOC		TOC	
43	TOC	TOC		TOC	TOC
56			IT02 challenge		
60			TOC		TOC
62			TOC		

TOC = tracheal organ culture

Each of the groups comprised of 20 specific pathogen free (SPF) day-old chicks, and these were housed in separate negative pressure isolators. All vaccines were administered via the oculonasal route.

Birds were challenged with a heavy dose ($10^{7.5}$ EID50) of the Italian 02 strain.

Ciliary activity was analysed in four euthanized birds from each group using the ciliostasis test on tracheal organ cultures (TOC) as reported by Cavanagh et al (1977). 10 tracheal rings from each chick were analysed using a low magnification microscope to allow a score to be calculated using the following scale:

0 – all cilia beating
1 – 75% cilia beating
2 – 50% of cilia beating
3 – 25% of cilia beating
4 – 0% cilia beating (100% ciliostasis)

The maximum possible ciliostasis score for each trachea was 40. A chick was considered protected against infection if the score was less than 20. For each group, a protection index was calculated using the following formula.

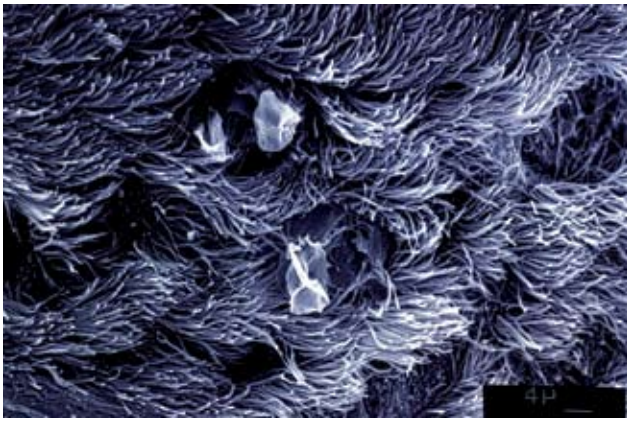


Diagram 2 - Healthy Trachea With Beating Cilia

Diagram 4 - Protection Index Calculation Formula

$$\left\{1 - \frac{\text{mean ciliostasis score for vaccinated/infected group}}{\text{mean ciliostasis score for challenged controls}}\right\} \times 100$$

The challenged controls were the birds in group D. A high Protection Index shows a better level of protection against challenge.

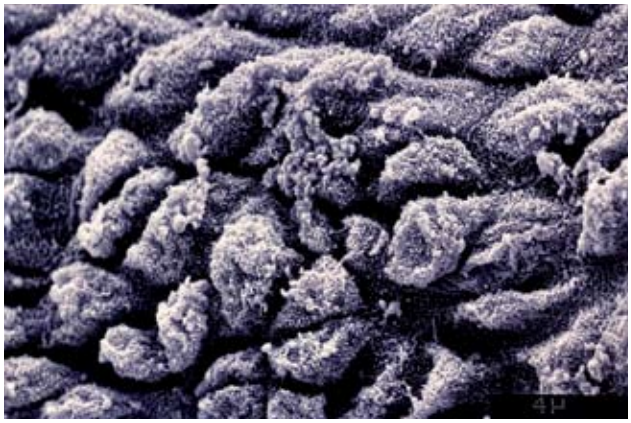
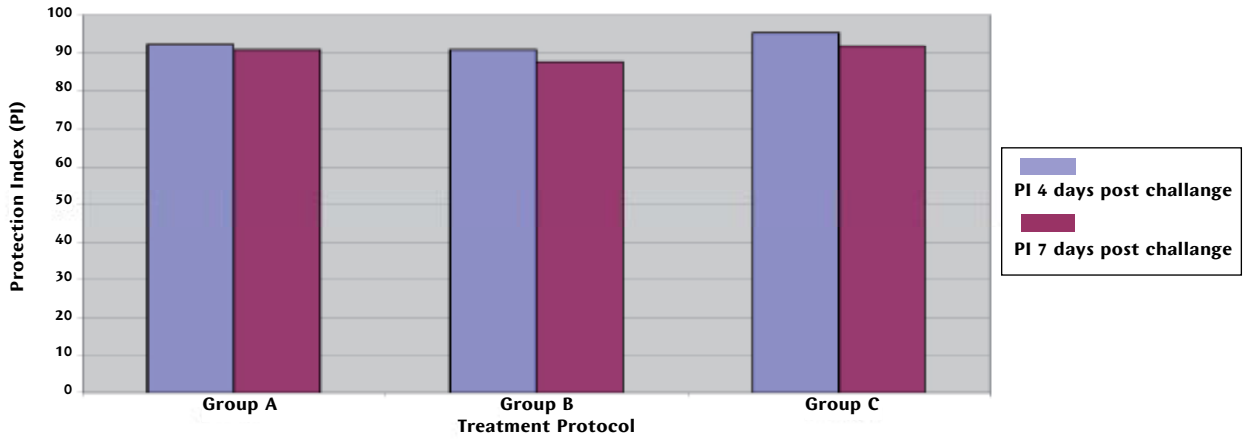


Diagram 3 - Trachea Post Heavy IB Challenge – Damaged Cilia

Results

The Protection Index values shown in diagram 5 were very high (›87) in all challenged, vaccinated groups, highlighting an excellent level of protection by all the schedules. It can be concluded, therefore, that all the vaccination programmes used in this laboratory trial induced protection against IT02 challenges at 36 and 56 days of age.

Diagram 5 – Protection Index For Vaccination Schedules



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Item Code: 039846
039846 • Aug2006/MP/2k