PRACTICAL APPLICATIONS OF QUANTITATIVE IMAGE-BASED ASSESSMENT OF DIGITAL PATHOLOGY SLIDES IN CHILEAN SALMON INDUSTRY

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Pathology diagnosis has been performed by pathologists observing the stained specimen on the slide glass using a microscope. In recent years, attempts have been made to capture the entire slide with a scanner and save it as a digital image (Whole slide image, WSI). Researchers both in the image analysis and pathology fields have recognized the importance of quantitative analysis of pathology images. Since most current pathology diagnosis is based on the subjective (but educated) opinion of pathologists, there is clearly a need for quantitative image-based assessment of digital pathology slides. In VeHiCe we adopt these analyses to be applied in farmed salmon industry in Chile. Currently this method is applying to assess pathologies evolution, health status, organs responses to drugs and diets among others. Allowing farmers take objectives measures regarding health and productions issues.

This study reports the assessment of the effects of anti-inflammatory drug in the evolution of an inflammatory process in the heart fibers caused by PRV. Two groups were tested; control group and T1. In total, the heart of 50 fish with were histologically processed, transverse sections of the ventricle were made and then the whole histopathological slide was capture with scanner and save as a digital image (WSI). The 85%-95% of total surface of the ventricle was analyzed in each slide. The morphometric analyze of the images was realized using ImageJ v1.49 (National Institut of Health, EE.UU.). In total 550 images were analyzed. In control group, there was 6,18% of the total heart surface presenting an inflammatory process, and in T1 group only a 0,47% of the total heart surface presented inflammation.

Using this method, we were able to measure precisely the % of inflammation in the different groups analyzed and consequently the evolution of the inflammatory process and the response to the tested drug.

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