DIFFERENTIAL EFFECTS OF INTERLEUKIN 6 AND LIPOPOLYSACCHARIDE ON TELEOST B LYMPHOCYTES

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In mammals, interleukin-6 (IL-6) is a pleiotropic cytokine that has the capacity to induce the differentiation of B cells into antibody-secreting cells (ASCs). On the other hand, lipopolysaccharide (LPS) acts on B cells as a T cell independent antigen producing a polyclonal cell activation that goes along with an increased proliferation and antibody secretion. LPS is also known to enhance the B cell antigen-presenting capacity of B cells. Very few studies have examined how teleost B cells respond to these two stimuli, thus the aim of our work was to evaluate the stimulatory capacity of recombinant rainbow trout (*Oncorhynchus mykiss*) IL-6 on spleen B cells, comparing its effects to those induced by LPS. We found that both IL-6 and LPS induced the proliferation of spleen IgM⁺ B cells and activated NF-κB in these cells as determined by NF-κB translocation to the nucleus. Additionally, IL-6 and LPS-stimulated B cells mobilized more intracellular calcium after B cell receptor cross-linking. Although both IL-6 and LPS provoked a significant differentiation of B cells to ASCs as determined by ELISPOT, the levels of secreted IgM mRNA only increased in response to IL-6, suggesting different pathways for increased antibody secretion. Concerning effects on their antigen-presenting capacities, IL-6 and LPS showed quite different effects. We observed a significant down-regulation of MHC-II surface expression on IL-6-stimulated B cells, but a significant up-regulation with LPS in comparison with control cells. Accordingly, we found a significant increase of the percentage of phagocytic IgM⁺ B cells when splenocytes were stimulated with LPS but not with IL-6. This work provides important insights on the B-stimulating capacities of IL-6 and LPS not previously explored in teleost fish.

KEYWORDS

B cells; Interleukin 6 (IL-6); lipopolysaccharide (LPS); trout

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