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Assessing concentration of antibiotics in tissue during oral treatments against piscirickettsiosis

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Abstract

The use of antimicrobials in aquaculture is increasingly being scrutinized. In Chile, piscirickettsiosis accounts for approximately 90% of the total volume of antibiotics used in marine aquaculture. Treatment failures are frequently reported, but there is limited information on why this occurs. Fish producers have started assessing the level of antibiotics in fish tissues during and immediately after in-feed treatments to determine if they are adequately medicating their fish. In this study, we evaluated the probability of finding antibiotic concentrations in muscle tissue above the minimum inhibitory concentration for 90% of the *P. salmonis* isolates (MIC90) recently tested in Chile, for two antibiotics commonly used in aquaculture. We found that the proportion of fish with antibiotic concentrations above the MIC90 varied, depending on the product used, species, day of sample collection, and size category of fish within a cage. The proportion of fish above the MIC90 was lower in fish treated with florfenicol than in fish treated with oxytetracycline. Using a mixed-effects logistic model, we modeled the probability of antibiotic concentrations above MIC90 when fish were treated with florfenicol. Our model suggested lower probabilities of having concentrations above MIC90 in Atlantic salmon than in

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