



## ASPA 25th Congress Book of Abstract

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# **ASPA 25<sup>th</sup> Congress**

## ***Monopoli (BARI - ITALY), June 13-16, 2023***

**#ASPA2023**

### **ASPA 25<sup>th</sup> Congress Book of Abstract**

**The 25th congress of the Animal Science and Production Association**

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**Monopoli (BARI - ITALY),  
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respectively). Glycolytic muscle had the same PUFA profile in all the experimental groups whereas oxidative muscles of OH chickens showed higher levels of n-3 HUFA and ALA than OL ( $p > 0.05$ ). The lack of significance was probably due to the consumption of these FA for the high activity of OH chickens. In conclusion, the *Activity index* could be a *post mortem* marker of kinetic activity in a given genotype also assessing the adaptability to ERS and giving indication of n-3HUFA metabolism.

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## O109

### Microalgae as alternative protein source to soybean: effects on the main quality traits of broiler breast meat

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The sustainability concerns regarding the increasing request for animal proteins along with the massive production of conventional feedstuffs has elicited the necessity to find environmentally sustainable protein sources. Among them, microalgae are a promising feed protein ingredient whose production is characterized by a lower environmental footprint compared to conventional feedstuffs. This study aimed at evaluating the effects of the inclusion of dehydrated microalgae protein meal (MPM; *Arthrospira spp.*) in broiler diets, as partial replacement for soybean, on the main breast meat quality traits. A total of 1000 broilers (Ross 308, males) were divided into 5 groups according to both MPM dietary dosage (3 and 6%) and administration period (finishing-F: 29–41 d and growing+finishing-GF =14–41 d): commercial soybean-based diet (CON), F3 (3%, 29–41 d), F6 (6%, 29–41 d), GF3 (3%, 14–41 d) and GF6 (6%, 14–41 d). At 41 d, 15 carcasses/group were selected for the evaluation of meat pH, color, drip and cooking losses, shear force, lipid and protein oxidation, while plasma amino acids content was assessed by <sup>1</sup>H-Nuclear Magnetic Resonance. Data were analyzed using the One-Way ANOVA option of the GLM procedure of SAS software and means were separated by Tukey's HSD test at a level of  $p < 0.05$ . Results showed that, regardless of the dosage and feeding period, the use of MPM significantly changed ( $p \leq 0.001$ ) meat color parameters, with a special reference to b\* which was found more than tripled in the group fed the highest dosage of MPM and for the longest period compared to CON. Feeding MPM-supplemented diets did not alter

meat water holding capacity and shear force, with the only exception being drip loss, which was significantly reduced in GF6 group compared to CON ( $p < 0.01$ ). The inclusion of MPM in broilers diets did not affect the oxidative status of chicken meat, regardless of the dosage and the duration of inclusion. The dietary use of MPM significantly ( $p < 0.01$ ) reduced plasma levels of histidine, arginine and creatine, while did not affect the main markers of *in vivo* energy metabolism, as also confirmed by the similar meat pH<sub>u</sub> values observed among experimental groups. In conclusion, no major changes on *in vivo* energy metabolism and meat quality were observed, except for yellowness which was greatly increased in meat from broilers fed MPM. Thus, MPM can represent an effective strategy to increase skin and meat pigmentation by means of a sustainable feed source.

## O578

### Feed restriction strategies in growing rabbits fed post-weaning diets with different protein levels

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The present study evaluated the effects of the feeding system (AL: *ad libitum* vs. R1: monophasic feed restriction vs. R2: biphasic feed restriction) and the dietary crude protein (CP) level (HP: 16% CP vs. LP: 14% CP) on growth performance and slaughter yield of 336 crossbred growing rabbits reared from weaning to slaughtering (33–78 d of age) in 48 collective pens (7 rabbits/pen; 8 pen/group). The access time to feeders decreased from 16 to 9 h/d in the first week of trial in both R groups; it was 8 h/d given in a single slot (R1 group) or in two slots (R2 group: 4 h + 4 h separated by 4 h without feed access) during the 2nd and 3rd week. Then, access time increased to 12 h/d during the 4th week and, thereafter, it was 12 h/d in a single slot of access for both R groups until the end of the trial. The HP and LP diets were administered from 33 to 60 d of age, then the same fattening diet (14% CP) was provided to all groups. Data were analysed by ANOVA using PROC GLM procedure of SAS software. In the first period (33–61 d), both R groups showed lower daily weight gain (DWG) and feed intake (DFI) and better feed conversion (FC) compared to AL group ( $p < 0.001$ ). In the second period (61–78 d), R rabbits maintained a lower DFI ( $p = 0.02$ ) compared to AL rabbits but showed a higher DWG ( $p < 0.001$ ) and a better FC ( $p < 0.001$ ). At the end of the trial, there were no differences on growth performance among groups, whereas both R systems improved FC compared to AL one ( $p < 0.001$ ). The R2 group had better FC than R1 during the 2nd and 3rd week. However, the differences

between R1 and R2 groups disappeared in the following weeks with the return to the monophasic system. At slaughtering, R rabbits had decreased carcass yield ( $p < 0.001$ ) compared to the AL ones. The use of LP diet decreased DWG ( $p < 0.001$ ) and increased FC ( $p < 0.001$ ) in the first period. However, in the second period, LP rabbits achieved a higher DWG ( $p = 0.01$ ) and a better FC ( $p = 0.01$ ) compared to HP rabbits. At the end of the trial, LP and HP rabbits showed similar growth performance and slaughter results. Finally, no significant interaction was found between feeding system and dietary protein level. In conclusion, the application of feed restriction systems improved rabbit feed efficiency but significantly decreased slaughter yield compared to the AL system. The dietary CP level can be reduced until 14% in the post-weaning diets without negative effects on growth performance and slaughter yield.

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**O581**

## In vitro efficacy of phyto-L against entero-Pathogenic *Escherichia coli* strains of rabbits from industrial farms

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Colibacillosis is one of the most common diseases in rabbit farms. It more frequently occurs in post-weaning rabbits, and it is due to the proliferation of Entero-pathogenic *Escherichia coli* (EPEC) in the ileocecal contents, resulting in weight loss, diarrhea, mortality and economic losses. The frequent use of antimicrobials occurred until recently to treat and prevent the disease in farms lead to the increase of the risk of the onset of antimicrobial resistance (AMR) and the selection of multidrug-resistant (MDR) bacteria. Therefore, the interest in natural substances as alternative treatment has increased in the scientific community. The garlic (*Allium sativum*) has many properties, such as antimicrobial, anti-inflammatory, antioxidant, immunomodulatory activities. The aim of this study was to evaluate the *in vitro* antimicrobial efficacy of Phyto-L (Pro Tech s.r.l.), a commercial product containing garlic, against *E. coli* strains isolated from rabbits coming from 19 farms. The Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC) of Phyto-L were evaluated. One hundred and eight strains of *E. coli* were tested. Bacterial suspensions with charge of  $10^8$  CFU/mL, corresponding to those found in pathologic conditions in rabbit gut, were prepared and tested with different concentrations (2%, 1%, 0.5%,

0.25%, 0.125%, 0.06%, 0.03, 0.015%) of Phyto-L. For each strain, the MIC and the higher concentrations were examined by plating the corresponding bacterial suspensions on Tryptic Soy agar (TSA) without Phyto-L, to assess the MBC values.

MIC of the tested strains corresponded to 0.125% (34/108–31.5%), 0.25% (73/108–67.6%) and 0.5% (1/108–0.9%). MBC was 0.125% (15/108–13.8%), 0.25% (49/108–44.9%), 0.5% (8/108–7.3%), 1% (19/108–17.4%), 2% (9/108–8.3%) and higher than 2% for 9 (8.3%) strains.

The data highlight the greater bacteriostatic activity of Phyto-L than the bactericidal effect against EPEC strains from rabbits. *In field* application, Phyto-L should be used to prevent the enteritis due to EPEC in rabbit farms. Therefore, further investigations are in progress testing bacterial charges of  $10^4$ – $10^5$  CFU/mL, which correspond to those usually found per gr of the intestinal content of rabbits in physiological conditions, to assess the possibility to use lower doses of Phyto-L *in field* application.

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**O574**

## Influence of rearing system and hen age on fatty acid composition of egg yolk

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In recent years, the use of cages in egg production has decreased and free-range system has increased, driven by the societal sensitivity for animal welfare. The aim of the study was to evaluate the effect of housing system (cage, C vs free-range, FR) and hens age on total lipid, cholesterol and fatty acid composition of egg yolk. Eggs were collected from Lohmann Brown Classic hens, after the 68th week of age every two weeks (at 70th, 72th and 74th week) for both housing systems (C and FR). The production technology was in accordance with the technological standards for this type of laying hens. Total lipid, cholesterol and fatty acid (FA) composition of 15 eggs/age/system were determined. Data were analyzed by GLM where housing system and hen age were the main factors. Differences among the means were determined with Scheffé's test. Total lipid (from 32.04 to 33.45%) and cholesterol (from 9.20 to 9.98 mg/g) contents of egg yolk were not affected ( $p > 0.05$ ) by both factors. Housing system had a significant effect on the single fatty acids ( $p < 0.01$ ). Egg yolk from FR group showed similar total saturated fatty acid (SFA) content, lower ( $p < 0.01$ ) monounsaturated fatty acids (–6.3%; MUFA) and higher ( $p < 0.01$ ) polyunsaturated fatty acids (+6.5%; PUFA) of both n-3 and n-6 series compared to that of C. From the