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Protection conferred by a subunit *Salmonella* vaccine against *Salmonella Infantis* in broiler chickens

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Abstract: *Salmonella* infection is a major cause of bacterial enteric illness in both humans and animals. This foodborne pathogen is often associated with poultry production and contaminated poultry products. Currently, vaccination is one of the main strategies to control *Salmonella* in commercial poultry farms avoiding the use of antimicrobials while improving food safety for consumers. We have previously tested the efficacy of a commercially available subunit vaccine (Biotech Vac *Salmonella*) to protect against *Salmonella enteritidis*. The aim of this study was to evaluate the performance of the same vaccine against *Salmonella infantis* (SI). 1 day old broiler chicks were randomly assigned to one of two treatment groups: a vaccinated group (n=22) or an unvaccinated group (n=27). Chickens in the vaccinated group were individually administered by oral gavage Biotech Vac *Salmonella* (0.2ml/bird) at day 3 and 17 of life and chickens in the unvaccinated group received PBS (0.2m/bird). At day 30 all birds were challenged by oral gavage with 10^9 CFU of a virulent strain of SI. Individual cloacal swab samples were taken at 4 and 8 days post-infection (dpi) to determine the excretion of SI. Briefly, samples were enriched overnight in tetrathionate broth and streaked on XLD agar plates for recovery of the challenge strain. Additionally, on the 8th dpi enumeration of *Salmonella* in cecal contents was performed (n=5/group). Results showed 4 dpi 21/27 (77%) and 8/22 (36%) birds respectively from unvaccinated and vaccinated groups were positive for SI; whereas at 8 dpi SI was recovered from 7/27 (26%) in the unvaccinated group and none in the vaccinated group 0/22 (0%). SI was isolated from 4/5 of the cecal samples in the unvaccinated birds (avg: $10^{2.4}$ CFU/gram) but no SI was recovered in the vaccinated group. Data indicates the vaccine was able to reduce the excretion and cecal colonization of SI. These results were similar to those obtained previously when chickens were challenged with SE, demonstrating the efficacy of the vaccine to control several serotypes of *Salmonella*, even when they belong to different serogroups. The vaccine combined with biosecurity management may be a useful tool to control *Salmonella* by reducing the infection in the birds and in the environment.