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O-057.

Nodavirus modulates immune-relevant proteins in European sea bass

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Abstract

European sea bass (*Dicentrarchus labrax*) is the most important fish species in Spanish aquaculture in terms of biomass (Tm) production. One of the biggest problems facing its farming is its great susceptibility to nodavirus infection, which causes mortality rates up to 100% in larvae and juveniles. The knowledge of immune responses triggered upon nodavirus infection in European sea bass specimens and their regulatory mechanisms is mandatory to maintain the production of this specie. Nodavirus up-regulates the transcription of genes coding for antimicrobial peptides, cellular markers of T and B lymphocytes and pro-inflammatory cytokines whether inhibits those genes related to the interferon type I pathway in the brain. At this point, an insufficient antiviral response at transcriptional level is shown leading to develop the viral disease. In this work, and due to the lack of tools to characterize the leucocytes using specific cell populations markers, we have produced polyclonal antibodies specific to European sea bass antimicrobial peptides (NK-lysin and dicentracin), interferon gamma and perforin to quantify them through larval development and study their regulation in control and nodavirus-infected juveniles. Our results show basal levels of these proteins during the entire larval development from eggs up to 69 days post-fertilization, increasing at two different time points in the case of several proteins. After nodavirus infection, the quantification of most proteins decreased instead of increasing as expected upon activation of an immune response. These data suggest a post-translational modulation of these proteins by the virus since the enhancement of antimicrobial activities was previously demonstrated. Taking into account the lack of preventive or palliative solutions to nodavirus infections, further investigations should be developed to understand how nodavirus evades the immune response to spread.

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Keywords: Nodavirus, protein, polyclonal antibodies, immune response, *Dicentrarchus labrax*

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O-058.

Mucosal immunoglobulin IgT plays a key role in the oral immunity of teleosts

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Abstract

The oral gustatory organ of vertebrates is crucial to obtain energy for survival and reproduction, and it is simultaneously exposed to pathogenic organisms. Thus, oral-associated lymphoid tissue (OALT) is considered the first line of immune and by far, it has only been described in terrestrial animals. Since teleost fish represent the most ancient bony vertebrates containing the oral mucosa, we hypothesized that the relationship between the oral gustatory surface and mucosal immunity represents an ancient association. Supporting this hypothesis, we show for the first time that OALT is present in teleost fish and is similar to other mucosa-associated lymphoid tissues (MALTs). Moreover, we discover that the majority of bacterial microbiota in the oral mucosa is coated with IgT and, to a much lesser degree with IgM and IgD. In addition, following parasitic infection, significant specific-IgT immune responses were observed in the oral mucus, while IgM responses were almost exclusively detected in the serum. In contrast, parasite-specific IgD was absent both in oral mucus and serum. Importantly, we detect significant IgT+ B cell proliferative responses in the oral mucosa but not in head kidney and spleen of fish that survived parasitic infection, providing the first demonstration that IgT is the main immunoglobulin player in oral mucosal immunity and that IgT responses are probably induced locally in the oral mucosa. More critically, we reveal that the teleost oral mucosa is a novel and effective site of immunization for the control of aquatic parasitic infection. Overall, our findings further broaden the understanding of oral immunity in not only terrestrial animals but also in early vertebrates.

Keywords: Oral immunity, IgT, B cells, Mucosal immune, Rainbow trout (*Oncorhynchus mykiss*)

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O-059.

17 α -ethinylestradiol or tamoxifen alters the humoral innate immune function in male gilthead seabream

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Abstract

The presence of pharmacological compounds in the marine water have increased the concern about their unpredicted effects in aquatic organisms. 17 α -ethinylestradiol (EE2), a potent estrogenic compound, is widely used in oral contraceptive pills treatments and hormonal therapies. Tamoxifen (Tmx), an antagonist or agonist of the estrogen receptor alpha depending on the cell types, is commonly used in breast cancer therapies. Both drugs are present in aquatic environments. The gilthead seabream (*Sparus aurata*) is one of most important species in Mediterranean aquaculture and the effects of these compounds in its physiology are of especial relevance. It is demonstrated that cellular and adaptive humoral immune