



Efficacy of butyrate and heptanoate dietary additives against *Salmonella* in broilers

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1. INTRODUCTION

Salmonella is one of the most important cause of food poisoning in humans, mainly due to the consume of poultry meat or contaminated eggs (Rabsch et al., 2001). There are several strategies used to avoid the infection by *Salmonella* in poultry industry: vaccines, antibiotics, probiotics and acidifiers (Barrow, 1997). In previous experiments, protected sodium butyrate additives demonstrated a significant reduction of *Salmonella* infection in birds (Fernández-Rubio et al., 2009). In this context, a trial was conducted to evaluate the preventive effect of protected salts of organic acids against *S. Enteritidis* infection in broilers, on fecal shedding and in organ content.

2. MATERIAL AND METHODS

Animals: 160 Cobb 1-day-old males broiler chickens. The study lasted 41 d

Additives:

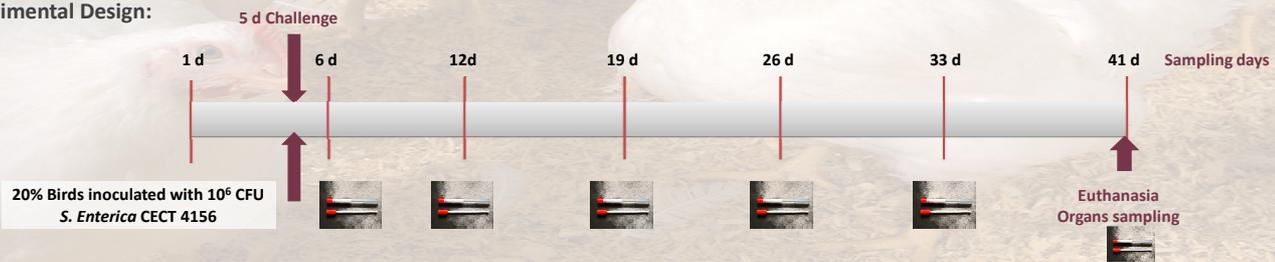
- **Gustor N'RGY** = 70% sodium butyrate protected with sodium salts of PFAD (palm fatty acids distillates)
- **Coated** = 30% sodium butyrate coated with vegetable fat
- **Hept'on** = 65% sodium heptanoate protected with hydrogenated PFAD

Measurements: Presence of *Salmonella* in faeces with cloacal swabs and microbial counts in organs of a 40% of birds in each treatment (crop, ceca, liver and spleen)

Treatments : 4 treatments (with 4 pens of 40 birds each)

- T1) Control feed
- T2) T1 + 1.3 kg/t of **Gustor N'RGY**
- T3) T1 + 3 kg/t of **Coated**
- T4) T1 + 1 kg/t of **Hept'on**

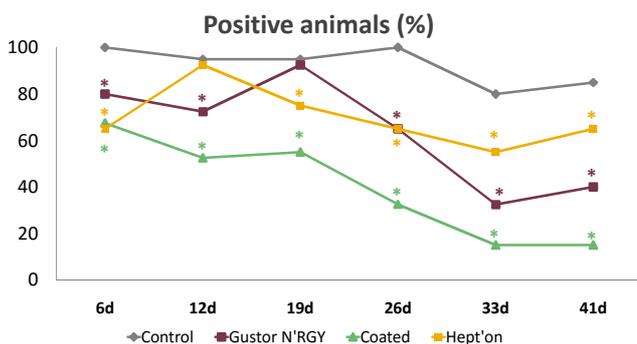
Experimental Design:



3. RESULTS

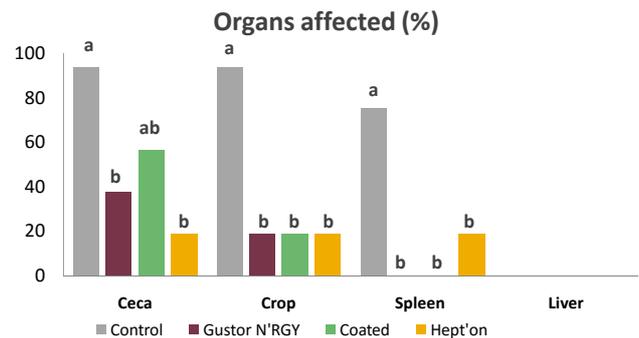
Presence of *Salmonella* in faeces and in different organs

Figure 1. % of positive animals to *Salmonella* in cloacal swabs



* Differences between treatment and Control (P<0.05)

Figure 2. % organs affected by *Salmonella*



1) Analysis of *Salmonella* in faeces showed a decrease in the percentage of positive plates in all supplemented treatments respect to the control at days 6, 26, 33 and 41. However Hept'on on d12 and Gustor N'RGY on d19 did not improve Control results.

2) No presence of *Salmonella* was detected in liver. In the other organs the highest values were found for Control group. In spleen, only birds fed the Control (75%) and the Hept'on (19%) showed *Salmonella* infection.

4. CONCLUSIONS

It can be concluded that butyrate and heptanoate feed additives reduce the presence of *Salmonella* in faeces and are able to prevent systemic infection in broilers experimentally challenged with *Salmonella* Enteritidis.