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ASPA 25th Congress Book of Abstract

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ASPA 26th Congress

Turin (ITALY), June 17 –20, 2025

Guest Editors

Giustino Gaspa, Joana Maria Venda Da Graca Nery, Laura Gasco & Manuela Renna*

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ASPA 26th Congress

Turin (ITALY), June 17–20, 2025

#ASPA2025

ASPA 26th Congress Book of Abstract

The 26th Congress of the Animal Science and Production Association

"Innovations in animal sciences: shaping the way for a sustainable future" is under patronage of Loghi Patrocini

Turin (ITALY),

June 17 –20, 2025

Venue

Campus SAMEV (Scuola di Agraria e medicina Veterinaria)
Largo Braccini 2, Grugliasco (TO)– ITALY

noticeable effect on texture parameters. Since fish muscles undergo excessive and rapid post-mortem softening due to weak connective tissue and the activity of endogenous proteolytic enzymes, HPP improves the texture (firmness) of fish muscle as opposed to thermal processing that result in brittle and flaky product.

This study was supported by the Italian Ministry of Health, under Grant nr. IZS PLV 04/23 RC.

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Discriminant analysis to classify two fish species based on geographical origins and farming systems using FT-NIRS

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Aquaculture supplies 51% of the global seafood market, surpassing the quantity of wild products. Despite this milestone, the European Union remains heavily reliant on imports to meet domestic demand for seafood products, making it the largest importer worldwide. Widely produced euryhaline finfish species in Italy are the European seabass (*Dicentrarchus labrax*) and gilthead seabream (*Sparus aurata*). Because of the strong relationship between farming conditions, feed composition, and the quality of the final aquaculture products cannot be considered homogeneous. Therefore, it is essential to identify markers of traceability, and to develop rapid techniques for assessing product quality. This preliminary study aimed to classify different geographical origins and farming systems of the two fish species, applying the qualitative approach of discriminant analysis based on principal components of the near-infrared (NIR) spectra. Fish samples ($n = 30$) of *S. aurata* were collected from three Italian farms located in different geographical areas of Tuscany (two in Piombino, Livorno, equipped with inland tanks or sea cages), and Apulia (Manfredonia, Foggia, equipped with sea cages). Other 40 specimens of *D. labrax* were purchased from the previous mentioned farms, plus a farm located in Castiglione della Pescaia, (Grosseto) equipped with ponds. For each fish, two intact portions from the epaxial part of fillet were acquired by Antaris II FT-NIRS instrument (Thermo Fisher Scientific) considering the infrared region ranged from 3999 to 9999 cm^{-1} with a resolution of 4 cm^{-1}. Thirty-two continuous scans for each replicate was collected as log 1/R. After a pre-processing on raw spectra, on average spectra a multivariate exploration was applied on 3112 wavenumbers by discriminant analysis of principal components (DAPC) using the factoextra R package. A cross-validation was applied for class assignment where the full dataset was used for model training, and the discriminant functions were extracted based on all samples for fish classification. The first two components explained 99% of the total variability of the dataset (82.7 PC1 and 16.7 PC2 as % of variance). The DAPC model resulted in an overall assignment success rate of 75.7% for the farming systems, and 81.4% for geographical origin using one discriminant function.

Research funded by Next generation EU M4C2 – Investimento 1.4 – Centri Nazionali – CN2 AGRITECH SPOKE 9 CUP B13C22001020007.

P121

Nutritional characterization of a fermented beverage from donkey milk

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The present work is part of the Tool4MEDLife project (PRIMA program), which aims to increase awareness about the Mediterranean diet thanks to the production of innovative foods and educational toolkits. Donkey milk, due to its potential hypoallergenic properties, has been suggested as a good alternative for feeding young children affected by cow milk protein allergy (CMPA) when it is not possible to breastfeed. Furthermore, thanks to the presence of nutraceutical molecules with antioxidant, anti inflammatory, antimicrobial, antiviral, and antitumor activities, donkey milk is interesting also for elderly people. Considering the high-quality characteristics associated with fermented milk, the aim of this work was the production of fermented donkey milk by selected Lactic Acid Bacteria (LAB) able to synthesise folates (vitamin B_9). The final product was also fortified with vitamin D_3 and calcium. The levels of folates of natural origin represent an optimal alternative to synthetic folate-fortified products, which have limited bioavailability, and possibly lead to the accumulation of unmetabolised folic acid. Five fresh pasteurised donkey milk samples, added with vitamin D_3, calcium carbonate, *Streptococcus thermophilus, Lactobacillus delbrueckii ssp. bulgaricus* and *Lactobacillus plantarum* IMC 509 (Synbiotec), were fermented at a constant temperature of 38–40 °C for 5 hours. Folate content on the final product was determined by RP HPLC (Agilent 1260 Infinity LC system), using a column C18 HiQSil HS, 5 µm, 4.6 mm i.d., 250 mm (Kya Tech Corporation, Tokyo, Japan). The fermentation process led to the production of a fermented beverage with a final pH value of 4.4. The determination of folates by RP HPLC indicated mainly the

presence of tetrahydrofolate (5.3 ± 0.081 µM) which is a form of folate with high bioavailability. Other water soluble vitamins found in the final fermented donkey milk were vitamin C (110.16 ± 13.5 µM), nicotinic acid, and nicotinamide (52.7 ± 0.05 µM and 7.36 ± 0.15 µM respectively), and also vitamin B_{12} (1.69 ± 0.022 µM). Comparing the above results with the water soluble vitamin content of donkey milk present in the literature, it can be noticed that the vitamin content found in the fermented donkey milk beverage is considerably higher. These preliminary results indicated that the LABs used in these experiments are very promising to produce fermented donkey milk with enhanced nutraceutical properties.

Research supported by: PRIMA, Partnership for Research and Innovation in the Mediterranean Area supported by the European Union – Section 2, Tool4MEDLife Project – PRIMA22_00088 – CUP: J13C23000150002.

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Hermetia illucens as functional feed for laying hens: effect on egg quality

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Insect-derived products are part of many animal feeding programs because they provide a sustainable way of recycling waste into nutrient-rich ingredients. Additionally, the nutrient content and accessibility of ingredients derived from insects are typically much higher compared to the required levels and formulation demands, and components such as chitin, provide additional benefits. The aim of this study was to evaluate the physical characteristics of eggs produced by laying hens fed exuviae and chitin functionalised feeds produced by larvae of *Hermetia illucens* reared on substrates derived from agricultural waste. A total of 120 ISA Brown laying hens were randomly divided into 3 groups (40 hens per group): CTR, fed a basal diet (16.6% CP; 2714 kcal/kg); CHI, basal diet enriched with chitin extract (1g/head/day); and ESU, basal diet integrated with exuviae in terms of 1 g/head/day of chitin. The trial lasted 70 days, and a total of 252 eggs (126 at the start and 126 at the end of the trial) were sampled to assess their quality. Physical parameters were determined on each egg (42 eggs per group) using a texturometer (TA.XTPlusC). Yolk color was determined using a Yolk Color Fan (dsm-firmenich). All data were subjected to the ANOVA model of XLSTAT software, using diet as fixed effect. No significant differences were found in eggs weight and shell thickness among the 3 groups, but the CHI group (54.09N) showed greater shell breaking strength compared to the ESU (46.99N) and CTR (40.24N) groups, while the ESU group evidenced greater shell deformation (0.81mm) than CH (0.77mm) and CT (0.63mm) groups ($p = 0.032$). In a farm context, both parameters are very important to prevent damage due to handling and to preserve eggs during transport from farm to market. Regarding egg freshness indicators such as albumen height, Haugh Unit, yolk width, yolk index and yolk color, no significant differences were found. However, experimental feeding significantly improved vitelline membrane strength ($p = 0.0001$) with the highest value in the CHI group (CHI 0.18N; ESU 0.17N; CTR 0.17N). No significant differences were observed in the length, width, circumference of the egg, weight and percentage of the components (shell, yolk and albumen). In conclusion, the supplementation of exuviae and chitin in laying hen diets, highlighted the positive effect of these functional components derived from *Hermetia illucens* on improving egg quality.

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P148

Alfalfa and linseed oil in rabbit diet to improve sustainability and healthiness of the meat

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Rabbit farming represents an interesting livestock resource for meat production, both for Western and for emerging countries. However, the sector has crucial difficulties also due to the dependence on conventional feed ingredients responsible for price volatility, competition between feed and food and environmental impacts. In recent decades there has been a strong reduction in the use of forage in rabbit diets in order to improve performance and reduce feed costs. In a previous experiment we compared a commercial diet with one based on alfalfa, finding a significant improvement in the nutritional characteristics of the meat but, at the same time, a worsening of growth performance. For this reason, the aim of the present study was to verify the efficacy of an enrichment with linseed oil added to alfalfa-based diet. The trial was carried out at a commercial rabbitry, where at weaning age three hundred hybrid rabbits of both sexes were divided into three homogeneous groups and fed with commercial feed based on 18% wheat +17% alfalfa hay+ 8% dehydrated alfalfa (Control), experimental feed based on 40.4% alfalfa hay +35.0% dehydrated alfalfa (Alfalfa) and another experimental feed based on 40,4% alfalfa hay +35.0% dehydrated alfalfa +2% of linseed oil (Alfalfa + Linseed). A linear