Protein deposition and energy recovery in gilthead sea bream (*Sparus aurata*): Evaluation of nutritional requirements

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Protein deposition and energy recovery in gilthead sea bream (*Sparus aurata*): evaluation of nutritional requirements.

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Abstract

The energy and protein requirements for gilthead sea bream were studied until commercial weight. Gilthead sea bream with different body weights (from 24 to 422 g) were fed from starvation to apparent satiation, studying protein and energy in the interval of 21-25ºC. Energy recovery (ER) was expressed in relation to the digestible energy intake (DEI), $ER= 173.1*(1-e^{(-0.00407*(DEI-59.84))})$, and protein deposition (PD) was expressed with regard to digestible protein intake (DPI), $PD= 2.97*(1-e^{(-0.152*(DPI-1.393))})$.

Maintenance needs in summer conditions were found to be 1.393 g $kg^{-0.7}$ day^{-1} of the digestible protein intake and 59.84 kJ $kg^{-0.82}$ day^{-1} of the digestible energy intake. The response curves to the graded levels of intake of energy and protein should allow the diet formulation under several growth conditions and all sizes until commercial weight.

Introduction

The four main factors with a great influence on growth, in most fish species, including gilthead sea bream (*Sparus aurata L.*), are temperature, feed composition, feed intake, and body weight of the fish (Brett, 1979). For most sea farmers working with offshore systems, the diet usually remains the only factor of choice, as temperature comes with the environment and weight with commercial demands. In this sense, diets should be designed considering the requirements of the fish as well as profitability. Thus, it is necessary to develop several models: