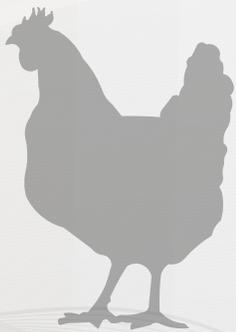


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**ABSTRACTS**  
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**SYMPOSIA AND ORAL SESSIONS**

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trol group ( $P < 0.05$ ). No pH differences were detected in other GI regions ( $P > 0.05$ ). Caecal butyric and propionic acid concentrations were higher in OA supplemented broilers than in control group birds ( $P < 0.0001$ ). Formic and acetic concentrations were not different between treatments ( $P > 0.05$ ). In conclusion, the formic and propionic acid-based products reduced distal digesta pH and increased some caecal SCFA concentrations in *E. coli* challenged broilers. Given decreased digesta pH and increased SCFAs are considered beneficial to gut health, these data demonstrate the ability of the organic acid products to promote GI health of broilers.

**Key Words:** Broiler, Organic acid, Digesta pH, Short chain fatty acid, Butyrate

**T140 A single feces index (LIAN1.1) as indicator of intestinal health in broilers** Diego Martínez<sup>1</sup>, Carlos Vilchez<sup>2</sup> <sup>1</sup>LIAN Development & Service; <sup>2</sup>Universidad Nacional Agraria La Molina

Data from three experiments (E1, E2, E3) on intestinal health with Cobb 500 broilers were used to test the sensitivity of a feces index as indicator of intestinal health. E1 and E2 had two and three treatments with eight replicates each, used 128 and 192 day-old male chicks placed on litter at a research facility, and were evaluated at 3 and 1 different ages, respectively; while E3, had two treatments with four replicates each, used 18,000 male/female birds placed in commercial facilities, and were evaluated at two different ages. Droppings were collected on absorbent papers placed on the litter in all the groups of birds and ages, and were evaluated with the following index: LIAN1.1 index =  $\sum S_i \times (25/n)$ ; where « $\sum S_i$ » indicates the summatory of the score (S) of each dropping sampled (i) in the same experimental unit, and “n” is the number of droppings sampled in the experimental unit. Score: 0, normal; 1, watery (if the diameter of humidity is at least twice the one of the dropping); 2, with undigested feed; 3, with desquamated mucosa; 4, bloody. The data was analyzed using a CRD and the GLM procedure of SAS to obtain the P-value of each variable for each treatment comparison at each age. The values obtained in all the variables were used to correlate the LIAN1.1 index to body weight, prevalence and intensity of intestinal lesions, and morphometry of lymphoid organs by the CORR procedure of SAS. The LIAN1.1 index showed significant correlations with body weight (-0.45;  $P = 0.0001$ ), density of intestinal lesions (0.32;  $P = 0.0258$ ), lesion score of *Eimeria acervulina* (0.29;  $P = 0.0441$ ) and percentage of birds positive to coccidia (0.33;  $P = 0.0142$ ), bursa diameter (0.33;  $P = 0.0225$ ) and thymus morphometric index (0.30;  $P = 0.0360$ ), and presented the lowest P-values among the 7 evaluated variables of feces quality in most of the cases (87.5%) when comparing treatments within each experiment and age. In conclusion, the LIAN1.1 index is sensitive to intestinal health, statistically stronger than other fecal variables, and can be used as a one-single grading index to compare different flocks.

**Key Words:** LIAN index, gut health, intestinal integrity, feces quality, broilers

**T141 Effect of protected sodium butyrate and nutrients concentration on broilers performance** Monica Puyalto\*, Pilar Honrubia, Juan Mallo NOREL S.A.

The study was conducted to compare the effect of sodium butyrate protected with PFAD sodium salt (GUSTOR N'RGY) with different diets on growth performance.

A 2 x 2 factorial design was used with two basal diets based on wheat, barley and soy: S (standard nutrient diet) and L (low nutrient diet) with a reduction of 60 Kcal/Kg of ME and 2.3% lower concentration of aminoacids; with or without addition of protected sodium butyrate at 1 kg/t.

A total of 200 Cobb one day old chickens were randomly allocated on floor to 4 treatments with 5 pens of 10 birds per treatment: SN (standard nutrient diet; no additive), SY (standard nutrient diet; protected butyrate), LN (low nutrient diet; no additive), LY (low nutrient diet; protected butyrate). Mash feeds and water were offered ad libitum.

BW, ADG, ADFI and FCR were recorded at 0, 21 and 42 d. Data were analyzed using the GLM procedure of SAS.

There were no statistical differences due to nutrient level in any growth phase.

The results regarding to the addition of protected butyrate showed that in the first 21 days animals achieved higher final BW with higher ADG than those without additive (0.807 Kg vs 0.773 Kg;  $P < 0.0121$  and 35.83 g/d vs 34.18 g/d;  $P < 0.0123$ ). Also, tended to present better FCR (1.271 vs 1.305;  $P < 0.0912$ ); FCR was only numerically different in the growing phase (21-42d) (1.758 vs 1.775) and in the total period (0-42d) (1.547 vs 1.579).

Looking at the interaction between additive and nutrient, treatment with low energy and butyrate (LY) had higher FBW (2.34<sup>a</sup> Kg;  $P < 0.0243$ ) and ADG (54.34<sup>a</sup> g/d;  $P < 0.0245$ ) than SN, SY and LN respectively (2.29<sup>ab</sup> Kg, 2.21<sup>b</sup> Kg and 2.19<sup>b</sup> Kg; 53.27<sup>ab</sup> g/d, 51.46<sup>b</sup> g/d and 51.04<sup>b</sup> g/d).

We can conclude that the addition of GUSTOR N'RGY improves performance results at early stages in broiler chickens. On the other hand, broilers feed with low nutrient diet (ME reduction of 60 Kcal/Kg and 2.3% lower concentration aminoacids) and 1 Kg/t of protected sodium butyrate obtained the same FBW than standard diet.

**Key Words:** sodium butyrate protected, energy, aminoacids

**T142 Effect of protected sodium butyrate and nutrients concentration on broilers gut health** Monica Puyalto, Pilar Honrubia, Cinta Sol, Juan Mallo\* NOREL S.A.

The study was conducted to compare the effect of sodium butyrate protected with PFAD sodium salt (GUSTOR N'RGY) with different diets on growth performance.

A 2 x 2 factorial design was used with two basal diets based on wheat, barley and soy: S (standard nutrient diet) and L (low nutrient diet) with a reduction of 60 Kcal/Kg of ME and 2.3% lower concentration of aminoacids; with or without addition of protected sodium butyrate at 1 kg/t.

A total of 200 Cobb one day old chickens were randomly allocated on floor to 4 treatments with 5 pens of 10 birds per treatment: SN (standard nutrient diet; no additive), SY (standard nutrient diet; protected butyrate), LN (low nutrient diet; no additive), LY (low nutrient diet; protected butyrate). Mash feeds and water were offered ad libitum.

At the end of the trial (42 days) chickens were euthanized and samples from the GIT were removed to analyze gut microflora (*Lactobacillus*, *E. Coli* and *Coliforms*), lactic acid and short chain fatty acids (SCFA) by HPLC. Moreover, duodenum, jejunum and ileum epithelium samples were obtained in order to determine their development status. Data were analyzed using the GLM procedure of SAS.

There were no differences in gut microflora in any part of GIT. Lactic acid was statistically higher in duodenum, jejunum and numerically higher in ileum in SY treatment compared to LN, LY and SN (33.84 vs 19.36, 11.53 and 9.83 for duodenum; 32.95 vs 13.89, 9.27 and 2.72 for jejunum, respectively). Lactic acid was not affected by the interaction of the treatments in caecum nor in colon, despite the fact that in general, animals fed additive showed higher values of lactic acid in all parts of GIT, except in caecum.

Total SCFA followed the same distribution as lactic acid in duodenum and ileum being the interaction statistically significant with the highest values for SY, followed by LN, LY and SN. The interaction was also significant in caecum where the highest value was found for LN, followed by SY, SN and LY (182.33, 152.49, 114.98 and 93.10 mM, respectively). The addition of additive to the diet increased numerically the values of total SCFA in all parts of GIT, except in caecum.

There were not differences in histomorphology at duodenum and ileum level, however, there were significant interactions in villus, mucosa and V:C ratio in jejunum, showing the highest values for LY treatment.