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125 – Marek's disease IV

Vaccination

The first real success in the control of Marek's disease was the development of effective vaccines. Vaccination strategy is aimed at preventing early infection, slowing down the gaining of virulence by field strains, and providing superior immune responses. This is because over the years there has been a 'race' between field strains of the virus and vaccine strains to gain enhanced virulence. Once a situation had been stabilised the field viruses became more virulent and took the upper hand, only to lose this when the next and better vaccine was developed. Then this cycle was repeated.

Today, several different vaccines are used either on their own or in combination. Vaccines fall into three groups – low pathogenic serotype-1, naturally avirulent HVT, and serotype 2 – all of which are protective but to varying degrees. HVT is widely used because it is effective and relatively cheap. Bi-valent vaccines were introduced in the 1980s, for example HVT + SB1.

Administration of vaccines

Vaccines are usually administered subcutaneously or intramuscularly in the hatchery. In larger hatcheries automated in ovo vaccinators are used. When vaccinating in ovo this must be given by the amniotic or intra-embryo route. Correct thawing and reconstitution of Marek's disease vaccines is critical.

Efficacy of vaccination

An adequate dose is required for efficacy of vaccination. This is usually considered to be 2,000-6,000 plaque forming units (pfus), but it can be less for broilers. There is some debate as to whether a two dose regimen, for example at one and seven days, bestows any additional benefits and some authorities claim it is deleterious.

Maternal antibodies are often present in commercial chicks and these can reduce the effectiveness of cell-associated vaccines, but not counter their protective effect if enough pfus are used.

Most vaccination failures are due to improper vaccination or very early exposure of chicks to the disease. The strain of vaccine virus and field virus are important. HVT vaccine may be very effective against a low virulence virus field challenge but the same vaccine can be virtually useless against early challenges from highly virulent strains. Stresses can interfere with the level of vaccinal protection as can co-infections with Gumboro disease virus, reovirus and chicken anaemia agent.

Vaccination strategies

Marek's disease vaccines are usually effective and often protect >90% of birds in commercial operations.