# TELEOST B CELL-ACTIVATING FACTOR (BAFF) DIFERENTIALLY REGULATES B CELL ACTIVITY IN LYMPHOID AND MUCOSAL TISSUES

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## ABSTRACT

In mammals, B cell activating factor (BAFF) is a cytokine belonging to the tumor necrosis factor (TNF) family mainly produced by innate immune cells, such as macrophages and dendritic cells, to orchestrate early T-independent B cell responses before T-dependent follicular responses are mounted. Mammalian BAFF can signal through three different receptors: B cell maturation antigen (BCMA), transmembrane activator and calcium modulator and cyclophilin ligand interactor (TACI) and BAFF receptor (BAFF-R). In this context, we have undertaken an exhaustive characterization of the effects of BAFF on rainbow trout (*Oncorhynchus mykiss*) B cells, since understanding how BAFF regulates B cell responses is of high importance in teleost fish lacking lymphoid follicles. Here, we show that recombinant rainbow trout BAFF strongly promoted the survival of resting unstimulated B cells *in vitro* without inducing B cell proliferation. In addition, rainbow trout BAFF modulated the levels of membrane MHC class II on B cells as well as the expression of class II-associated genes and immunoglobulins, significantly altering their phenotype. Interestingly, the effects that BAFF produced on B cells were significantly different on B cells from central lymphoid organs (spleen) or mucosal tissues (gills), suggesting the involvement of different BAFF receptors according to the location of B cells. Unravelling the mechanisms underlying the effect of teleost BAFF on B cell differentiation will be of great importance to understand T cell-independent responses and to generate effective adjuvants in future vaccination strategies.

## KEYWORDS

B cells / BAFF / MHC II / Trout / T cell-independent responses

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