

Proteomics as a tool to develop molecular indicators of nutritional condition in farmed gilthead seabream

Pedro M. Rodrigues¹, Nadège Richard¹, Mahaut de Vareilles¹, Tome S. Silva¹ and Luis E. C. Conceicao^{1,2}

¹University do Algarve, Portugal

Gilthead seabream is the main aquaculture species produced in Portugal, as well as in the Mediterranean. However, the winter disease syndrome, a series of metabolic and immune system disorders caused by low temperatures, affects seabream culture, leading to important industrial losses, either as mortalities or growth decreases during spring. These effects can be minimized through dietary optimisation, either improving diets for the end of summer season, or feeding seabream with a fortified diet during autumn/winter. However, the development of a fortified diet for autumn/winter is hindered by the lack of tools to evaluate fish metabolic and physiological condition. Nevertheless, the recent development of new generation molecular tools provides good perspectives to supply molecular indicators of condition that would support this task.

Proteomics is being used in order to develop a fast service that will allow foreseeing the effect of specific ingredients and additives (supplied in a specific diet formulation being developed) on medium/long term immune status and oxidative stress of seabream. 2D-DIGE technology will be used together with metabolomic and transcriptomic data, to unravel molecular markers of nutrition, immune and oxidative stress condition. Studies will be performed using the liver and kidney of Gilthead seabream as these organs are involved in important immune and metabolic processes with physiological responses to nutritional unbalances and/or disease. Plasma will also be analysed since it allows a non-invasive fish sampling. An overview of the results obtained from a comparative analysis of the different profiles will provide detailed information regarding the seabream metabolic adjustments to different diets. A first selection of possible biological markers will be presented.

pmrodrig@ualg.pt