

**Title** Development of lipid changes related to quality loss during the frozen storage of farmed coho salmon (*Oncorhynchus kisutch*)

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#### **Abstract**

Lipid changes related to quality loss were evaluated during frozen storage of coho salmon for up to 15 months. Biochemical indices concerning lipid hydrolysis (free fatty acids, FFA) and oxidation (peroxide value, PV; thiobarbituric acid index, TBA-i; fluorescent compounds, FR; polyene index, PI) were determined and compared to sensory (odor and taste) and endogenous antioxidant (tocopherol isomers and astaxanthin) assessments. As a result of the frozen storage, lipid hydrolysis was shown to develop according to the increase in FFA content ( $p < 0.05$ ). However, most biochemical lipid oxidation indices (PV, TBA-i and FR) led to a low degree of rancidity development ( $p < 0.05$ ) when compared to other fatty fish species under similar frozen storage conditions. The PI value decreased ( $p < 0.05$ ) at month 10 but then remained unchanged until the end of the experiment. Rancid odor and taste development were shown to be low throughout the experiment, according to the biochemical indices mentioned above. However, a progressive decrease ( $p < 0.05$ ) in the original fresh odor and taste of salmon fish flesh occurred with increasing frozen storage time, such that fish samples had the poorest scores by month 15. Endogenous antioxidants were remarkably stable throughout the experiment and which might contribute to the oxidative stability of frozen farmed coho salmon lipids.