FIELD EXPERIENCE WITH THE USE OF VACCINATION TO CONTROL SALMONELLA IN POULTRY

Ir. P.J.G. Oostenbach

Intervet Nederland B.V., P.O. Box 50, NL 5830 AB Boxmeer, The Netherlands

Introduction

The human health authorities and the poultry industry world-wide recognise the implications of Salmonella infections in humans and poultry. During the 1980s one particular type of Salmonella, *Salmonella enteritidis (S.e.)* became of major importance as it became a predominant source for human salmonellosis, originating from poultry products. Since 1994 Salenvac® is used as a major tool in Salmonella Control Programs. Recently additional information became available on the field use of this vaccine in layers and broiler breeders.

Materials and Methods

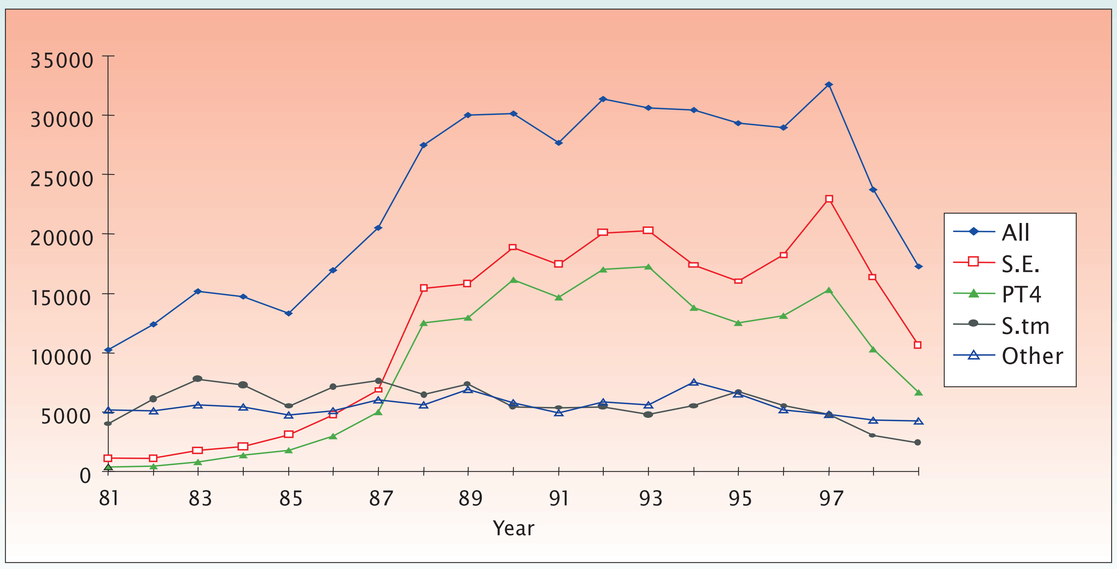
Salenvac® is an inactivated Salmonella enteritidis, phage type 4, vaccine. Vaccination with Salenvac® enables each individual bird to protect itself against a *S.e.*-infection. This protection is not restricted to *S.e.*, a broader protection against other serovars of the D-group is proven. The antibodies will be transferred to the offspring via the hatching egg and result in a protection during the first weeks of life. This is a crucial period, as it is known that then only a few S.e.-bacteria are sufficient for infection. The importance of protection during this period is furthermore underlined by the risk of an explosion of infection due to the logistic handling of hatching eggs and day old chickens before, during and after the incubation period.

Results

Layers in United Kingdom

Based on an extensive sampling of eggs followed by analysis for Salmonella-contamination the British Egg Industry Council implemented the use of vaccination in their Code of Practice for Lion Quality Eggs. After this decision a steady decrease in the amount of human Salmonellosis in England and Wales is observed in the data of the official monitoring. These data are summarised in figure 1

Figure 2. Trends in human Salmonellosis in England and Wales (ref: website Public Health Laboratory Services)



Broiler breeders in The Netherlands

From August 1995 until the first half of 1996 the effect of a *S.e.*-vaccination was examined by the Animal Health Service in a field trial. In this trial 1.100.000 broiler breeders with increased infection risk were vaccinated using Salenvac®. The control group consisted of 608 nonvaccinated flocks, hatched in the same period. Monitoring was performed according to the Dutch Salmonella Control Program. It is concluded that the proportion of *S.e.*-infected flocks with a risk of reinfection in the Salenvac® -vaccinated group (0%) was significantly lower (P = 0.02) than in the nonvaccinated group (18%)

Maternal immunity

Vaccination of broiler breeders can also have a protective value for the corresponding broilers during the first weeks of age as maternal antibodies are transmitted to the offspring. This effect is confirmed by a trial carried out at the Central Veterinary Laboratory in UK using day-old chickens from 57-week-old vaccinated parents or unvaccinated parents.

Discussion / Conclusions

Extensive field data confirm the efficacy of Salenvac®-vaccination as a major instrument to reduce the level of Salmonella-infections in poultry production. Vaccination will not only limit the spread of Salmonella at the level of the vaccinated birds themselves, but will also protect the offspring by maternal antibodies during the vulnerable, first weeks of life.
It is of utmost importance to realise that the efficacy of a Salmonella Control Program does not solely depend on the preventive use of vaccines. Simultaneous implementation of an adequate monitoring program, in case of observed contamination followed by corrective measures, and adequate biosecurity is essential.

R 179A00