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Effect of salting process on the histological structure of salmon flesh

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Context and objectives

Atlantic Salmon, *Salmo Salar*, is composed of approximately 70% water, 19% protein, 10% lipid and 1% small nutrients.

Smoked salmon comes from the processing of fresh salmon: the fillets are removed from the fish, salted and then smoked. Salting can be carried out with dry salt or by brine injection.



Our goal was to characterize the muscle structure of smoked salmon according to the salting process.

Conclusions

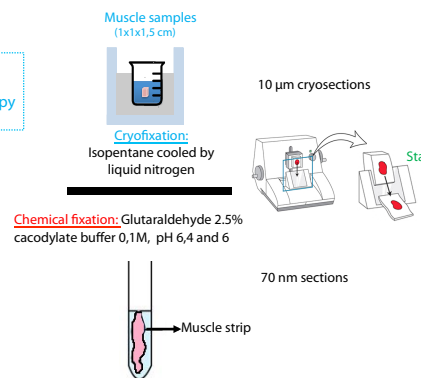
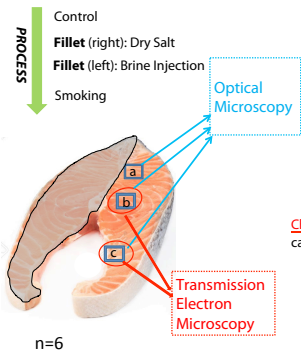
✗ **Effect of salting:**

- **Dry Salt:** causes solubilisation of sarcomeres at Z-lines.
- **Brine Injection:** causes the swelling of myofibrils. The increase in water holding capacity of myofibrillar proteins, is reflected by the swelling of myofibrils.

✗ **Effect of Smoking:** **not significant change** after salting.



Material and Methods



HES

Sirius Red

Image analysis (Image J)

Olympus BX61 + camera DP 71

Double Contrast

Uranyl acetate + Lead citrate

grid

Ultrathin sections

TECHNAI F20 200KV by FEI

Control

Sarcoplasme

Sarcomere

Z line

I band

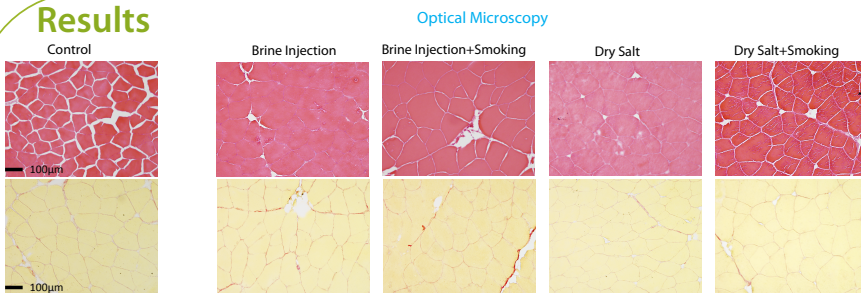
M line

A band

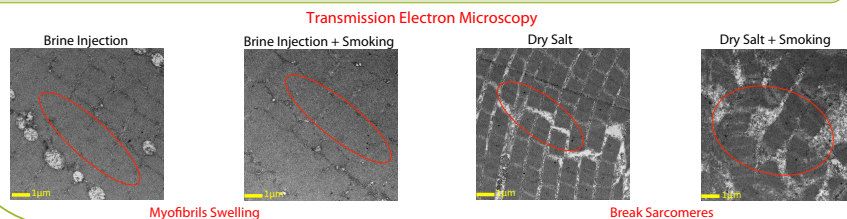
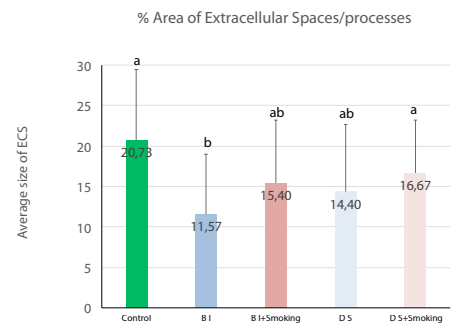
Mitochondria

Lipid

Results



HES = size of the extracellular spaces after brine injection.
 Dry salt salting shows no difference in the extracellular size compared to control
 Sirius red = no significant effect on the connective tissue (red).



Salting substantially degrades muscle ultrastructure with in particular a significant solubilization of the Z-lines.

Salting by brine injection leads to swelling of the myofibrils and almost complete solubilization of the Z lines.

