

Effects of dietary vitamin D₃ administration on innate immune response of sea bass (*Dicentrarchus labrax*)

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The aquaculture sector is a productive force rapidly growing in the world; therefore, over the past 30 years much has been done to improve the performance of fish growth by manipulating diets. Currently, the optimization of diets and disease control are two main objectives to ensure the continued expansion of aquaculture. A new area of great interest to improve growth efficiency and to prevent and/or control fish diseases is the application of probiotics, prebiotics and stimulants of the immune system as additives in the diet, being a promising alternative to antibiotics. Thus, the aim of the current study was to evaluate the potential *in vivo* effects of the dietary administration of vitamin D₃ (vD₃) on the humoral innate immune response (level of total IgM antibodies, the activities of peroxidase, protease, and antiprotease) cellular (phagocytic activity) and biochemical parameters (cortisol, glucose) of the sea bass (*Dicentrarchus labrax*). Vitamin D₃ was orally administered to sea bass specimens in a commercial pellet food supplemented with 0 (control), 3750, 18750 or 37500 U kg⁻¹ and fish were sampled after 2 and 4 weeks of treatment. Serum and peritoneal cavity leucocytes were collected from specimens and innate immune biochemical parameters were evaluated. This study showed for the first time in sea bass a modulation in the activities examined in animals fed with the addition of vitamin D₃ after 4 weeks. These results suggested that dietary vitamin D₃ administration has an effect on the innate immune parameters of *D. labrax*, therefore this vitamin could be considered of great interest as immunostimulant when used as food additive in fish farming.

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