Effect of pancreas disease (PD) on quality attributes of raw and smoked fillets of Atlantic salmon (Salmo salar L.)

The impact of pancreas disease (PD) on fillet quality of raw and cold-smoked Atlantic salmon was investigated. Commercially reared fish were sorted into six groups: (1) Control (healthy fish), (2) SAV (infection with salmonid alphavirus, without PD outbreak), (3) PD0 (PD diagnosis at slaughter), (4) PD6 and (5) PD12 (diagnosed 5–7 and 11–12 months before slaughter, respectively) and (6) PDchronic (repeated PD outbreaks). The condition factor (CF) and fillet protein content were significantly higher for the control group (1.13 and 22.1%, respectively). The CF was lowest for PDchronic (0.92), whereas the fillet protein content was lowest in PD0 (20.2%). Fillet fat content did not vary significantly between the groups, but the muscle pH was 0.2 units higher in PD12 as compared to Control. Astaxanthin (Ax) and idoxanthin (Ix) content were significantly lowest for PD0. Ax recovered six months after the outbreak, but the Ix content remained lower in the PD affected salmon. The Ax level after smoking was similar for all groups, but Ix showed a similar pattern to that of raw fillets. Results of the colorimetric analyses (L*, a*, b*) indicated darkest colour for the control group and palest colour for PD0, whereas PDchronic showed highest differences between raw and smoked fillets. Firmness of raw fillets was lowest in PDchronic, but after smoking a significantly higher firmness was found in PDchronic, PD0 and PD6 (16.7–19.7N) compared with that of Control and PD12 (14.1N). Changes in fillet quality in the order of their appearance were decreased CF, depleted muscle glycogen, increased drip loss of raw muscle, paler colour, depleted protein and finally harder texture in smoked salmon. It is concluded that the fillet quality deteriorated after a PD outbreak, but the quality may to a large extent recover.

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