ASPA 24th Congress Book of Abstract

Roberto Mantovani & Alessio Cecchinato

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Italian Journal of Animal Science

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Padova, September 21-24, 2021

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

Giuseppe Conte\textsuperscript{a}, Eleonora Longo\textsuperscript{b}, Sara Tinagli\textsuperscript{b}, Roxana Elena Amarie\textsuperscript{a}, Monica Tognocchi\textsuperscript{b}

\textsuperscript{a}Dipartimento di Scienze Agrarie, Alimentari e Agro-ambientali, University of Pisa (UNIPI), Pisa, Italy
\textsuperscript{b}Centro Interdipartimentale di Ricerche Agro-ambientali, “E. Acanzi”, University of Pisa (UNIPI), San Piero a Grado, Italy

Contact giuseppe.conte@unipi.it

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 alpha-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.

Effect of dietary \textit{Hermetia illucens} larvae meal on triglyceride composition of sea bream fillets

Lina Fernanda Pulido Rodriguez\textsuperscript{a}, Giulia Secci\textsuperscript{b}, Francesco Ga\textsuperscript{a}, Giulia Marichchilo\textsuperscript{b}, Giuliana Parisi\textsuperscript{b}

\textsuperscript{a} Dipartimento di Scienze e Tecnologie Agrarie, Alimentari, Ambientali e Forestali, University of Florence, Firenze, Italy
\textsuperscript{b} Istituto di Scienze delle Produzioni Alimentari, Consiglio Nazionale delle Ricerche, CNR, Grugliasco, Italy
\textsuperscript{b} Istituto per le Risorse Biologiche e le Biotecnologie Marine, Consiglio Nazionale delle Ricerche, CNR, Messina, Italy

Contact linafernanda.pulidorodriguez@unifi.it

Administering \textit{Hermetia illucens} meal (HIM) to marine finfish can be considered a strategy to increase aquaculture
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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