Effect of sodium bicarbonate and varying concentrations of sodium chloride in brine on the liquid retention of fish (Pollachius virens L.) muscle - DTU Orbit (02/04/2018)

**Effect of sodium bicarbonate and varying concentrations of sodium chloride in brine on the liquid retention of fish (Pollachius virens L.) muscle: High quality low salt saithe muscle**

**BACKGROUND** Negative health effects associated with excessive sodium (Na) intake have increased the demand for tasty low-Na products (<2% NaCl) rather than traditional heavily salted fish products (∼20% NaCl). This study investigates the causes of improved yield and liquid retention of fish muscle brined with a combination of salt (NaCl) and sodium bicarbonate (NaHCO3).

**RESULTS** Water characteristics and microstructure of saithe (Pollachius virens L.) muscle brined in solutions of NaCl and NaHCO3 or NaCl alone were compared using low-field nuclear magnetic resonance (LF-NMR) T2 relaxometry, microscopy, salt content, liquid retention and colorimetric measurements. Saithe muscle was brined for 92 h in 0, 30, 60, 120 or 240 g kg⁻¹ NaCl or the respective solutions with added 7.5 g kg⁻¹ NaHCO3. NaHCO3 inclusion improved the yield in solutions ranging from 0 to 120 g kg⁻¹ NaCl, with the most pronounced effect being observed at 30 g kg⁻¹ NaCl. The changes in yield were reflected in water mobility, with significantly shorter T2 relaxation times in all corresponding brine concentrations. Salt-dependent microstructural changes were revealed by light microscopy, where NaHCO3 supplementation resulted in greater intracellular space at 30 and 60 g kg⁻¹ NaCl. **CONCLUSION** Sodium bicarbonate addition to low-salt solutions can improve yield and flesh quality of fish muscle owing to altered water mobility and wider space between the muscle cells.
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