EXPLORING DIETARY PROTEIN-ENERGY RATIOS FOR THE FLATHEAD GREY MULLET *Mugil cephalus* REARED AT TWO DIFFERENT TEMPERATURES

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Introduction

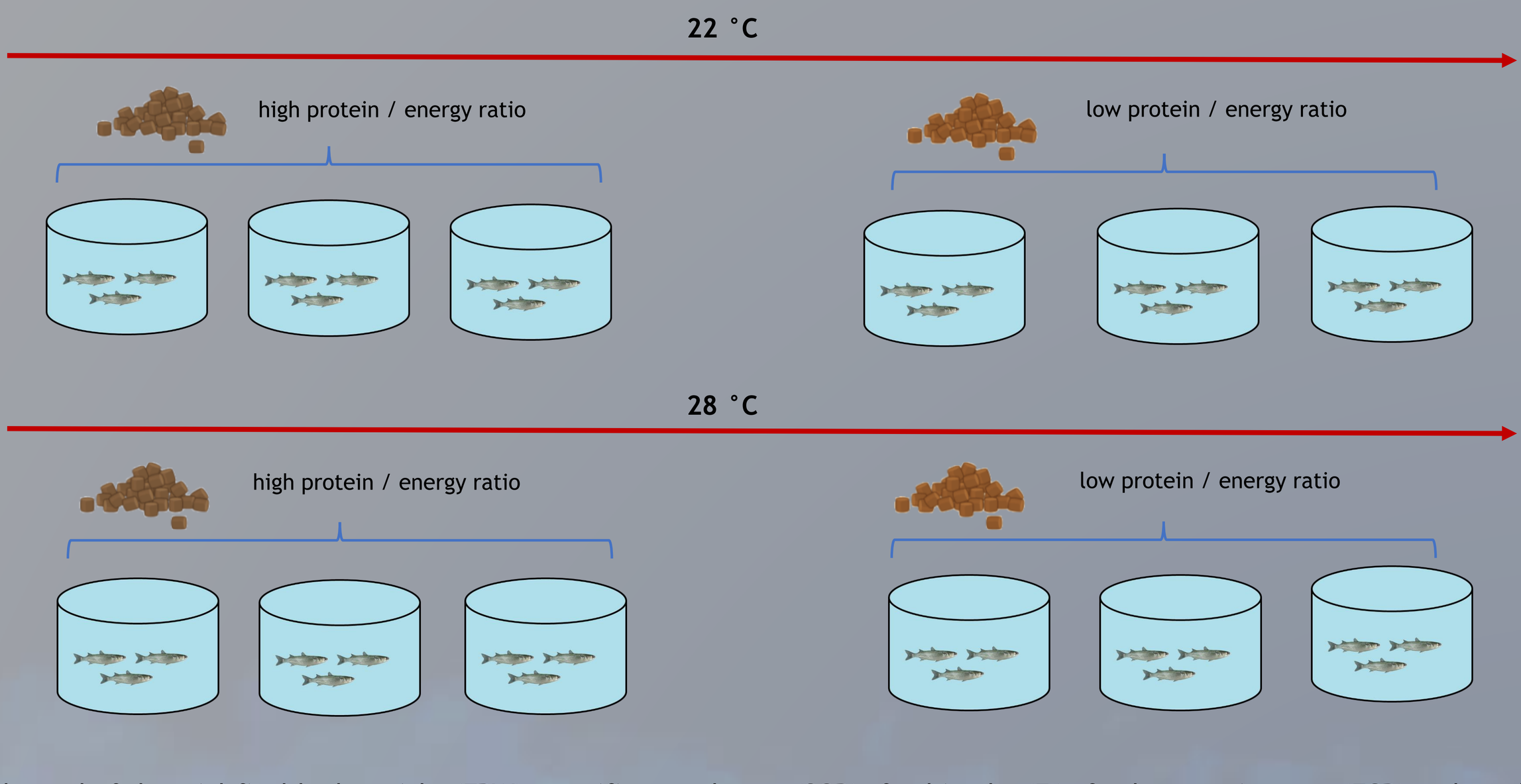
Flathead grey mullet (*Mugil cephalus*) is a catadromous omnivorous fish species that has recently come into prominence among researchers because of its potential as a sustainable low-trophic species. In particular, it is interesting to evaluate the interaction between environmental factors (temperature), growth and feed. Understanding the role of temperature is particularly relevant in a scenario of global warming. Feeding strategy optimization related to environmental conditions is necessary to pursue more efficient aquaculture production. Temperature is the key environmental factor, playing a crucial role on metabolism, nutrient utilization and gut health.

Aim of the study

The objective of this trial is to explore the effect of two different protein/energy ratio requirement (diet A: 30% proteins; 10% lipids; diet B: 30% proteins, 15% lipids) on growth of grey mullet juveniles under two different water temperature condition (22 °C and 28°C). Diets were formulated using circular ingredients (fisheries and aquaculture by-product, poultry and agriculture sector).

Materials and methods

The experiment took place at the the Laboratory of Aquaculture, Department of Veterinary Medical Sciences of the University of Bologna (Cesenatico, Italy). Flathead grey mullet specimens were obtained from IMC (Torre Grande, Italy) and adapted to the laboratory facilities for two weeks at 25 °C. Thereafter, 50 fish per tank were randomly distributed into twelve 450 L flat bottom tanks connected to a recirculating system. Each fish was weighed (initial average weight: 42,37 ± 10,87 g) and tagged using a PIT tag to follow individual performance throughout the trial. Water quality was maintained constant (O2 8 mg L-1, salinity 7 ‰, pH 8.0). Feed (diet A and diet B) was provided to apparent satiation during 6 hours meal once a day over a period of 120 days across two temperatures (22°C or 28°C). Growth and feed utilization were monitored throughout the experiment.



At the end of the trial final body weight (FBW), specific growth rate (SGR), feed intake (FI), feed conversion rate (FCR) and condition factor (CF) were calculated. Digestive enzyme activity, gut microbiota and sex ratio were calculated.

Consideration and Conclusion

Fish raised at 28°C are likely to grow more than those at 22°C, given the optimal growth temperature for flathead grey mullet is 26-27°C. At 28°C, significant dietary differences are expected because the fish will optimally utilize all necessary nutrients for growth, thereby meeting the energy requirements best suited to this species, particularly regarding lipid intake. At 22°C, however, significant dietary differences are unlikely, as energy consumption will be lower for both diets.

Understanding the protein and energy requirements at different temperatures for this emerging species is essential to achieve optimal performance and establish successful aquaculture practices.

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