

Effects of dietary electrolyte balance on growth performance, nutrient digestibility and energy use in meagre (*Argyrosomus regius*)

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The gastro-intestinal tract (GIT) is not only the site for digestion and nutrient absorption, but is involved in maintaining ionic and water balance in fish. The effect that dietary ionic and water disruptions have on digestion and nutrient assimilation itself remains unexplored in marine fish. The objective of the present study was to investigate the effect that dietary electrolyte balance (DEB) has on growth, nutrient digestibility, and energy use in meagre (*Argyrosomus regius*). For this purpose, fish (104±2 g) were fed to satiation for 75 days a rich-base (DEB 700) or a more acidic (DEB 200) diet, and changes in growth performance, metabolic rates and nutrient digestibility were assessed. Meagre fed the DEB 200 diet had better specific growth rate than fish fed the DEB 700 diet (0.8±0.0 and 0.5±0.0 %·day⁻¹, respectively), although absolute feed intake was not significantly different between both groups. Therefore, meagre fed the DEB 700 diet were less efficient in terms of gained mass per unit of feed consumed. Results also revealed lower standard metabolic rate in fish fed the DEB 700 diet than in fish fed the DEB 200 diet (64±5 and 99±31 mgO₂·Kg⁻¹·h⁻¹, respectively). Two hours after feeding, the pH of stomach chyme in fish fed the DEB 700 diet was more alkaline and blood pH was more acidic than in fish fed the DEB 200 diet (3.9±0.6 and 2.9±0.6 in chyme, 6.9±0.2 and 7.3±0.1 in blood, respectively). Meagre fed the DEB 700 diet also showed higher amylase activity in intestine but lower plasma glucose and TAG levels (P<0.05). Results suggest that a high DEB diet triggers mechanisms in order to re-establish acid-base homeostasis at the expense of an increased energetic cost. In addition, DEB may also reduce digestion efficiency and nutrient assimilation by altering chyme properties, which impacts growth and may have implications for aquaculture.