RECENT DISCOVERIES OF PITUITARY ADENYLATE CYCLASE-ACTIVATING PEPTIDE (PACAP) FUNCTION IN THE TELEOST FISH ADAPTATIVE IMMUNITY

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ABSTRACT

Recent findings added PACAP and its receptors to the growing list of mediators that allow cross-talk between the nervous, endocrine and immune systems in fish. A significant point for the behavior of this framework is the sharing of common ligand-receptor-effectors molecular systems. For lower vertebrates, there is limited information regarding this inter-system communication. On the other hand, in rainbow trout two major classes of B lymphocytes have been described: IgM+ and IgT+ cells. IgM+ cells are mainly localized in the spleen, peripheral blood and kidney but are also found in other tissues. However, differences among IgM+ cell populations attending to its location and gene expression profiles are poorly defined in fish. In this connection, our findings demonstrated for the first time the occurrence of the two PACAP transcriptional variants together with their receptors in diverse lymphoid organs of teleost fish. The characterization of the expression of the two PACAP transcriptional variants together with their receptors was also performed on IgM+ lymphocytes from different rainbow trout tissues. Different transcriptional patterns were observed for each IgM+ populations analyzed. The results showed that rainbow trout immune tissues contain different tissue-specific B cell populations as defined by their PACAP and its receptors expression profiles. Different i*n vitro* and *in vivo* studies was also conducted by us to demonstrate the influence of PACAP over adaptative immunity. All this information together will serve as a basis to develop strategies based on PACAP to improve growth and immune status in commercially important fish.

KEYWORDS

PACAP, adaptative immunity, B lymphocytes, teleost, PACAP receptors

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