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ABSTRACT
BOOK

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T27

APPARENT DIGESTIBILITY COEFFICIENTS IN SPENT BREWER'S YEAST MEAL FOR ATLANTIC SALMON (*SALMO SALAR*) JUVENILES

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Yeasts are unicellular organisms with the potential to be used as a protein ingredient in aquaculture diets. They usually have a relatively high protein concentration and provide a good level of essential amino acids. Yeasts can also contain various bioactive compounds that increase the interest in their application as functional ingredients. Spent brewer's yeast is an underutilized by-product from the beer production industry that could be used as a protein and functional aquafeed ingredient. A digestibility trial was conducted to verify the digestive use of nutrients for Atlantic salmon (*Salmo salar*) from spent brewer's yeast (*Saccharomyces cerevisiae*) meal obtained from brewing industry waste. Fish with an average weight of 34.41±0.45 g were fed during 34 days in six 0.5 m³ fiberglass tanks (130 fish per tank) at a temperature of 12.92 ± 0.80°C. Faeces collection was conducted by decantation column and stripping. The total apparent digestibility coefficients varied between 73.08 and 64.08%, while the ADC of the protein ranged between 91.82 and 84.97% for the decantation and stripping methods, respectively. Considering that this by-product is produced in large quantities, it can be a potentially valuable protein source for aquafeeds and increase the brewing industry and aquaculture sustainability.

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THE EFFECTS OF FISHMEAL REPLACEMENT BY ZOPHOBAS MORIO ON THE MUSCLE AND LIVER FATTY ACID PROFILES OF GILHEAD SEABREAM (*SPARUS AURATA*)

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Zophobas morio is a large tenebrionid beetle species, with a high protein content that has been proved as a suitable insect protein for fishmeal replacement in gilthead seabream diet (Asimaki et al. 2020). The species, however, is very rich in lipids that are characterized by high saturates and linoleic acid (LA) (Rumbos & Athanassiou 2021), so that their inclusion in diets may pose the risk of deteriorating the lipid nutritional value of fish. This study evaluated the alterations of the muscle and liver fatty acid (FA) composition of gilthead seabream (*Sparus aurata*) fed on *Z. morio* that replaced dietary fishmeal. 540 juveniles of 3.4g mean weight were divided into six dietary groups in triplicates and fed on isonitrogenous (52%) diets at which the fishmeal protein of the control diet (FM) was substituted by full-fat *Z. morio* meal at 5% and 10% and by low-fat *Z. morio* at 10%, 20% and 30%. The diets were also formulated to be isoenergetic (20 MJ/kg) by reducing the lipid content of all insect-based diets through a reduction of soybean oil and keeping constant levels of fish oil among all treatments. Fish were fed to satiation two times a day for 100 days. The increase of dietary *Z. morio* significantly increased the levels of 18:1n-9 in both tissues as it is known for being rich in oleic acid. In addition, lower levels of LA and total n-6 were observed in fish tissues with the increase of dietary *Z. morio*. Despite that *Z. morio* is a rich in LA feedstuff, the above results are due to the lower inclusion levels of dietary soybean oil in these groups that in turn reduced LA levels in fish tissues. Moreover, the reduced levels of EPA, DHA and total n-3 PUFA in both tissues with the increase of dietary *Z. morio* were due to their lower dietary fishmeal lipids, but this trend was insignificant. These findings suggest that the inclusion of either full or low fat *Z. morio* in the diet did not result in major alterations in the FA profiles of seabream's tissues.

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References

Rumbos C.I., Athanassiou C.G. 2021. Journal of Insect Science 21, 1-11.

Asimaki et al. 2020. Journal of Insects as Food and Feed, Vol. 6 Supplement 1, p. S24.