

Protein turnover in juvenile barramundi, *Lates calcarifer* at different temperatures

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Background - Temperature is recognized to be the most important environmental factor affecting growth and protein synthesis in ectothermic fish (1). The optimal temperature for barramundi is 27-28°C, however culture of these fish often occurs in temperatures which are above and below optimum.

Objective – Understanding how different temperatures affect the protein turnover rates of juvenile fish is important in understanding optimization of growth efficiency by juvenile fish.

Design – Fish were placed in one of five experimental temperatures ranging from 21–33°C. Fish were fed a 50% protein 15% lipid diet twice daily for 22 days. Growth was monitored weekly and at the end of the trial, fish were sampled for protein synthesis, protein degradation and whole body composition. Remaining fish were starved for 2 weeks to estimate maintenance.

Outcomes - No significant differences were found among the highest temperatures (27-33°C) for food conversion ratio, specific growth rate and growth (wet weight gain). Feed intake was significantly different between all treatment groups with the exception of the two highest temperature groups (30 and 33°C). The capacity for protein synthesis (RNA:protein) was highest at 27°C. This was not significant from the 30°C group however it was significantly higher than the remaining treatments.

Conclusions- Growth indices and protein turnover were affected by temperature. Higher temperature (27-33°C) supported faster growth than the lower temperatures (21-24°C).

1. Carter, CG, Houlihan, DF. Protein Synthesis. In P.A. Wright and P.M. Anderson (Eds): Fish Physiology, Volume 20: Nitrogen Excretion. Academic Press. 2001; 31-75.