

Preliminary results on nutrient digestibility of juvenile Meagre (*Argyrosomus regius*) fed three different protein /energy diets; characteristics of the digestive system

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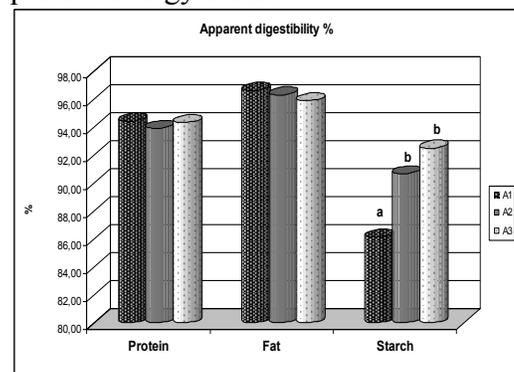
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Meagre is a relatively new and promising species in aquaculture. Although limited studies have been published on the effect of dietary protein/energy ratios on its growth and feed utilization, no information is available on the ability of meagre to digest macronutrients. Hence, the aim of this study was to examine apparent nutrient digestibility of meagre using diets of different energy density and their possible effects on its digestive system.

A four week digestibility trial was conducted using fish of $114.5\text{g} \pm 5(\pm \text{S.E.M})$ at the experimental unit of Hellenic Centre of Marine Research at Agios Cosmas in Greece. Three isonitrogenous extruded diets were formulated, containing different fat and starch levels (Diet A1: 46/14/20, A2: 46/20/17, A3: 46/26/15 - protein/fat/starch). Yttrium was added as an inert marker. Each treatment was run in triplicates, in fiberglass tanks of 450L capacity in an open flow-through system. Each tank contained of 18 fish. Water temperature ranged from 20 to 25⁰ C and salinity was 37.5ppt. Fish were fed by hand to apparent satiation, once a day. Faeces were collected daily for 10 days by sedimentation, freeze-dried and then stored at -20⁰C until further analysis. At the end of the trial, 10 fish from each tank were sacrificed and their morphometric characteristics were recorded including liver weight and intestine length.

No difference in apparent protein and fat digestibility was recorded amongst diets. Apparent starch digestibility was significantly lower in diet A1, with highest starch content, compared to the other two diets (Figure 1). Fish weight was positively correlated with fish length ($R^2=0.932$ at $p<0.01$). A significant difference was found in intestine length between the three diets ($p<0.05$) using ANCOVA and controlling for fish size (body weight*length). Regression analysis of intestine length with dietary starch and fat showed a strong positive and negative correlation respectively ($R^2=0.86$, $R^2=0.85$ at $p<0.01$). Further analysis is required to deduce which of the two factors affect intestine length. Hepatosomatic Index ranged from 1.36 to 1.72%, with significantly lower values measured in Diet A3 ($p<0.05$, ANCOVA).

Figure 1. Apparent nutrient digestibility % in Meagre fed three different protein/energy diets.



In conclusion, the results show that Meagre is a species that can digest both protein and high levels of fat very well. High dietary starch affected negatively starch digestibility. Diet formulation has an effect on carbohydrate digestibility and intestine length in short-term treatments.