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ABSTRACT  
BOOK

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### A BLEND OF INSECT MEALS PROVIDES A SUITABLE PROTEIN FOR DIETARY FISHMEAL REPLACEMENT IN SPARUS AURATA

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The rapid aquaculture expansion has led to an increased need for alternatives to fishmeal protein sources in aquafeeds. Various insect proteins, such as those of *Hermetia illucens*, *Tenebrio molitor*, *Bombyx mori* and *Zophobas morio*, have successfully replaced part of the fishmeal protein in carnivorous fish diets (Henry et al 2015; Asimaki et al. 2020). In our previous study (unpublished), each of the four insect species replaced dietary fishmeal protein at 30% without retarding the growth and feed utilization of gilthead seabream (*Sparus aurata*). Thus, the present study aimed to evaluate the effects of dietary fishmeal replacement by a blend of the above four insect proteins on growth performance, feed utilization and whole body proximate composition of *S. aurata* juveniles. 180 juveniles of 11.3 g initial mean weight were allocated into 6 glass tanks (125L) within a closed recirculation seawater system and divided into 2 dietary groups in triplicates, each feeding on a different diet. Two isonitrogenous (54%) and isoenergetic (22 Mj/Kg) diets were formulated at which the fishmeal protein of the control diet (FM) was replaced at 30% by a blend (BL) of defatted *H. illucens*, *T. molitor*, *B. mori* and *Z. morio*. Each insect meal participated with equal amounts of protein in the blend, while the inclusion level of fishmeal in the FM diet was 25%. Fish were fed to satiation twice a day, 6 days per week for 70 days in total. Both fish groups had similar ( $P>0.05$ ) feed intake, body weight, FCR, SGR and PER. In addition, both groups had similar dry matter, protein, lipid, ash and gross energy contents in their whole body. These findings suggest that a blend of *H. illucens*, *T. molitor*, *B. mori* and *Z. morio* provides a suitable protein for dietary fishmeal replacement in *S. aurata* and higher replacement levels should be tested in future studies.

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#### References

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### EVALUATION OF NOVEL INGREDIENTS SUPPLEMENTATION IN LOW FISH MEAL DIETS FOR JUVENILE EUROPEAN SEA BASS (*DICENTRARCHUS LABRAX*); PRELIMINARY RESULTS

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The limited availability and the high cost of Fish meal (FM), require continuous research to identify sustainable alternative ingredients to reduce its inclusion in aquafeeds. The aim of the present study was to evaluate the inclusion of two high protein novel raw materials, fermented soya (FS) and yeast protein (YP) at three inclusion levels in diets for European sea bass (*Dicentrarchus labrax*). Growth performance, feed utilisation and liver morphology were evaluated. Four isoenergetic and isoproteic diets (47.5% protein, 17% fat) were formulated and produced by IMBBC and fed to sea bass of 16.5g initial body weight for 10 weeks at 20°C ad libitum. Control diet (CTRL) contained 30% FM, while in the other three diets a mixture of 75% (FS) and 25% (YP) was added, at 12.5%, 25% and 37.5%. No significant differences were seen between experimental groups feeding on the novel ingredients and the CTRL, either on growth performance, or feed efficiency. A tendency for a lower performance was evident at the highest inclusion level. Protein efficiency showed a tendency of a better utilization in the groups fed with the first two inclusion levels of the novel ingredients compared to the CTRL diet, while at the highest inclusion level it seems that protein was not efficiently utilized. A decrease in the hepatosomatic index was evident by the addition of the novel ingredients, reflected also on the morphology of the liver tissue.

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