GAME AND FISHERIES RESEARCH

Comparing the Effects of Slaughter Methods in Rainbow Trout and European Whitefish

Susanna Airaksinen

Pathway from fish into a food product

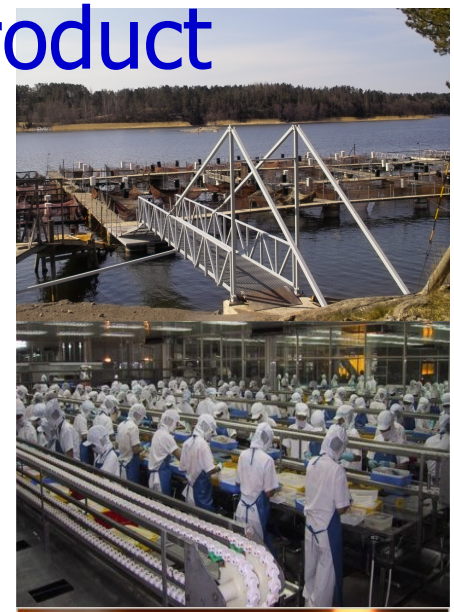
AQUACULTURE/WILD CATCH

GUTTING

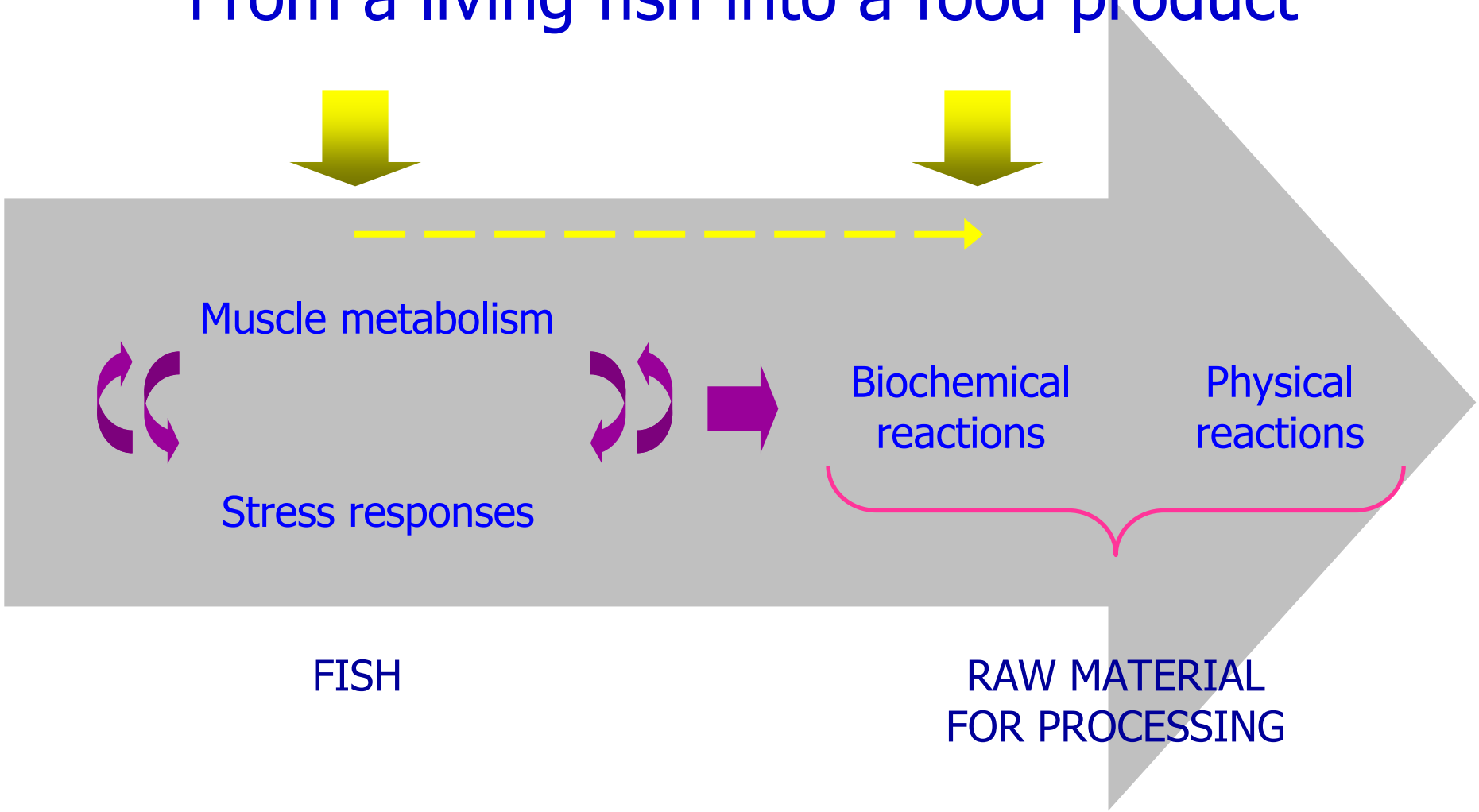
- Pretreatment
- Stunning
- Bleeding
- Chilling

PROCESSING

MARKETS



From a living fish into a food product



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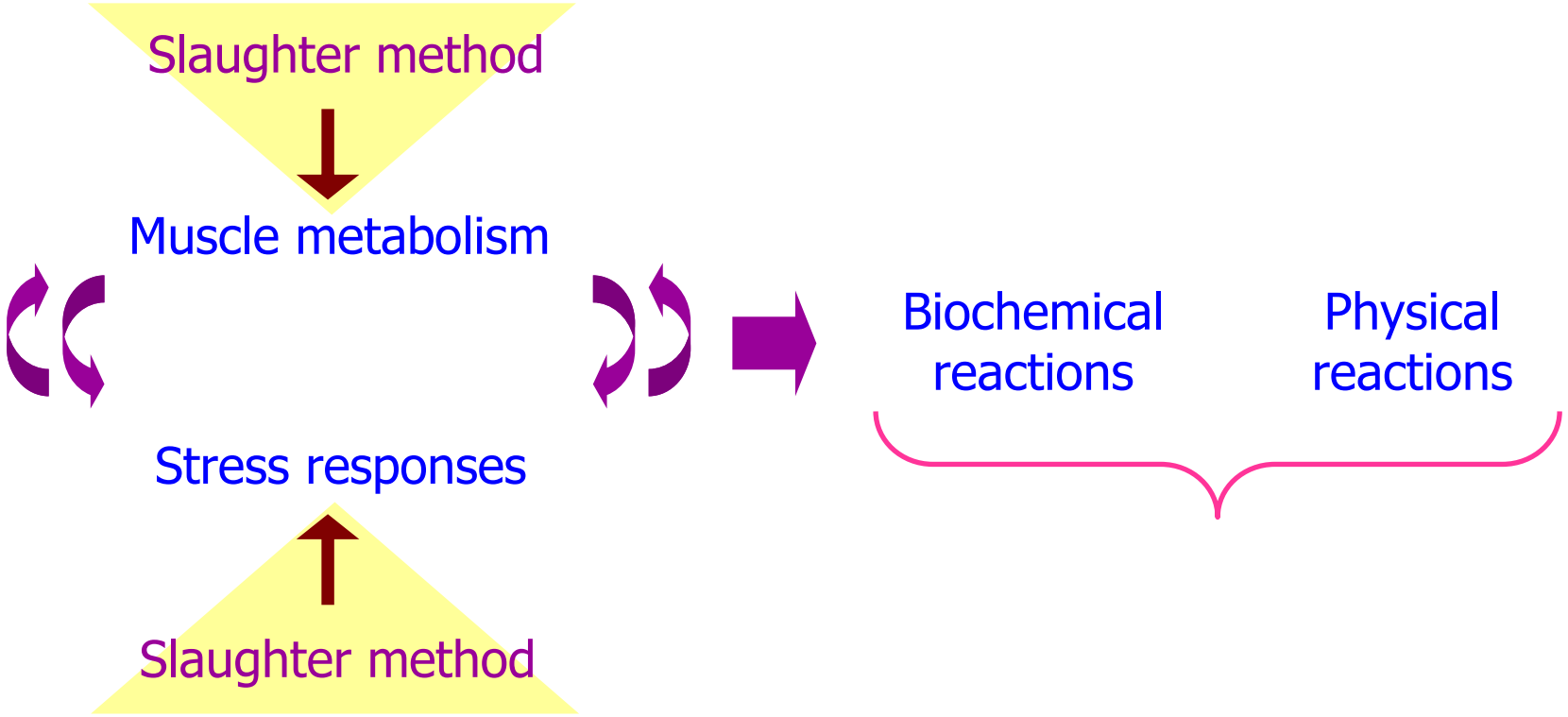
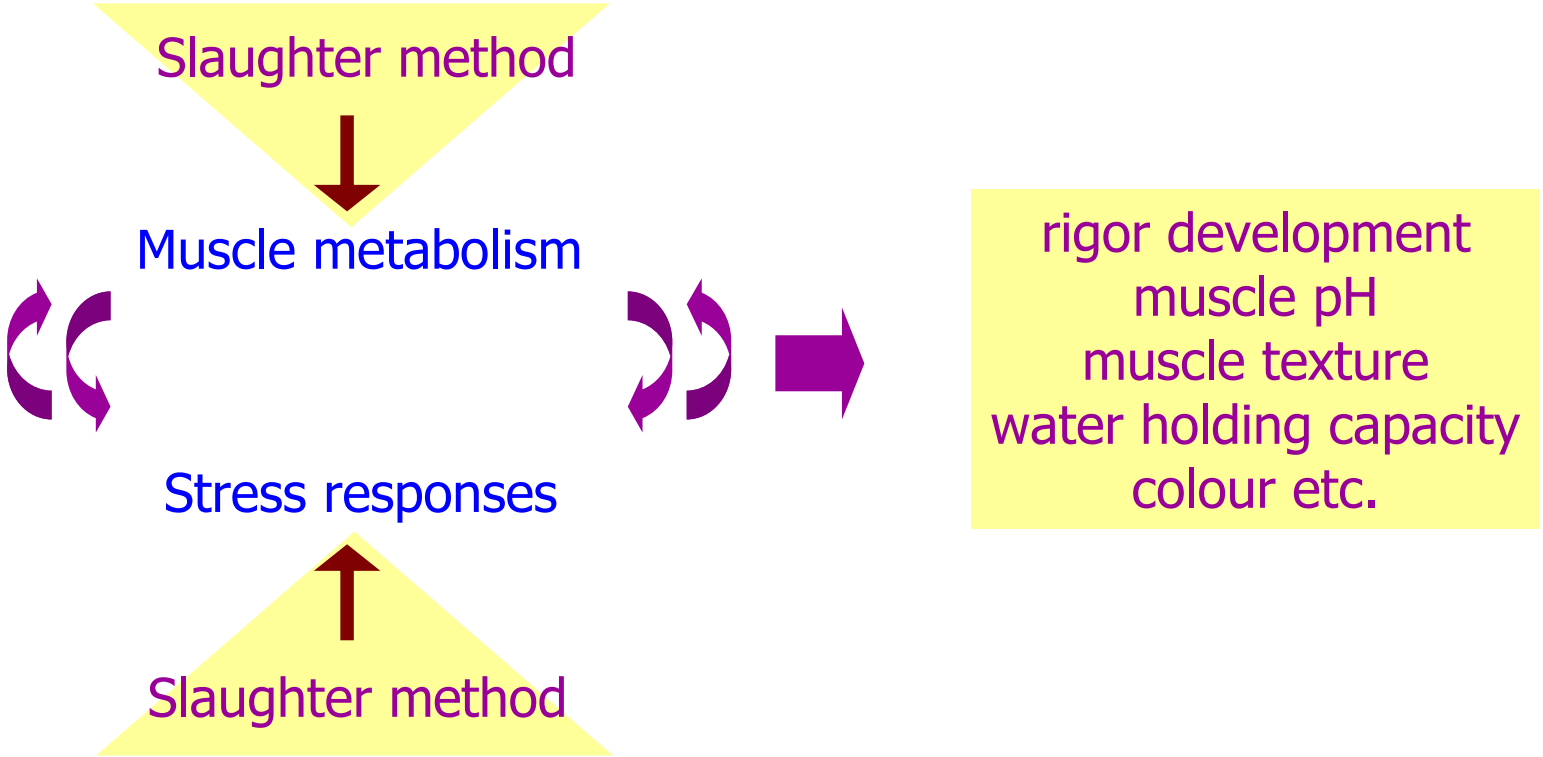


From a living fish into a food product



Experimental design

	Stress level high	Stress level low
Stunning by CO_2	CO_2/norm	CO_2/AQ
Stunning by percussion	perc/norm	perc/AQ

high stress> CO_2/norm > CO_2/AQ > perc/norm > perc/AQ > no stress

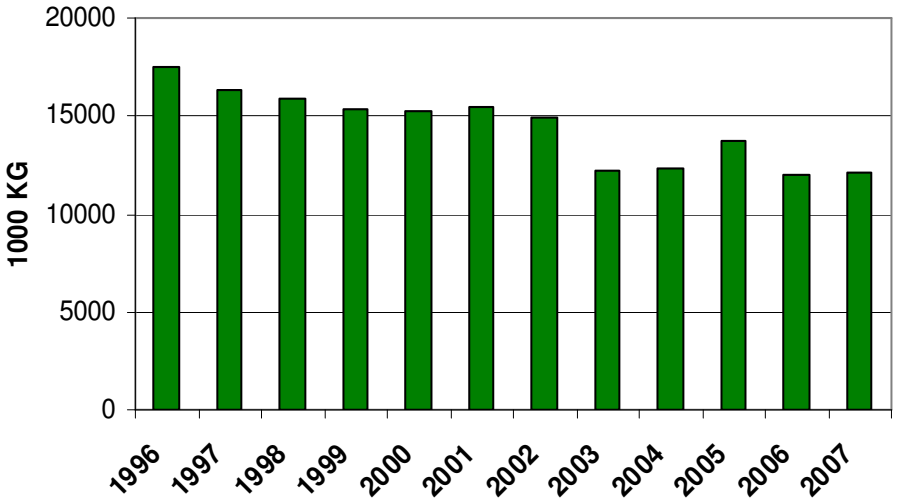
- fish were stored on ice and monitored for 96 hours after the slaughter

GAME AND FISHERIES RESEARCH

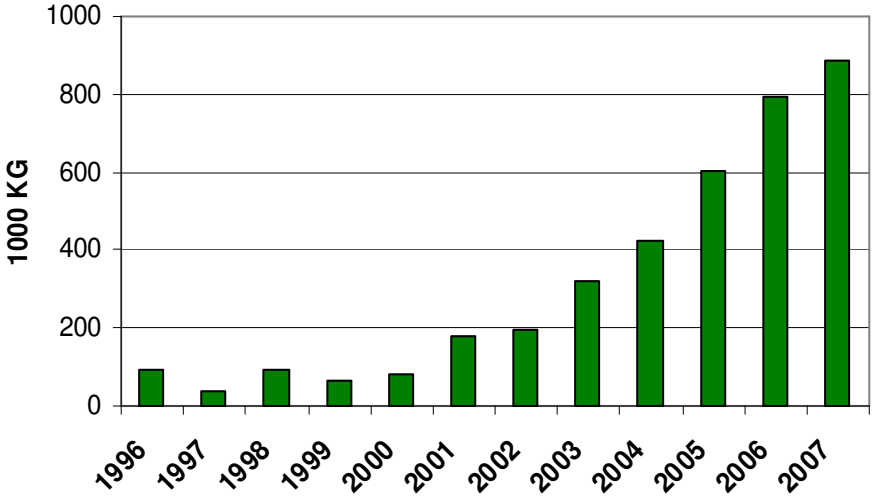
Two farmed fish species

Pictures by PROKALA

Rainbow trout *Oncorhynchus mykiss*



European whitefish *Coregonus lavaretus*



Statistics by Finnish Game and Fisheries Research Insitute

Two farmed fish species

Rainbow trout *Oncorhynchus mykiss*

European whitefish *Coregonus lavaretus*

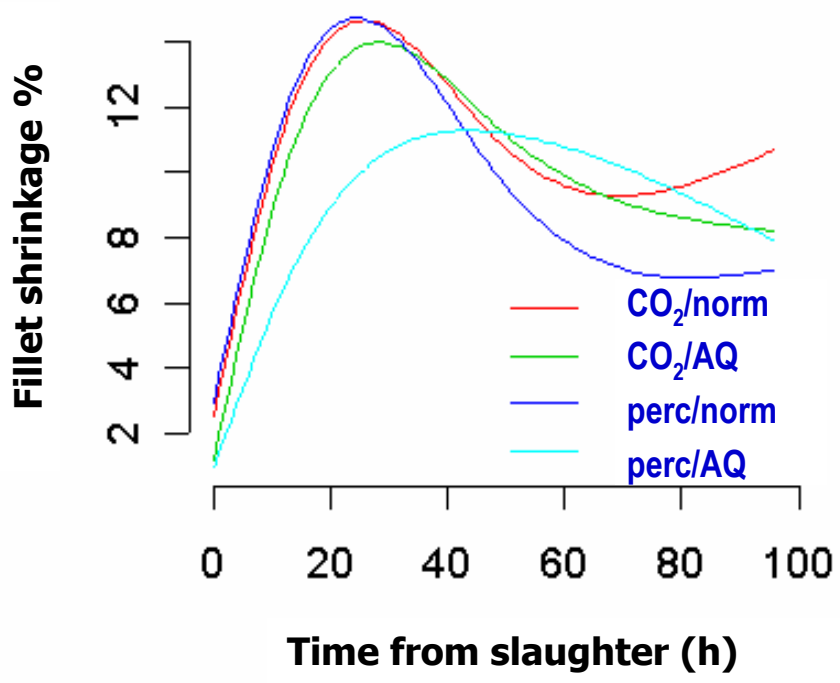
Pictures by PROKALA

Two salmonid species with distinct characters

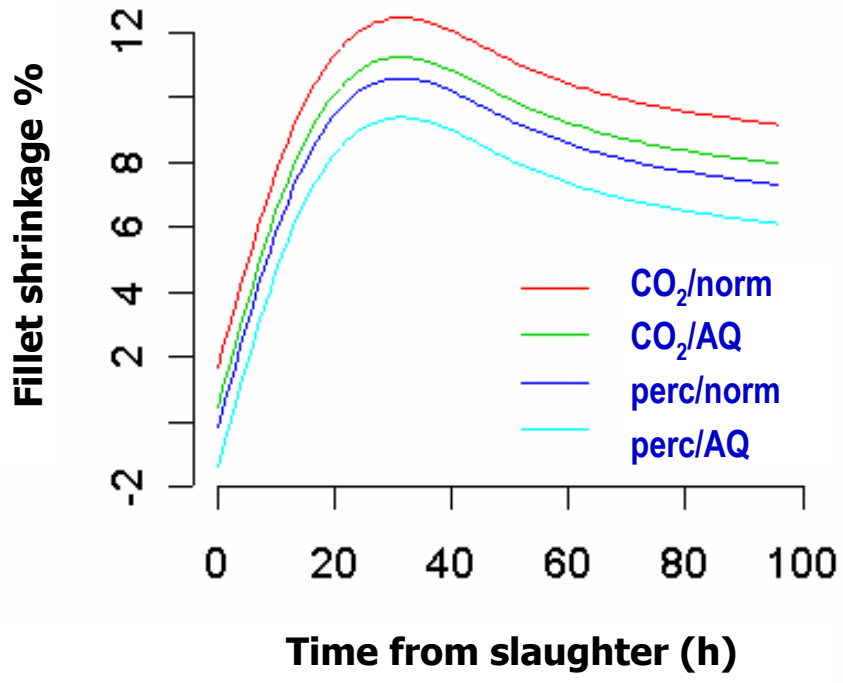
- Are there species-specific differences in the responses to chosen methods of slaughter?
- Are the differences such that they should be further considered upon development of the methods?

Fillet shrinkage

Rainbow trout

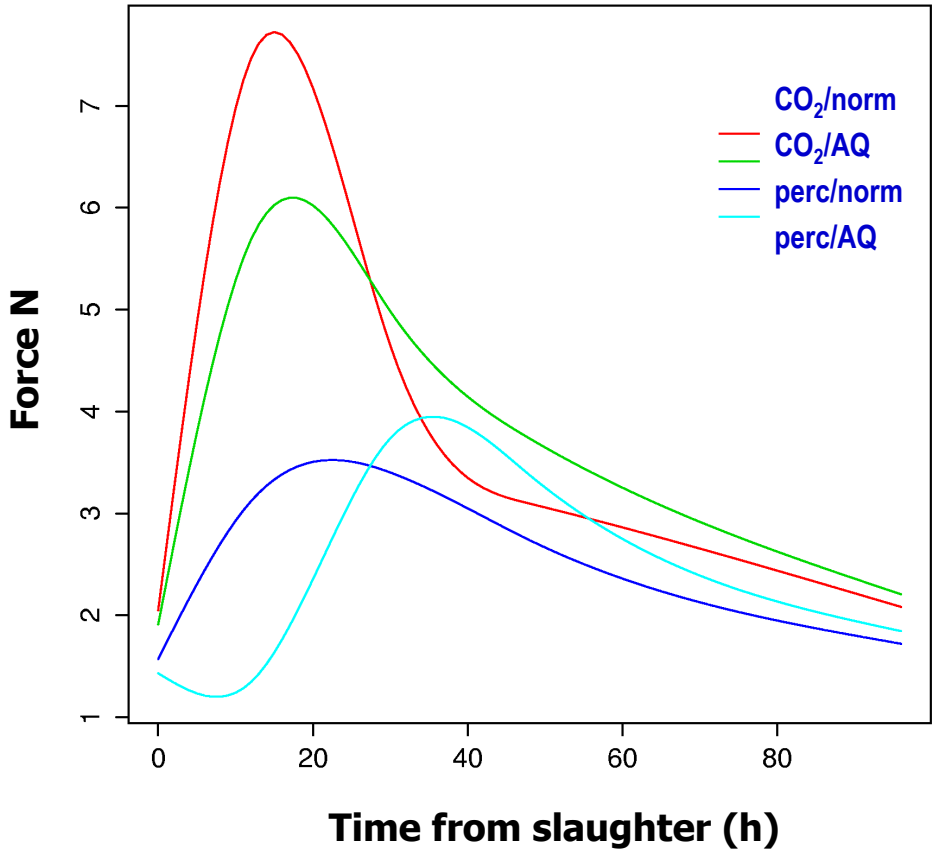


European whitefish



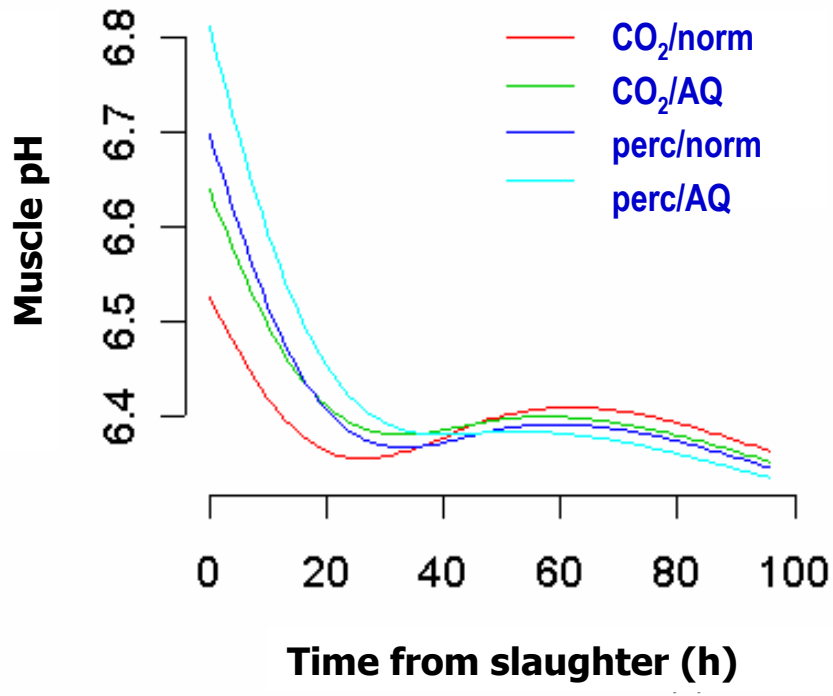
Rigor development

Rainbow trout

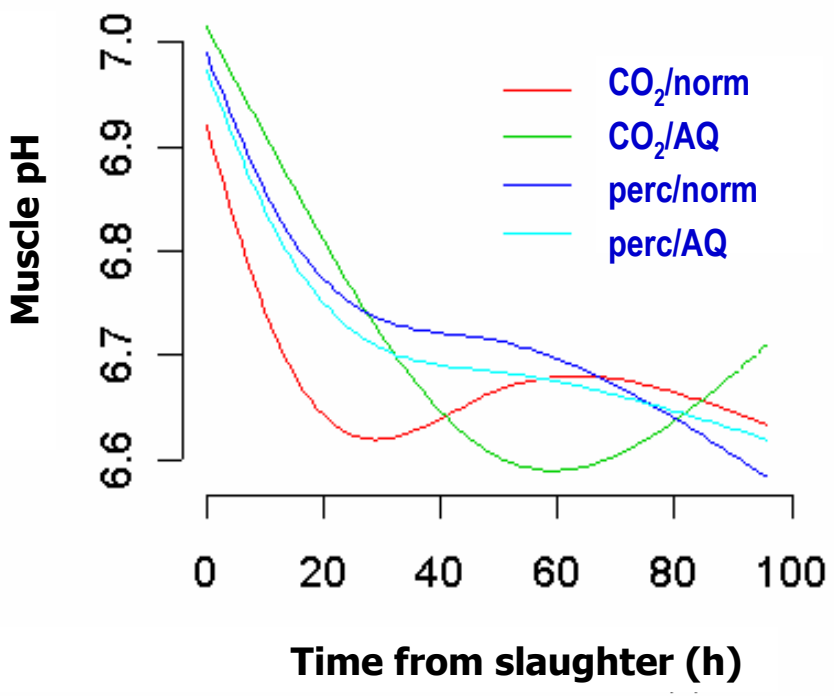


Muscle pH

Rainbow trout

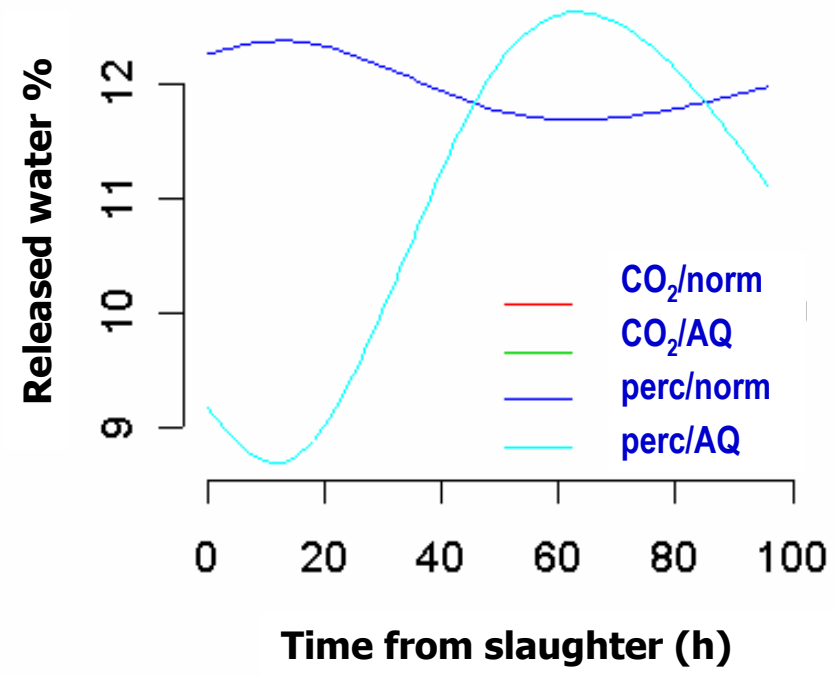


European whitefish

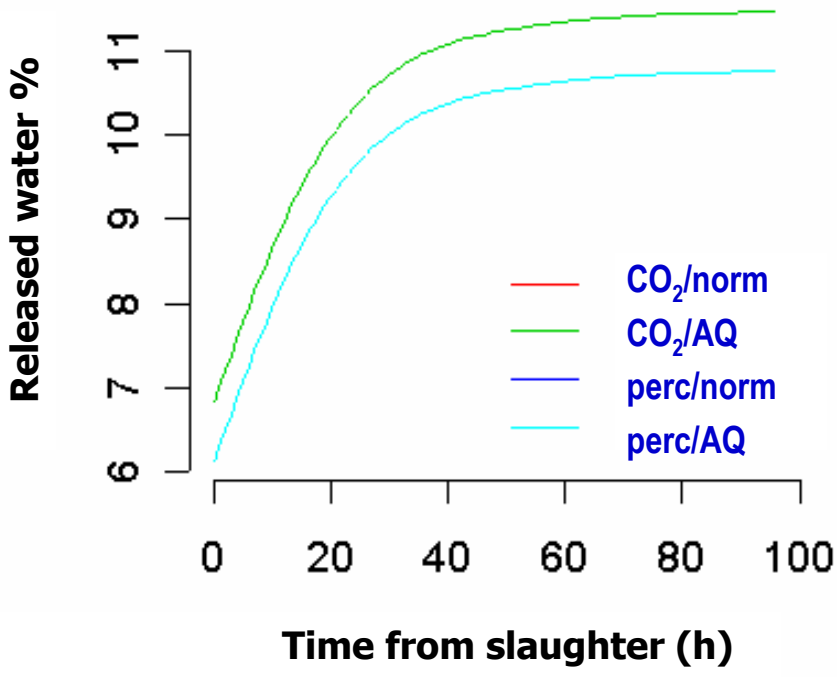


Water holding capacity

Rainbow trout

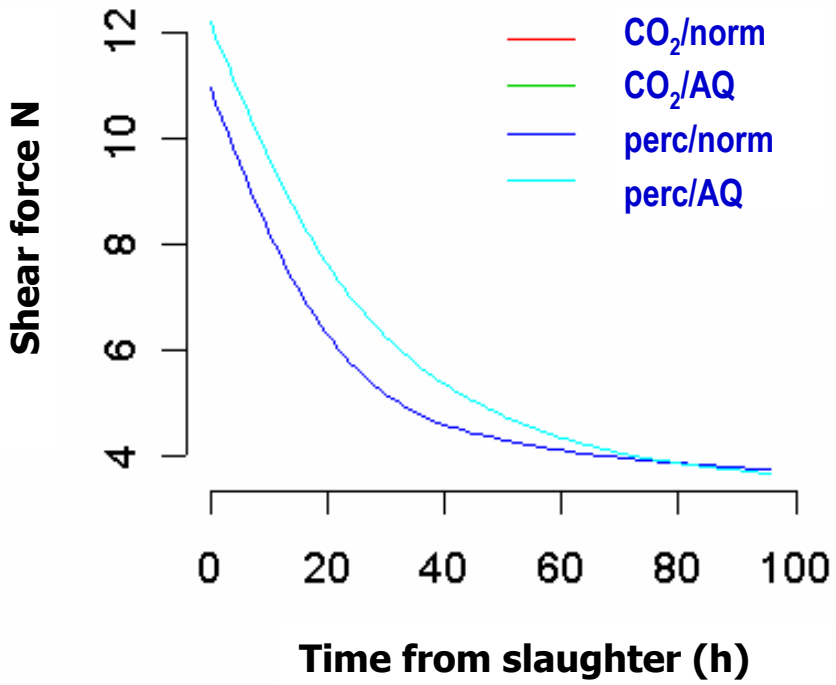


European whitefish

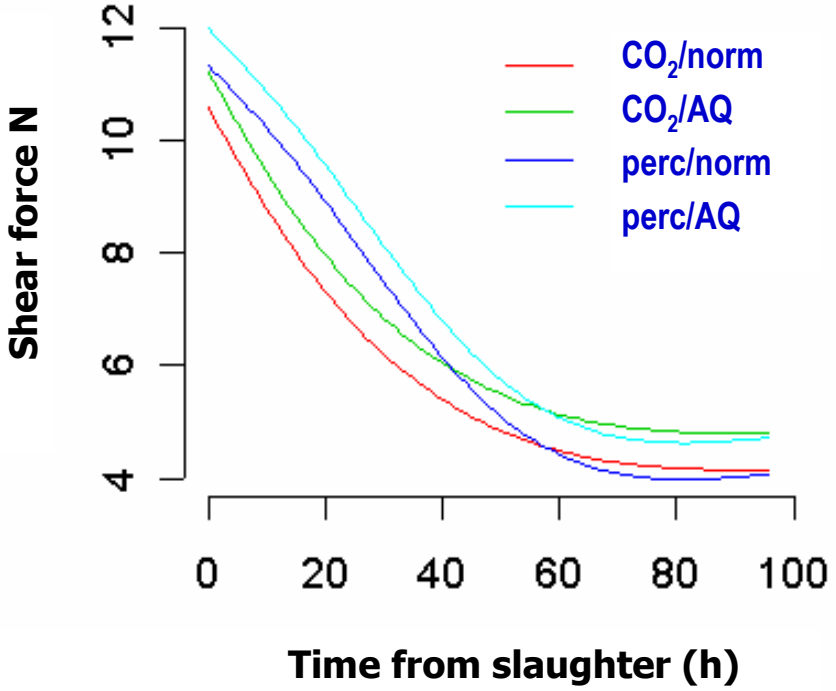


Muscle hardness

Rainbow trout

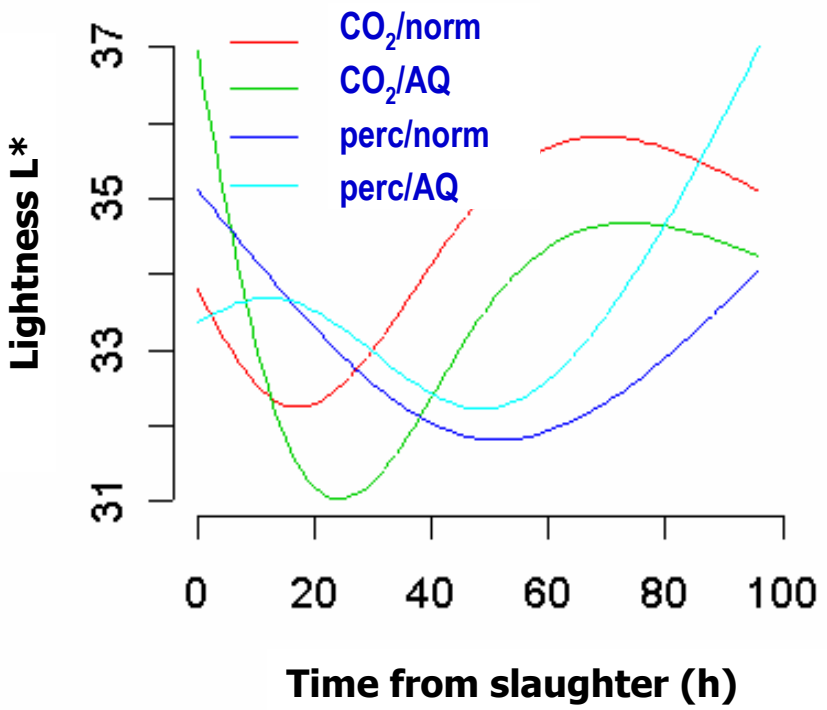


European whitefish

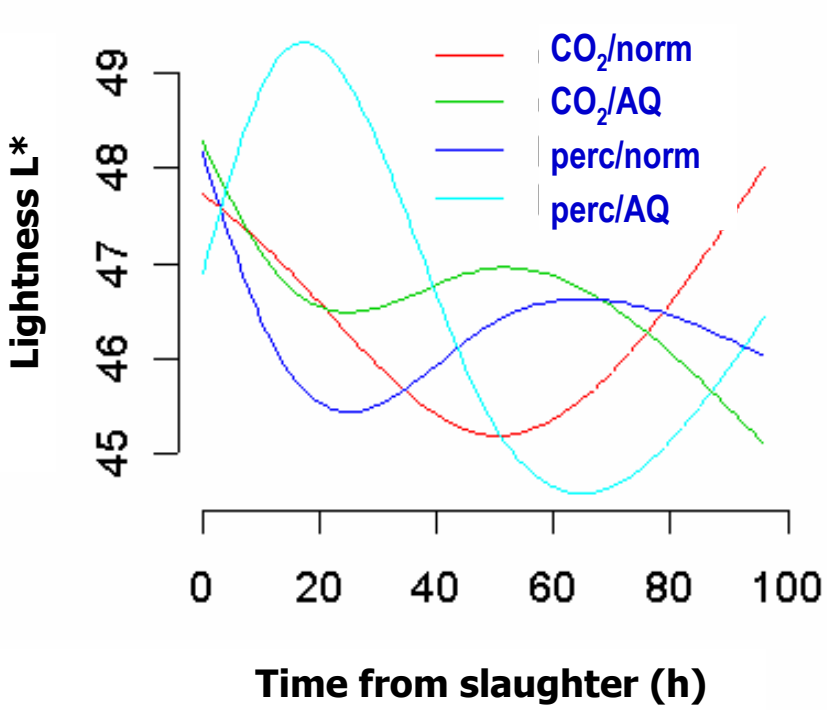


Fillet lightness L*

Rainbow trout

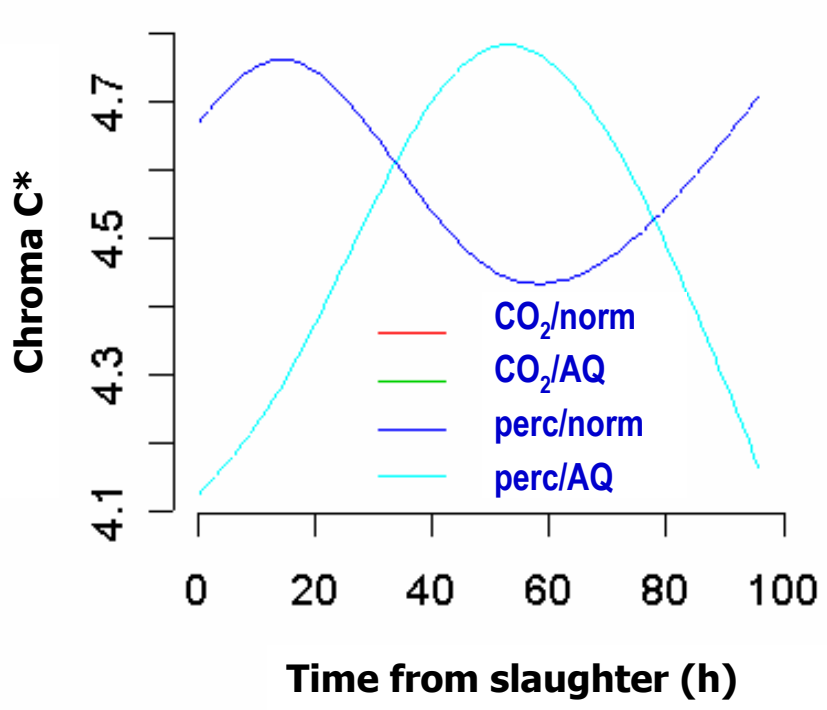


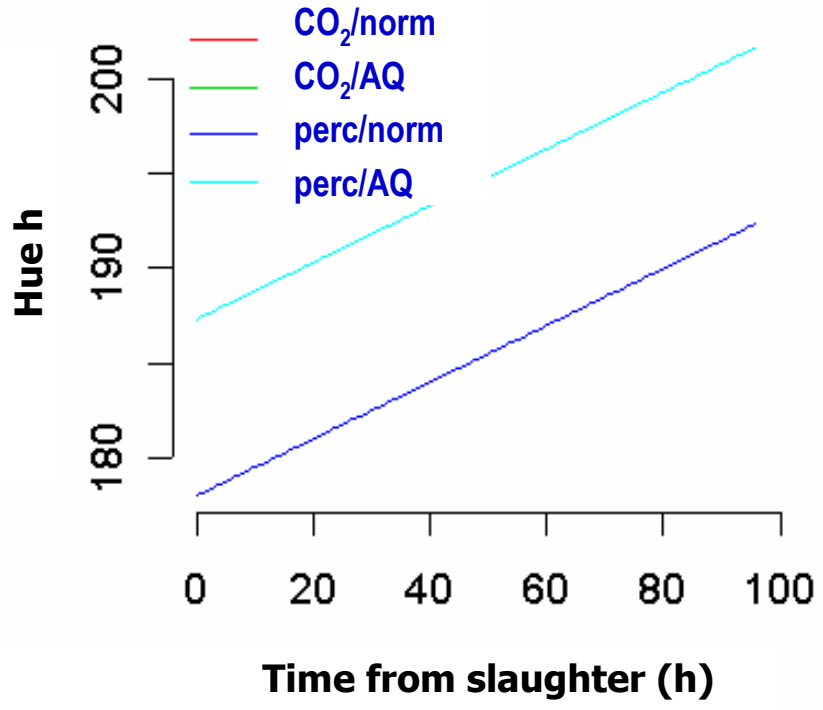
European whitefish



Fillet colour intensity C* and hue h

European whitefish





Conclusions

- In Rainbow trout stressfulness of slaughter is immediately reflected on muscle metabolism as shown by lower pH
- There is no difference in the final pH value between the treatments
- Similarly, when fillet is cut and let to shrink after slaughter, only the fillet in nonstress fish shows restrictions in contraction
- Also softening of the texture could be slowed down only by chemical sedation
- Due to very fast metabolic response of Rainbow trout it will be a great challenge to improve the end product quality by slaughter methods

Conclusions

Metabolically less active European whitefish showed graded response, i.e.,

- texture change and shrinkage followed the stressfulness of the slaughter method
- immediate pH drop was observed only in most stressful condition
- pH level remained higher when percussion was used as a slaughter method
- same was observed in water holding capacity

Development of the slaughter methods could be especially beneficial for European whitefish product quality

Acknowledgements

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