



WPC2016

THE XXV WORLD'S POULTRY CONGRESS

September 5-9, 2016
Beijing, China



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The Proceedings of XXV World's Poultry Congress 2016 — Abstracts



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Editors : Ning Yang, Ling Lian, Jiangxia Zheng,
Xiangping Liu and Changxin Wu

Hosted by the World's Poultry Science Association,
and organized under the auspices of the World's Poultry Science Association
and the Chinese Association of Animal Science and Veterinary Medicine.



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S1-0431 Understanding the relationship of dietary metabolizable energy and ideal protein in modern broilers. 1. growth, carcass, metabolites, and hormonal profile

Antonio Kalinowski¹, Christian Elwert², Behnam Saremi¹

1. Evonik Nutrition & Care GmbH, Hanau, Germany; 2. feedtest, Wettin-Löbejün, Germany

Corresponding author: antonio.kalinowski@evonik.com

The genetic improvement of broilers should lead us to constantly re-examine metabolizable energy (ME) and amino acids (AA) requirements of birds. Few recent studies and limitation in the design of many of the experiments have led to contradictory conclusions on the response of broilers to ME, AA and their interaction. In the present study, we evaluated this interaction at one growth stage (21 to 37d) addressing experimental shortfalls of previous investigations. A total of 2160 one-day-old Ross 308 male broilers were fed on commercial diets until 20 d of age. Thereafter, pellet corn-soybean meal based diets, were formulated based on 4 levels of true MEn (TMEn): 2875-, 3000-, 3125-, and 3250 kcal/kg by 3 levels of ideal protein (IP) (85%, 100%, and 115% of Evonik's AMINOChick®2.0). Each ME by IP combination had 9 replicates (20 birds/rep). TMEn, live performance, carcass parameters, and major blood metabolites and hormones were measured. Data were analyzed by 2-way ANOVA, using LSM method of JMP®. No interactions of ME by AA were found for any of the live-, carcass-, and metabolic parameters. Significant effects of dietary ME on feed intake (FI) and FCR were observed ($P < .0001$), with the lowest FI and best FCR recorded with birds fed 3250 kcal/kg TMEn. IP also had an effect on FI ($P < .0001$), however, birds fed levels beyond 100% showed no significant change in FI, though significant improvement in FCR ($P < .0001$). This effect was further supported by significant improvements ($P < .0001$) in carcass and breast meat yield, with the highest yield recorded with the 115% IP. On the contrary increasing ME lead to reduction in breast meat yield ($P < .0001$). Blood concentrations of non-esterified fatty acids showed a significant response to increasing ME ($P < .05$) while IP levels influenced T3 and T4 ($P < .05$). Findings suggest under commercial nutritional dietary ranges broilers respond independently to ME and IP, and opportunities exist in increasing current recommendations of IP.

Keywords: broilers, metabolizable energy, amino acids, ideal protein

S1-0432 Efficacy of butyrate and heptanoate dietary additives against Salmonella in broilers

Mónica Puyalto¹, Cinta Sol¹, Pilar Honrubia¹, Yolanda Pérez³, Rafael Balaña-Fouce³, María Jesús Villamide², Juan José Mallo¹

1. NOREL S.A., Jesús Aprendiz, 19, 28007, Madrid, Spain; 2. Dpt. Ciencias Biomédicas. Universidad de León, Facultad de Veterinaria, 24071, León, Spain; 3. Dpt. Producción Agraria. ETSI Agrónomos, Universidad Politécnica de Madrid, 28040 Madrid, Spain

Corresponding author: mpuyalto@norel.net

This trial evaluated the preventive effect of protected salts of organic acids against a *S. Enteritidis* infection. The effects were measured on fecal shedding and in organ contents, in broilers challenged with *S. Enteritidis*. A total of 160 one day old chickens were divided in four dietary treatments, with four pens of 40 birds each. Animal was the experimental unit. Treatments were: T1) Control feed, T2) T1 with 1.3 kg/t of Gustor N' RGY (70% sodium butyrate (NaB) protected with sodium salts of PFAD (palm fatty acids distillates)), T3) T1 with 3 kg/t of 30% NaB coated with vegetable fat, and T4) T1 with 1 kg/t of 65% sodium heptanoate protected with hydrogenated PFAD. At 5th day, 20% of the animals in each group were orally inoculated with 106 CFU of *S. Enteritidis* and the presence in faeces was evaluated in all animals with cloacal swaps on days 6, 12, 19, 26, 33 and 41. The animals were euthanised on d41, and crop, ceca, liver and spleen were sampled for microbiological counts. Analysis of *Salmonella* in faeces showed a decrease in the percentage of positive plates (from 85 to 40%, $P < 0.05$) in supplemented treatments respect to the control at d41. However T4 on d12 and T2 on d19 did not improve T1 results. No presence of *Salmonella* was detected in liver. However, in the other organs the highest values were found for control group. In ceca, results were 94, 38, 56 and 19%, for T1, T2, T3 and T4, respectively ($P < 0.05$). In crop results were 94, 19, 19 and 19%, for T1, T2, T3 and T4 ($P < 0.05$). In spleen, only birds fed the control (75%) and the T4 feed (19%) showed *Salmonella* infection. Moreover, there was a tendency to prevent spleen infection between butyrate vs heptanoate. It can be concluded that butyrate and heptanoate feed additives reduce the presence of *Salmonella* in feces and are able to prevent systemic infection in broilers experimentally challenged with *S. Enteritidis*.

Keywords: feed additives, butyrate, broilers, salmonella enteritidis