

# XX INTERNATIONAL SYMPOSIUM ON FISH NUTRITION AND FEEDING TOWARDS PRECISION FISH NUTRITION AND FEEDING

5<sup>th</sup>-9<sup>th</sup> June 2022  
Sorrento, Italy



ABSTRACT  
BOOK

ISFNF2022



O36

**APPARENT DIGESTIBILITY COEFFICIENTS OF PROTEIN AND AMINO ACIDS OF SOYBEAN MEAL ARE MORE AFFECTED BY THE COMPOSITION OF THE REFERENCE DIET THAN THE ONES OF POULTRY BY-PRODUCT MEAL IN NILE TILAPIA JUVENILES**

*M.F.O.d.Silva*<sup>1</sup>, *R.d.S. Romaneli*<sup>1</sup>, *K. Masagounder*<sup>2</sup>, *V.D.d. Oliveira*<sup>1</sup>, *D.M. Fracalossi*<sup>1</sup>

<sup>1</sup>Department of Aquaculture, Agrarian Sciences Center, Federal University of Santa Catarina (UFSC), Florianópolis, SC, Brazil

<sup>2</sup>Evonik Nutrition & Care GmbH, Hanau-Wolfgang, Germany

The protein quality of a feedstuff is closely related to its amino acid composition and digestibility. The accurate evaluation of the apparent digestibility coefficients (ADC) of such nutrients in commonly used feedstuffs is paramount to formulate efficient aquafeeds. The ADC of soybean meal (SBM) and poultry by-product meal (PBM) were evaluated using reference diets formulated with two types of ingredients (semipurified, SP or practical, P) for Nile tilapia (*Oreochromis niloticus*) juveniles of the GIFT strain. Groups of 20 juveniles (65.05 ± 12.37 g) were each stocked into twenty-four 115-L circular tanks connected to a freshwater recirculation system, with temperature and photoperiod adjusted to 28o C and 12 h, respectively. Fish were fed twice a day (10:00 am and 4:00 pm) to apparent satiation one of four experimental diets (SBM-SP, SBM-P, PBM-S, and PBM-P) in quadruplicate for 30 days. After the last daily feeding, feces were collected by siphoning at hourly intervals and analyzed to estimate the ADC of dry matter, protein, and amino acids (AA). Nile tilapia showed a high ability to digest SBM and PBM with most ADC exceeding 90%. Nevertheless, the type of reference diet affected the ADC of dry matter, protein, and most AA, with the SP reference diet providing the highest ADC, especially in SBM. In general, nutrients ADC in SBM presented more variability than in PBM in the different types of reference diet tested. Our findings suggest that the nutrients in SBM are more prone to interactions in digestibility trials whereas PBM leads to more constant ADC results, regardless of the type of reference diet used.

O37

**EVALUATING THE COMPARATIVE EFFECTS OF DIFFERENT DIETARY INSECT MEALS ON GROWTH PERFORMANCE AND FEED UTILIZATION IN GILHEAD SEABREAM (SPARUS AURATA)**

*A. Asimaki*<sup>1</sup>, *P. Psafakis*<sup>1</sup>, *M.C. Neofytou*<sup>1</sup>, *E. Gkalogianni*<sup>1</sup>, *M. Henry*<sup>2</sup>, *E. Fountoulaki*<sup>2</sup>, *C.I. Rumbos*<sup>3</sup>, *C.G. Athanassiou*<sup>3</sup>, *I.T. Karapanagiotidis*<sup>1</sup>

<sup>1</sup>Aquaculture Laboratory, Department of Ichthyology and Aquatic Environment, University of Thessaly, Volos, Greece

<sup>2</sup>Hellenic Centre for Marine Research, Athens, Greece

<sup>3</sup>Laboratory of Entomology and Agricultural Zoology, Department of Agriculture, Crop Production and Rural Environment, University of Thessaly, Volos, Greece

Insect meals are promising alternatives to fishmeal in aquafeeds due to their high protein contents and good amino acid profiles, while also could enhance the environmental sustainability of aquaculture (Sánchez-Muros et al. 2014; Henry et al. 2015). This study aimed to evaluate the effects of fishmeal protein replacement by insect proteins of different species on the growth performance and feed utilization in gilthead seabream (*Sparus aurata*). A total number of 450 *S. aurata* juveniles of 11.3 ± 0.03g initial mean weight were allocated into 15 glass tanks (125L) within a closed recirculation seawater system and after an acclimatization period of 10 days were divided into 5 dietary groups in triplicates. Each dietary group was fed one of the five isoenergetic (22 MJ/kg) and isonitrogenous (54% CP) diets, in which the fishmeal protein of the control diet (FM) was replaced at 30% by either a low-fat *Zophobas morio* meal (ZM30), *Tenebrio molitor* meal (TM30), *Hermetia illucens* meal (HM30) and *Bombyx mori* meal (SWP30). Fish were fed to satiation twice a day, 6 days per week for 70 days in total. No significant ( $P > 0.05$ ) differences were noted among all fish groups for feed intake, body weights, specific growth rates, FCR and PER. These findings suggest that *Z. morio*, *T. molitor*, *H. illucens* and *B. mori* are all attractive feedstuffs that could successfully replace fishmeal protein in seabream's diet up to 30% without negative effects on growth and feed utilization.

This study was funded by the MIS 5045804 project under the "Operational Programme Competitiveness, Entrepreneurship and Innovation - EPANek 2014-2020", Greece-EU.

**References**

Henry M. et al. (2015). *Anim. Feed Sci. Technol.* 203, 1-22.

Sánchez-Muros M.J. et al. (2014). *Journal of Cleaner Production* 65, 16-27.