

**Effect of maternal (passive) antibody on Newcastle disease virus (NDV) replication: could deviation from the national standard operating procedures (SOPs) contribute to evolution of virus virulence?**

Greg Underwood\*, Clive Jackson†, Lyn Coleman‡, David De Laney\*

\*Bioproperties Pty Ltd, 36 Charter St. Ringwood VIC

†Biological Technology Transfer Pty Ltd, 2 Victory Ave, Camden NSW

‡ Inghams Enterprises, Dennis Rd., Springwood QLD

Vaccination with NDV-V4 commenced in 1998 following an outbreak of virulent ND in the Sydney basin, NSW (Kirkland, 2000). This resulted in the establishment of prophylactic vaccination programmes by the National ND management committee, which have been ratified through legislation in NSW, Vic, SA and Qld (due to commence 1<sup>st</sup> March, 2004).

Prior to the introduction of vaccination, natural exposure to V4-like field viruses resulted in low antibody (Ab) levels (3-5 Log<sub>2</sub>). However, introduction of inactivated vaccines elevated Ab levels to 9-11 Log<sub>2</sub>. While this ensured high levels of protection in those flocks given inactivated vaccine, the progeny (broilers) from these flocks have moved from having a 'low to negative' maternally-derived antibody (Mab) status at hatch, to moderate Mab status with levels exceeding 6 Log<sub>2</sub> at times.

Passively-acquired Mab can interfere with virus replication (Reviewed by Al-garib, 2003). However, some companies have shifted their vaccination strategies from the preferred national SOPs (7-14 days of age by drinking water in broiler flocks) to coarse-spray at 1 day of age in the hatchery. What effect might a change in Mab status have on vaccine virus replication in broiler flocks? Extrapolating from this, what should the target Mab level be in broilers at the time of vaccination for an optimal response?

This presentation reports results of laboratory and field trials investigating the serological response following vaccination of Mab-positive broilers with NDV-V4. Our findings question the benefit of administering a single day-old live vaccine to broiler chicks with high levels of Mab. They also question the benefit of inducing high (>6 Log<sub>2</sub>) levels of Ab in parent stock due to the effect on seroconversion after vaccination in progeny broilers, and the potential effect this may have on wild-type NDV replication.

1. Kirkland, P.D. (2000). Virulent Newcastle disease virus in Australia: in through the 'back door'. *Aust Vet J.* 78(5):331-3
2. Al-garib, S.O. (2003). Review of Newcastle Disease Virus with particular reference to immunity and vaccination. *Worl. Poult. Sci. J.* 59(2):185-200