Persistent oxytetracycline exposure induces an inflammatory process that improves regenerative capacity in zebrafish larvae

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Background: The excessive use of antibiotics in aquaculture can adversely affect not only the environment, but also fish themselves. In this regard, there is evidence that some antibiotics can activate the immune system and reduce their effectiveness. None of those studies consider in detail the adverse inflammatory effect that the antibiotic remaining in the water may cause to the fish. In this work, we use the zebrafish to analyze quantitatively the effects of persistent exposure to oxytetracycline, the most common antibiotic used in fish farming. Methodology: We developed a quantitative assay in which we exposed zebrafish larvae to oxytetracycline for a period of 24 to 96 hrs. In order to determinate if the exposure causes any inflammation reaction, we evaluated neutrophils infiltration and quantified their total number analyzing the Tg(mpx:GFP)i114 transgenic line by fluorescence stereoscope, microscope and flow cytometry respectively. On the other hand, we characterized the proces