Effect of frozen storage time and temperature on quality of Atlantic mackerel (*Scombrus scomber*)

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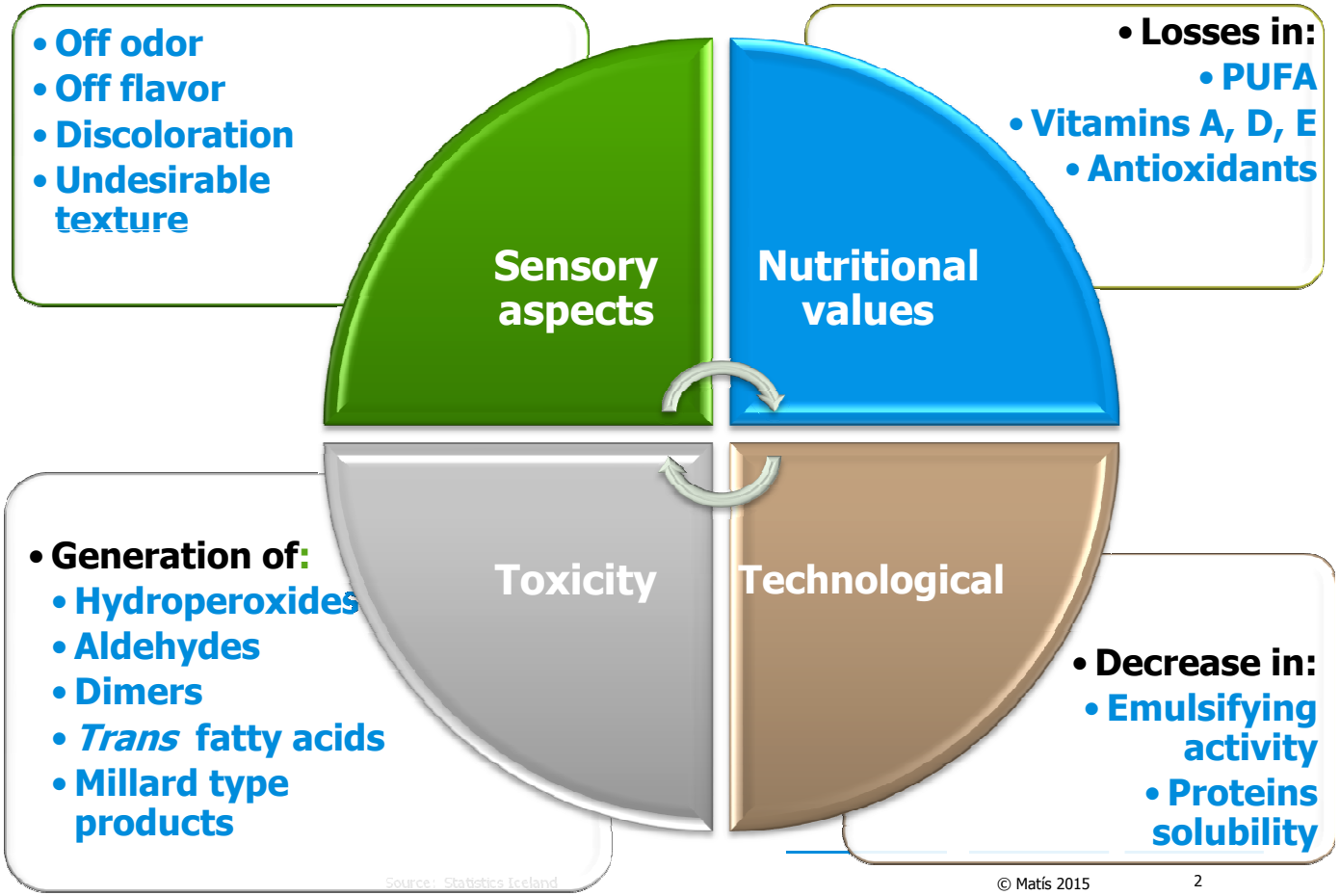
Atlantic Mackerel (*Scombrus scomber*)

- **Atlantic mackerel *(Scombrus scomber)* is known from widespread relocations and has been discovered in Icelandic waters since 2006 and gained great economical importance**
- **Frozen storage of the mackerel is main long term preservation method**
- **Main quality changes of the seafood occurs due to lipid oxidation**



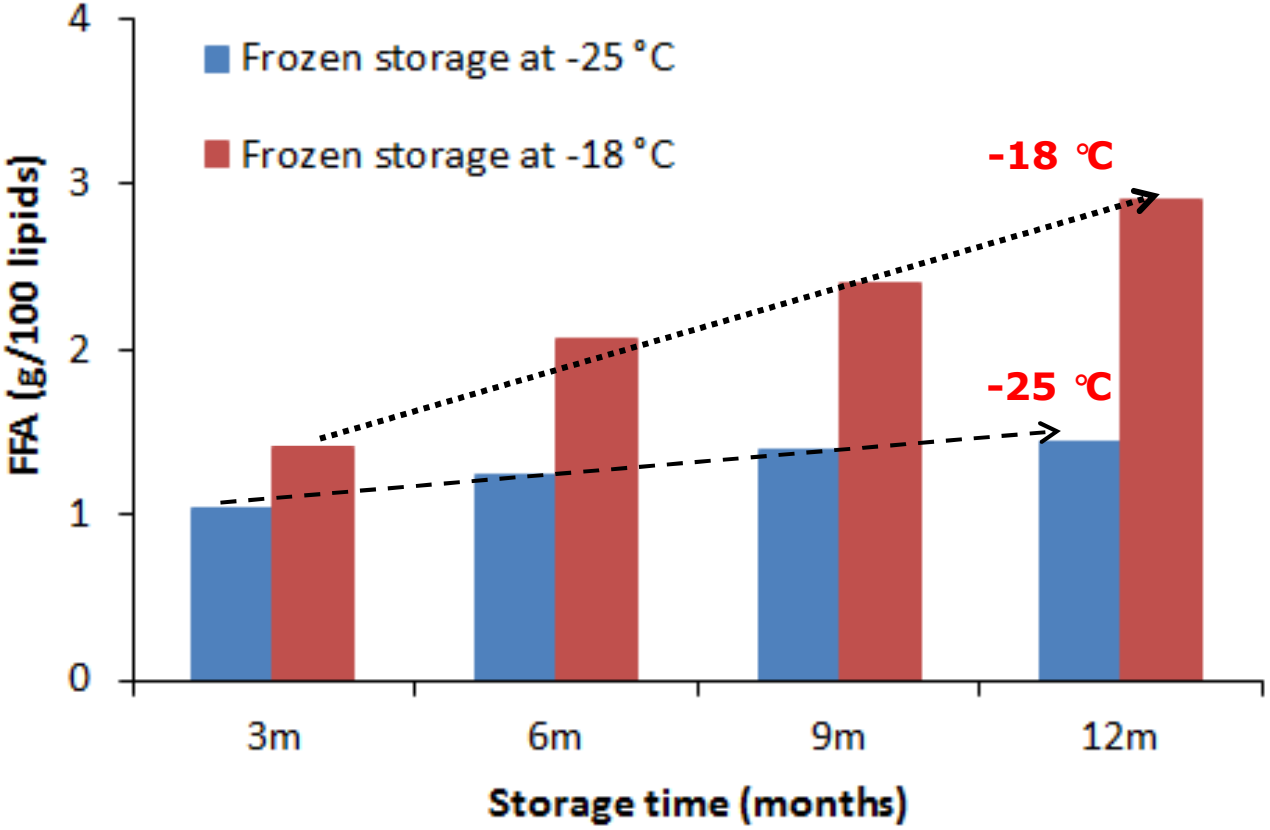
Factors affecting lipid oxidation development during frozen storage

- Seasonal variation
- Geological variation of fishing grounds
- Fish processing of raw material
- Freezing methods
- **Frozen storage time**
- **Frozen storage temperature**

Main methods

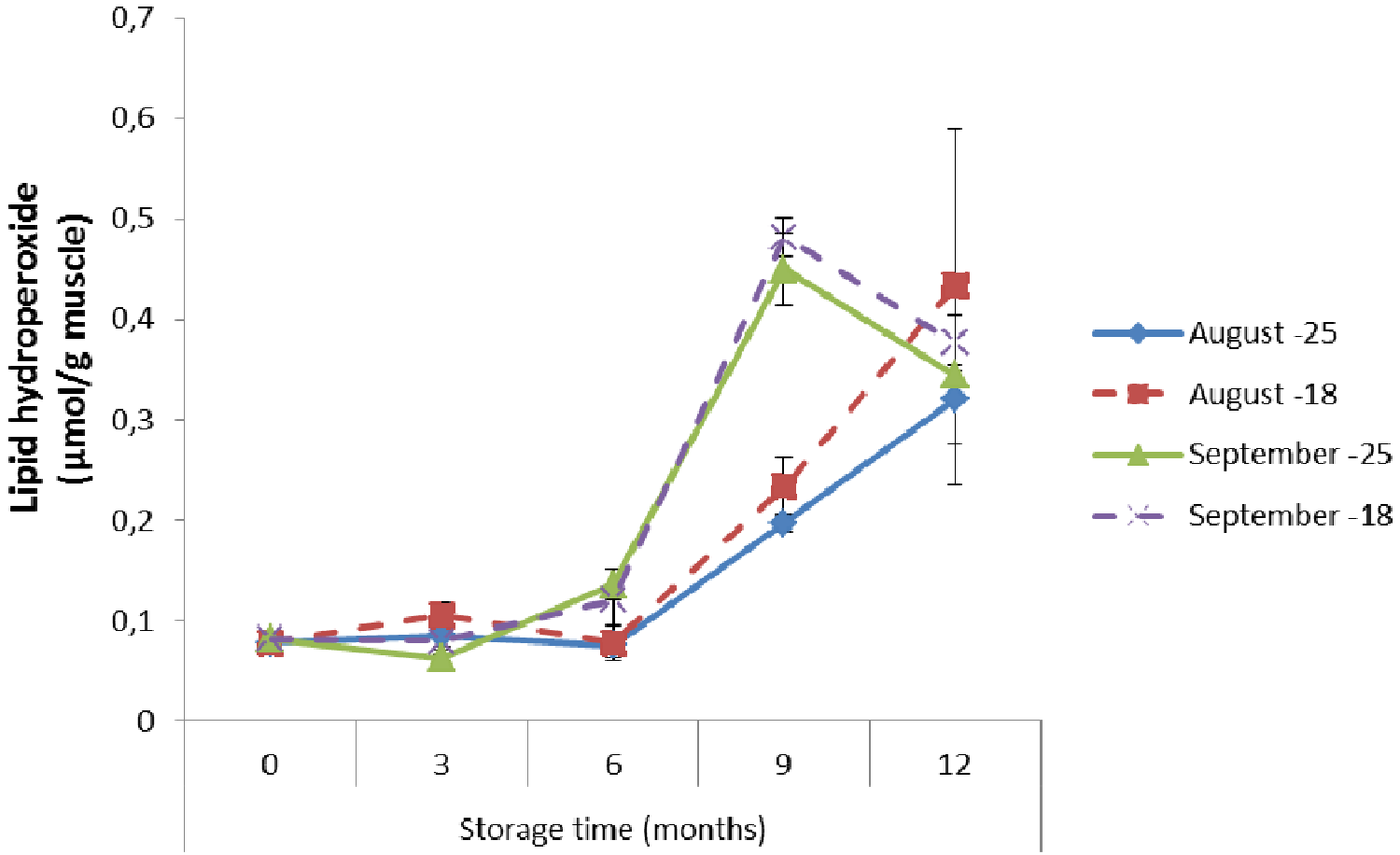
- **Lipid oxidation:** PV (1°), TBARS (2°), and fluorescence intensity (3°)
- **Enzymatic activity**: FFA
- **Physical and chemical properties**: Colour, drip, water content, lipid content, lipid composition
- **Quality evaluation**: texture, appearance, gaping, blood spots, peritoneum deterioration
- **Alternative methods**: NIR spectroscopy, colorimetric

The effect of storage temperature on fish quality and stability of lipids



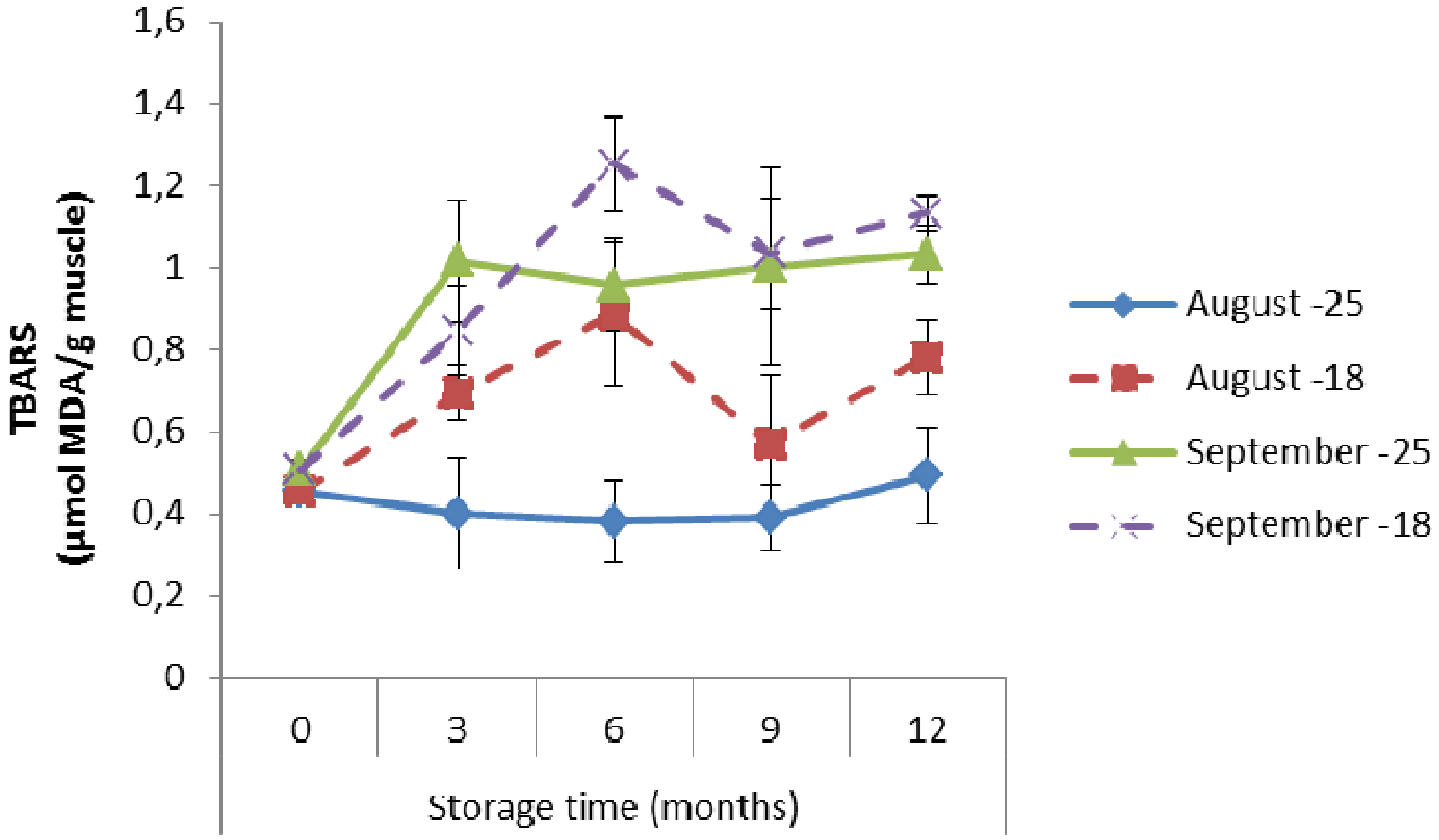
Free fatty acids (FFA) level were significantly higher for samples stored at -18˚C than -25˚C

The effect of storage temperature on fish quality and stability of lipids



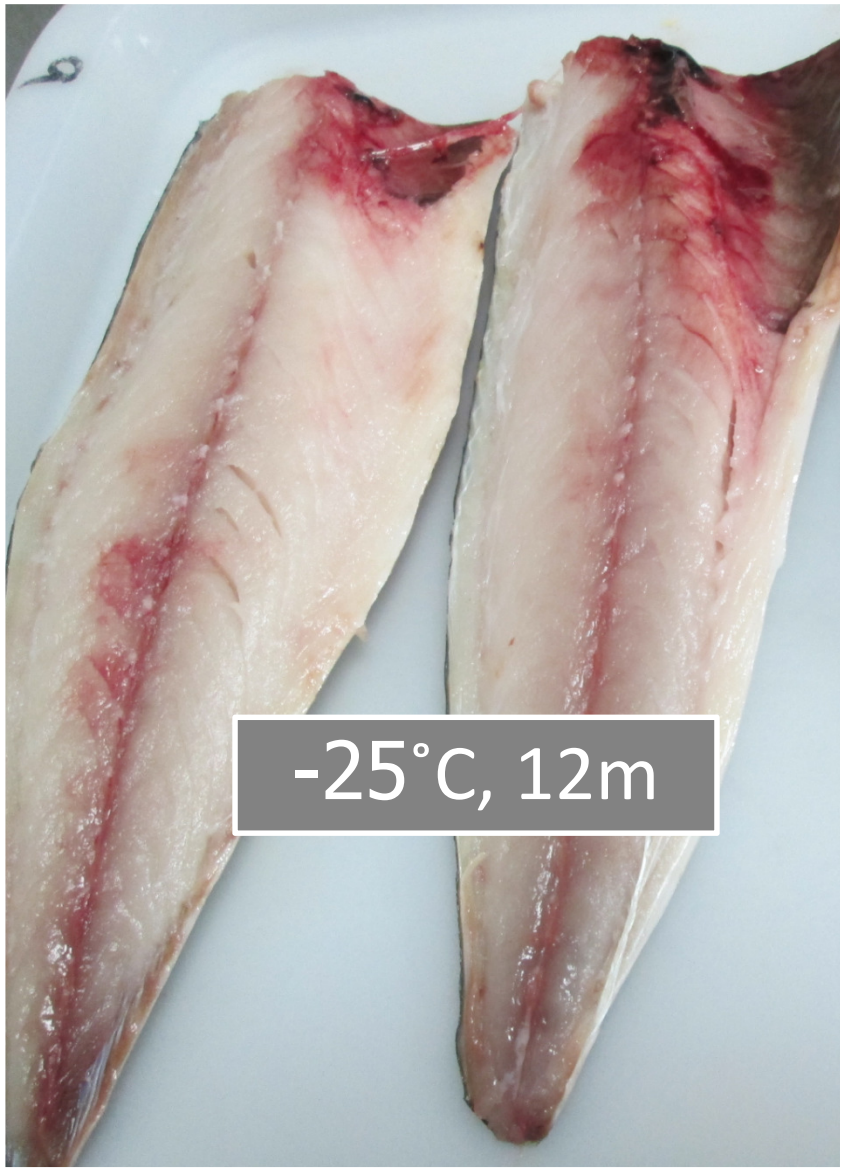
Primary oxidation products were at significantly higher level for samples stored at -18˚C than -25˚C

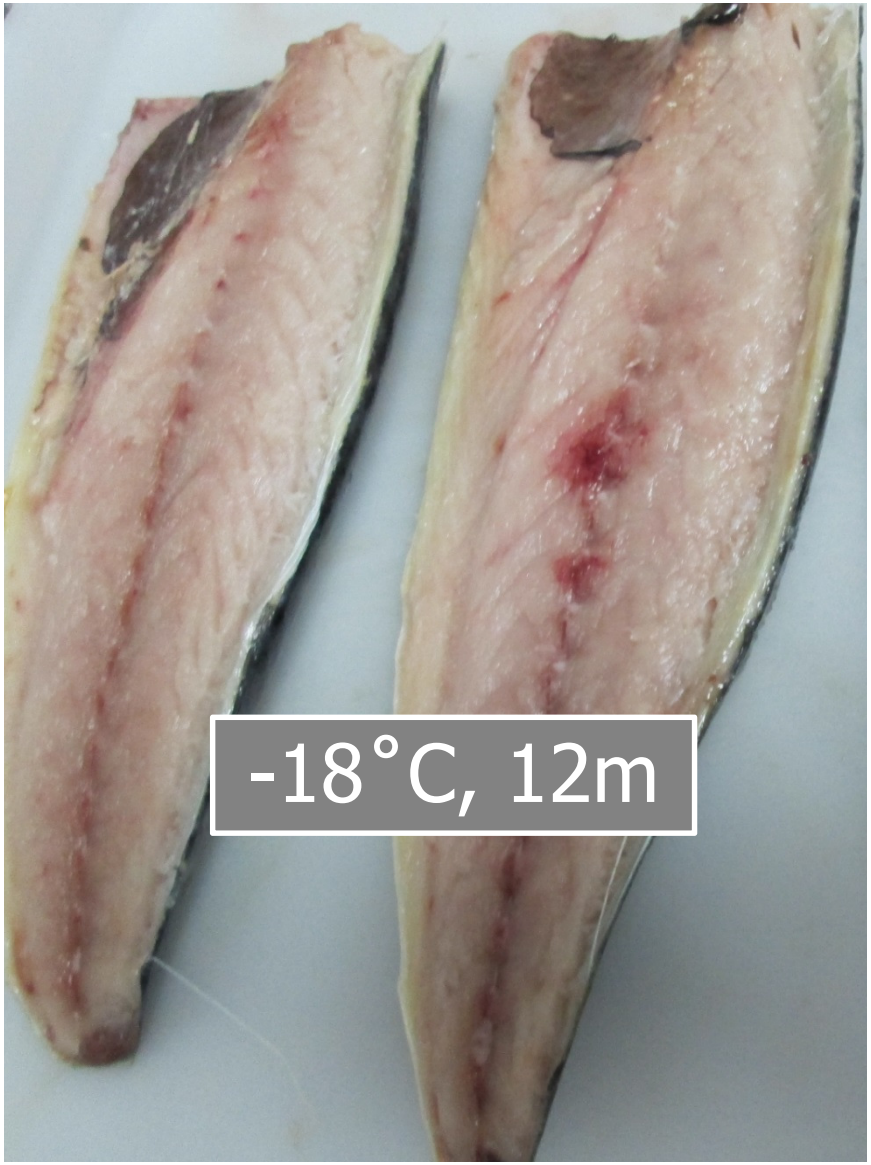
The effect of storage temperature on fish quality and stability of lipids



Secondary oxidation products were at significantly higher level for samples stored at -18˚C than -25˚C

Effect of different storage temperature on fish muscle quality





Conclusions

- Different pathways of lipid degradation

- Storage temperature and time are important factors regarding oxidative stability of frozen fish products

  - Recommended to store at -25 ℃ instead of -18 ℃

Acknowledgment