

# Comparison of two sources of encapsulated sodium butyrate on broilers performance

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## INTRODUCTION

Among the alternatives to antimicrobials as growth promoters, feed additives such as organic acids and their salts, have been widely used in recent years. Butyric acid, a short chain fatty acid (C4), has different properties, such as: strong antimicrobial activity against Gram-negative bacteria, effect on the intestinal epithelium being the first source of energy for the enterocytes and also, immunomodulatory effects. The presentation how this additive is supplemented in feed will condition its final effect. Butyric acid is generally available as salt (sodium or calcium) and as free salt or encapsulated by a vegetable fat matrix (coated) not only to facilitate the application in feed but also their efficacy

### OBJECTIVE:

The study was conducted to elucidate the effect of feed supplementation with two sources of encapsulated sodium butyrate (ESB, ~30% sodium butyrate encapsulated with vegetable fat) respect to a control diet, on broilers performance

## MATERIAL AND METHODS

### ANIMALS AND HOUSING

- 960 Ross308 one-day-old chicks
- 3 treatments
- N = 16 replicates (20 birds per replicate)
- Pellet feed and water were offered *ad libitum*

### Treatments:

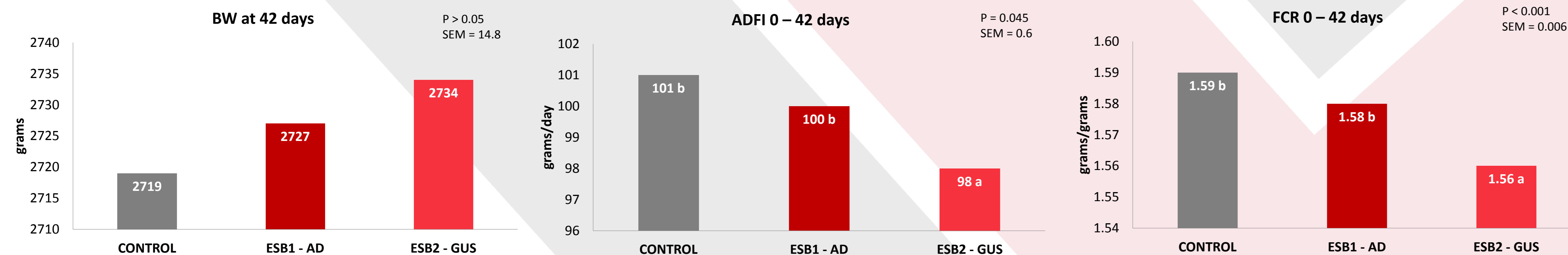
- **CONTROL (CON):** control diet
- **ESB 1 – AD:** CON + 2.19kg/tn of ESB from supplier 1
- **ESB 2 – GUS :** CON + 2.19kg/tn of ESB from supplier 2

### EXPERIMENTAL DESIGN

- Performance was recorded at 0, 21 and 42d at pen level
- Results presented were corrected by mortality
- Gut morphology from jejunum at 42 days was also recorded
- Data were analyzed with one-way ANOVA using the GLM procedure of SAS

## RESULTS

### PERFORMANCE PARAMETERS AT 42 DAYS



- Some numerical differences were observed between control and groups with ESB at 21d and at 41d
- From 0-21d, 22-42d and 0-42d average daily feed intake (ADFI, g/d) was significantly affected by treatment
- Feed conversion ratio (FCR) followed the same trend and was significantly improved by ESB2 – GUS at 21 and at 42 days

### JEJUNUM MORPHOLOGY AT 42 DAYS

Variable	CON	ESB1 – AD	ESB2 – GUS	SEM	P-VALUE
Villus height (VH), μm	1043	1039	989	49.9	0.698
Crypt depth(CD), μm	148	148	140	8.6	0.743
VH/CD ratio	7	7	7	0.6	0.881
Number of goblet cells	80	74	69	6.7	0.515
Mucous layer, μm	1225	1205	1156	53.1	0.640

The results showed no differences on gut morphology in jejunum

\*a,b different letters mean statistical differences (P<0.05)

## CONCLUSIONS

Even though birds from both ESB performed similar, those supplemented with ESB-GUS were more efficient than birds supplemented with ESB-AD. It might be explained likely to a better fat protection of the sodium butyrate.

