



ASPA 24th Congress Book of Abstract

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ASPA 24th Congress

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commercial concentrate while another group (SNS, $n = 10$) received the same diet where 10% olive pomace partially and totally replaced corn and wheat bran, respectively. Diets were administered at a rate of 2.2 kg/head/day. The dietary treatment did not affect ($p > .05$) growth performance. Specifically, the two groups had a comparable average daily gain (0.51 vs. 0.58 kg/d, for CTRL and SNS, respectively) and final body weight (144 vs. 158 kg, for CTRL and SNS, respectively). Similarly, the pH at 45 min and 24 h after slaughter did not differ ($p > .05$) between groups. Conversely, SNS pigs had a greater backfat thickness (3.02 vs. 2.38 cm, $p = .010$). Regarding meat colour parameters, dietary SNS increased a^* (11.9 vs. 10.8, $p \leq .001$), b^* (4.01 vs. 3.10, $p = .005$) and C^* (12.7 vs. 11.3, $p \leq .001$), while reduce H^* (0.23 vs. 0.27, $p = .043$). Dietary olive pomace did not alter ($p > .05$) meat lipid oxidation (2-thiobarbituric acid reactive substances, TBARS), however, the percentage of Met-Myoglobin was higher in the CTRL meat ($p = .002$). Regarding meat fatty acids, dietary olive pomace reduced ($p \leq .05$) total PUFA (138.2 vs. 165.8 mg/kg meat). Interestingly, this reduction mostly involved n-6 fatty acids and could be responsible for the lower peroxidability index (PI) in SNS meat (190.9 vs. 237.20, $p = .012$). Olive pomace administration affected ($p \leq .05$) backfat fatty acids by reducing the concentration of MUFA and PUFA. Surprisingly, 18:1c9 was lower ($p \leq .05$) in the SNS backfat. Moreover, 18:2c9c12, 18:3c9c12c15 and their elongation products were higher in the CTRL group, probably increasing the PI in CTRL meat ($p = .001$). Concluding, dietary olive pomace did not affect the performance of finishing pigs and limited effects were reported on meat fatty acids, while it improved meat colour. Finally, SNS meat and backfat had lower PI, which may be an advantage considering that heavy pig meat is used for seasoned products fabrication.

O102

Linseed supplementation in the diet of fattening pigs: effect on the fatty acid profile of different meat cuts

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Dietary fat supplementation contributes to the fatty acids (FA) profile in pig fat and meat. Several works have demonstrated the beneficial effect of extruded linseed supplementation on FA composition, mainly for an increase of n-3 polyunsaturated FA (PUFA), particularly the alfa-linolenic acid (ALA). Pork is one of the very favourite types of meat, though rich in saturated FA,

which entails a certain health risk. Thus, a modification of the FA profile is necessary to increase the health properties.

The aim of the work was to evaluate the effect of extruded linseed supplementation on the FA profile in 5 different swine meat cuts, improving the nutraceutical properties.

A total of 60 pigs (Large White) were divided into two groups (30 animals per group) fed with two different diets: a control diet (C) and an experimental diet (L) with the addition of extruded linseed (8%). The pigs were housed in an experimental stable in 6 pens of 10 animals (3 pens per group). Each subject was included in the experiment at the age of 125 days (mean weight of 66 ± 7 kg) and slaughtered at 110 ± 8 kg on average. The cuts collected were: subcutaneous dorsal fat (S), bacon (B), Boston shoulder for salami (Bs), ham lean part (Hl) and ham fatty part (Hf). FA profile was obtained by GC-FID, whereas dry matter, fat, protein, carbohydrate and ash were measured by AOAC methods. Data were analysed by a linear model for each meat cut, considering the fixed effect of diet (C and L).

L diet was related to a significant decrease ($p < .001$) of fat content in Hf (-6%) and B (-11%), while no differences were observed for the other cuts. The linseed supplementation increased the level ($p < .001$) of n-3 PUFA (approx. 9-fold for all cuts), especially ALA which represented the main FA in linseed. The increase in n-3 PUFA led to a significant reduction ($p < .001$) in the n-6/n-3 from 20 to 2.5, increasing the properties to prevent cardiovascular diseases. In the fatty cuts (S, B and Hf) of L group pigs, the level of n-3 PUFA exceeded the thresholds set by EFSA (2010) for obtaining the claim 'product rich in fatty acids Omega 3'. On the contrary, due to the low level of fat, the lean cuts (Hl and Bs) did not reach the threshold of n-3 PUFA required to obtain the claim. The results showed that a diet with 8% extruded linseed improved the quality of pork meat from a nutraceutical point of view. Indeed, the increase of n-3 PUFA allowed obtaining the claim, thus increasing the economic value of the product.

O103

Effect of dietary *Hermetia illucens* larvae meal on triglyceride composition of sea bream filets

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Administering *Hermetia illucens* meal (HIM) to marine finfish can be considered a strategy to increase aquaculture

sustainability. However, terrestrial insects contain little amounts of polyunsaturated fatty acids (PUFA) that could represent a limit in fish and human nutrition. Nevertheless, fatty acids distribution inside triglycerides (TGs) plays a pivotal role in fat digestion and absorption, due to the specificity of lipase activity on position sn-1 and sn-3. Since fatty acids in the sn-2 position are the first to be absorbed, our purpose was to analyze the FA profile of total lipids, triglycerides and their sn-2 position in fillets from gilthead sea bream (*Sparus aurata* L) fed HIM. Three-hundred and sixty gilthead sea bream were randomly divided into 12 tanks with four isoenergetic, isolipidic and isoproteic diets. Briefly, HI larvae meals were included at 9.2% (HI9), 18.4% (HI18), and 27.6% (HI27) in order to substitute graded levels of the FM contained in a control diet (HI0) which amount 30%. After 120 days of rearing, 10 fish for each diet were slaughtered and the fillet FA profile was deepened. The total lipid content was not affected by the diet. Considering the total lipid FA profile, in HI18 and HI27 fillets C12:0, C14:0, C16:1n-7, C18:1n-9 and the total saturated FA (SFA) content significantly increased while PUFAn-3 content lowered ($p < .01$). The triglyceride contents in the C, H25, HI18 and HI27 fillets were 2.65 ± 0.24 , 3.07 ± 0.49 , 3.28 ± 0.20 , and 2.95 ± 0.21 g/100 g muscle, respectively. HI18 and HI27 fillets contained in their TGs higher level of C16:1n-9 and SFA ($p < .05$) than C and HI9 fillets. In the same groups, a slight but significant decrease in PUFAn-3 content was observed. Noticeably, the FA profile of the TG sn-2 position remained almost unaffected by the inclusion of HI in the diet. Indeed, only some SFAs, namely C12:0 and C14:0, significantly increased ($p < .01$) in the HI27 group whilst PUFAn-3 content did not vary. In conclusion, the effects observed on lipid FAs confirmed previous data on HI inclusion in aquafeeds for finfish. However, the changes appeared limited to the sn-1 and sn-3 position of TGs, thus highlighting the resilience of the sn-2 FA profile. Finally, this study evidenced that the inclusion of HI in the diet did not impair the presence of fatty acids important for human nutrition, as PUFAn-3 in the sn-2 position of triglycerides, increasing the chances of being better assimilated and absorbed.

O104

Alternative protein sources in aquafeeds for rainbow trout: overview on fillet quality modifications

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Aquaculture has been facing the major challenge to answer the growing demand for fish to feed the world population, mitigating its pressure on finite natural resources. Since aquaculture highly depends on marine and vegetable materials as ingredients for aquafeeds, namely fishmeal (FM) and soybean meal (SBM),

many studies aimed to design a sustainable and eco-friendly fish production chain by cutting down FM and SBM incorporation rate in aquafeed. Novel ingredients, such as insect meals or poultry by-products, are the most promising strategies for the aquaculture sector. Nevertheless, several impairments of fish fillet quality, such as the decreased content in polyunsaturated fatty acid, are the main weaknesses which need to be minimised while proposing new ingredients for feed formulation.

The present trial aimed to compare the use of poultry by-products (P60) and *Hermetia illucens* larvae meal (H60), as single or in the blend (H10P50), to substitute plant protein in a vegetable-rich based diets (CV) for rainbow trout (*Oncorhynchus mykiss*). After 27 weeks of the feeding trial, 27 fish for each group were slaughtered and fillet yield, color (lightness, L*; redness index, a*; yellowness index, b*), hardness, and fatty acid (FA) profile of the fish fillets were analysed. A consumer test with 80 people was assessed to evaluate liking and intention of re-consumption. Fillets yield and hardness were unaffected by the dietary treatment. Fillet L* value was significantly higher in H10P50 than CV, being 49.08 and 46.95, respectively. P60 and H60 fillets showed intermediate L* values. Diet did not affect a* and b* values. Noticeably, the formulated diets were able to mitigate the differences in fillet FA profiles, in particular, the addition of animal-derived protein did not increase saturated FAs and the n-3/n-6 ratio was equal to 1.4. Consumers' liked trout fillets regardless of the dietary treatment, however, the H60 group was described as more fibrous and less juicy than the others. Despite this, 78% of respondents declared their intention to re-consume the product. In conclusion, considering fish fillet quality characteristics, the formulated diets were suitable and valuable alternatives to reduce plant-protein ingredients in feed for rainbow trout. Improving the n-3/n-6 ratio remains a priority to support human health that deserves further investigations.

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O105

Productive performance and meat characteristics of kids fed anthocyanes

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The purpose of the study was to evaluate the in vivo performance and the meat characteristics of suckling kids fed a red-orange