

Use of native plants from Argentina to control *Salmonella* Enteritidis in poultry



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INTRODUCTION

Salmonella infection is a major cause of bacterial enteric illness in both human and animals and poultry production is usually associated with the contamination of this food-borne pathogen. Among other measures, antimicrobials are traditionally used to control *Salmonella* which provides a selection pressure resulting in the preferential spread of resistant microorganisms, not only between *Salmonella* strains, but also among other species of *Enterobacteriaceae*. Therefore new alternatives to antimicrobials are needed to guarantee the safety for the consumers. The aim of this work was to assess the efficacy of two additives based on native plants from Argentina to diminish the excretion of *Salmonella* Enteritidis in an experimental infection model in broilers.

METHODS

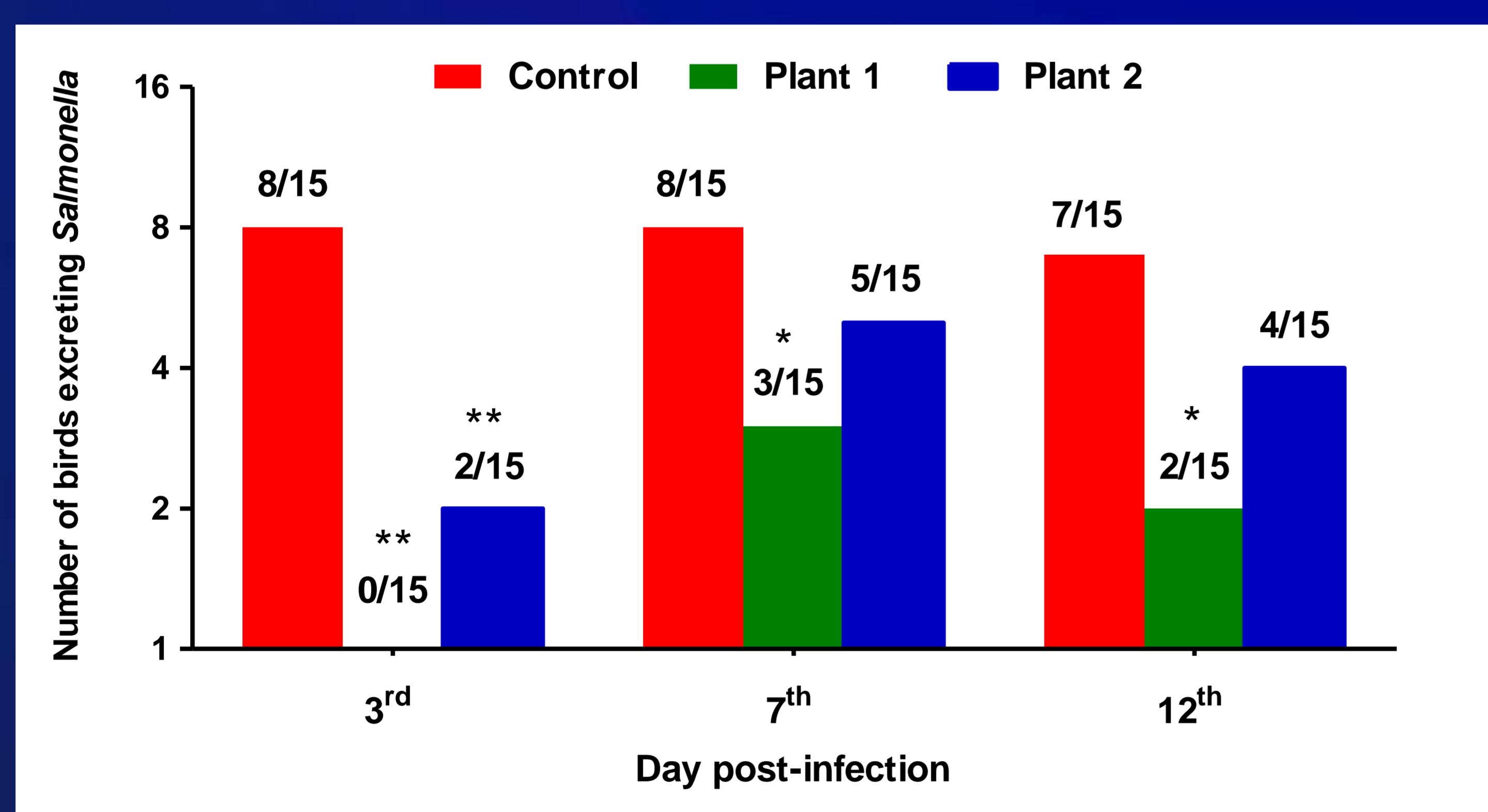
Birds & Treatments. Groups of 15 broiler chickens were fed from the first day of life onwards with regular feed added with 0.1% of desiccated and ground native plants from Argentina, belonging to the family *Leguminosae* (plant 1) and family *Anacardiaceae* (plant 2). A control group of birds was also included.

Challenge with *Salmonella* Enteritidis. At day 6, chickens were individually challenged by oral gavage with 10^7 colony-forming-units of an avianized *S. Enteritidis* strain.

Sampling. Individual samples were taken by cloacal swabbing at the 3rd, 7th and 12th day post-infection (dpi) to determine the excretion of the microorganism. Samples were enriched using tetrathionate broth and thereafter detection of the strain was done on XLD agar plates.



RESULTS



At the 3rd dpi, 8/15, 0/15 and 2/15 birds respectively from control, plant 1 and plant 2 groups were positive for *Salmonella*. At the 7th dpi, *Salmonella* was isolated from 8/15, 3/15 and 5/15 birds of control, plant 1 and plant 2 group. Finally, at the 12th dpi, 7/15, 2/15 and 4/15 of the birds respectively from control, Plant 1 and Plant 2 groups excreted the pathogen (Figure 1). **Both plants were effective to diminish the excretion of *Salmonella***, particularly during the first days after challenge; the effect of native Plant 1 from family *Leguminosae* was more evident.

Figure 1. Number of birds excreting *Salmonella* after challenge

CONCLUSIONS

In productive conditions, reduced excretion of *Salmonella* from infected animals at early stages is crucial to control contamination in the environment. Therefore, the use of these alternative natural products, combined with appropriate biosecurity management, may be a useful tool to diminish and avoid the use of antibiotics to control the pathogen in poultry and consequently to improve the food safety for the consumers.