GROWTH RESPONSE, PLASMA METABOLITES AND BRUSH BORDER ENZYME ACTIVITY OF SEA BASS FED DIETS INCLUDING A BLEND OF TWO MARINE MICROALGAE

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Microalgae have attracted increasing attention as animal feed supplements since they are natural sources of bioactive compounds which give them nutraceutical properties in addition to their basic nutritional value. More recently, dry microalgae biomass has also been proposed as raw materials in partial substitution for fish meal and oil in aquafeeds. The aim of this study was to evaluate the effects of including a blend of dried marine microalgae in low fish meal/fish oil diets on growth performance, levels of plasma metabolites and activity of brush border intestinal enzymes in adult European sea bass (*Dicentrarchus labrax*, L.).
Two test diets (A1 and A2) were prepared by including a blend of *Isochrysis galbana* and *Tetraselmis suecica* dried biomass in a 2:1 w/w ratio to replace 15 and 45% fish meal protein and 10 and 30% fish lipid of a control diet (C) with a 50:50 fish to vegetable-protein-lipid ratio. One hundred eight fish (mean body weight 204±12.7g) were randomly divided among 9 groups kept in a marine recirculating tank system ensuring nearly optimal water condition to sea bass (temperature 21°C, salinity 28‰). Fish were fed the test diets to visual satiety over 15 weeks according to a randomized design with 3 replicates per dietary treatment. At the end of the trial, final biomass, specific growth rate (SGR) and feed conversion ratio (FCR) were calculated per group and 6 fish per dietary treatment were sacrificed and immediately subjected to blood and intestine sampling for further analysis of plasma metabolite levels (glucose, cholesterol, triglyceride, total proteins and albumin levels) and activity of brush border enzymes in different sections.
No diet-induced effects were noted in the final individual live weight, 420±14.5g, SGR, 0.68±0.003 and FCR, 1.7±0.11. Amongst plasma metabolites, only cholesterol and total proteins were affected by dietary treatments resulting in reduced levels only in fish given the diet highest in microalgae relative to controls (347.2 *vs* 276.6 mg/dl and 5.90 *vs* 5.37 mg/dl; respectively, $P<0.05$).
The activity of the intestinal mucosal enzymes varied according to the different intestinal tracts but did not show major diet-dependent changes.
This study suggests that a blend of dried marine microalgae biomass could further reduce reliance on fish meal and fish oil in practical diets for adult sea bass without adversely affecting growth response and digestive-absorptive functions.