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# Creatine supplementation to modulate allergenicity in European seabass: A proteomics study

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Allergies are caused by a hypersensitive immune system that reacts wrongly against proteins in specific foods. Fish allergies are mainly caused due to the highly abundant calcium-binding parvalbumin protein. Parvalbumin has a molecular weight of ± 12 kDa and a pI of 4.5-5. Previous studies performed in rats showed a 75% decrease in parvalbumin content with creatine supplemented diets. Two different concentrations of creatine (0.35% and 2%) supplemented diets and a control diet were tested in European seabass. Natural photoperiod and flow-through seawater were used with an artificial aeration (dissolved oxygen above 5 mg.L-1). At the end of the trial (2 months) blood and muscle samples were collected for analysis. Cortisol and creatine were measured using commercial kits. Proteomics was used to compare protein expression levels in the muscle of fish submitted to different supplemented diets. Using 2D-DIGE, proteins were first focused on 24 cm pH 3-10 NL Drystrips (GE Healthcare) followed by separation according to their molecular weight on 12% bis-acrylamide gels. SameSpots software was used to analyze differences in expression. Significant different expressed proteins ($P<0.05$) were identified using mass spectrometry (MALDI-TOF/TOF). Parvalbumin concentration was specifically targeted using comparative proteomics. Cortisol and creatine levels showed no significant differences between control and creatine supplemented diets. Parvalbumin concentration had a 20% decrease between control and the 2% creatine supplemented diet. Higher concentrations of creatine supplemented diets as well as other molecules and different fish species are currently being tested.

## Biography

Pedro Miguel Rodrigues has completed his PhD in Chemistry from the Universidade Nova de Lisboa and is currently working as a Professor at University of Algarve, Portugal since 2000 and a member of the Center of Marine Science of the Algarce. He has been working on the use of proteomics in Aquaculture to access fish quality and welfare for the past 10 years and has published 32 papers in reputed journals, 2 book chapters. He has been serving as an Editorial Board Member of repute.

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