Protection against experimental infection by *Salmonella* Gallinarum biovar Gallinarum using different live vaccination programs

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Correct control of Salmonella spp in long-living birds requires strict biosecurity measures, cleaning and desinfection and vaccination progam implementation. Herein, the efficacy of five vaccination programs was evaluated. Two live attenuated vaccines, Cevac® S. Gallinarum (SG9R strain; IM injection) and Cevac® Salmovac (Salmonella Enteritidis auxotrophic strain, oral gavage) were used as described. Group 1 (G1) was vaccinated with Salmonella Enteritidis auxotrophic strain 1 week-of-age (woa) and with Salmonella Gallinarum vaccine at 4 and 8 woa; G2 received Salmonella Enteritidis auxotrophic strain at 1 and 5 woa and SG9R at 8 and 12 woa; G3 Salmonella Enteritidis auxotrophic strain at 1 and 5 woa; G4 SG9R at 4 and 8 woa and G5 received Salmonella Enteritidis auxotrophic strain at 8 and 12 woa. G6 was not vaccinated (control). Each group was composed by 72 commercial brown layer-hens, tested negative for Salmonella before challenge. Groups were challenged with SG at 14 WOA.

SG protection against mortality was evident in vaccinated birds. No mortality caused by fowl typhoid was recorded in vaccinated groups G1, G2, G4 and G5 birds. In G3 (vaccinated only with Salmonella enteritidis auxotrophic strain) the onset of the disease and mortality was delayed, and mortality rate reached 42% during the 2 weeks observation period but was still significantly lower ($p<0.05$) than in control group, in which was recorded 87.5% mortality rate. As evaluated, primary vaccination with SE auxotrophic vaccine followed by booster dose with SG9R vaccine showed satisfactory efficacy against SG. With the results obtained, it can be ensured that there is no negative interference between the vaccination of Salmonella Enteritidis auxotrophic strain and Salmonella Gallinarum vaccine, showing 100% protection against the challenge of Salmonella Gallinarum when both vaccines were applied at different ages of life.

Key words: vaccination, salmonellosis, layer-hens, fowl typhoid, biosecurity