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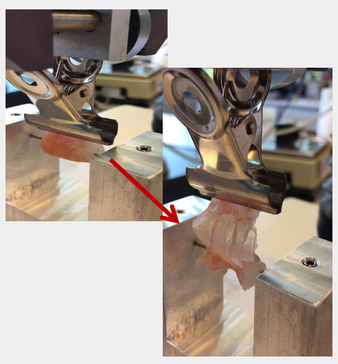
INTRODUCTION

Today shrimps are industrially peeled on automatic peeling machines after four to five days of maturation on ice. The TECHSHELL project is aiming at reducing the maturation time to one day, which will lead to an increased yield of 1%. Moreover, the CO2-emmission will be reduced, as well as the expenses to ice and the shrimps will be of higher quality.

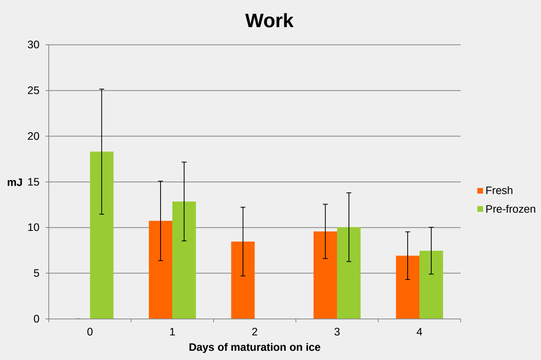
In order to be able to shorten the maturation period it is important to understand the quality changes (i.e. colour and texture) that take place during the maturation. Also, in order to test the change in peelability we have set up a quantitative method to measure the work needed to peel the shrimps, and we present here the peelability work and peak force as well as the colour results from a VideometerLab on both fresh and pre-frozen *Pandalus borealis* during maturation on ice (0-4 days).

PEELABILITY

Peelability is measured by a Texture Analyzer. The tension is measured quantitatively as the shell is pulled off the muscle of the first three segments.



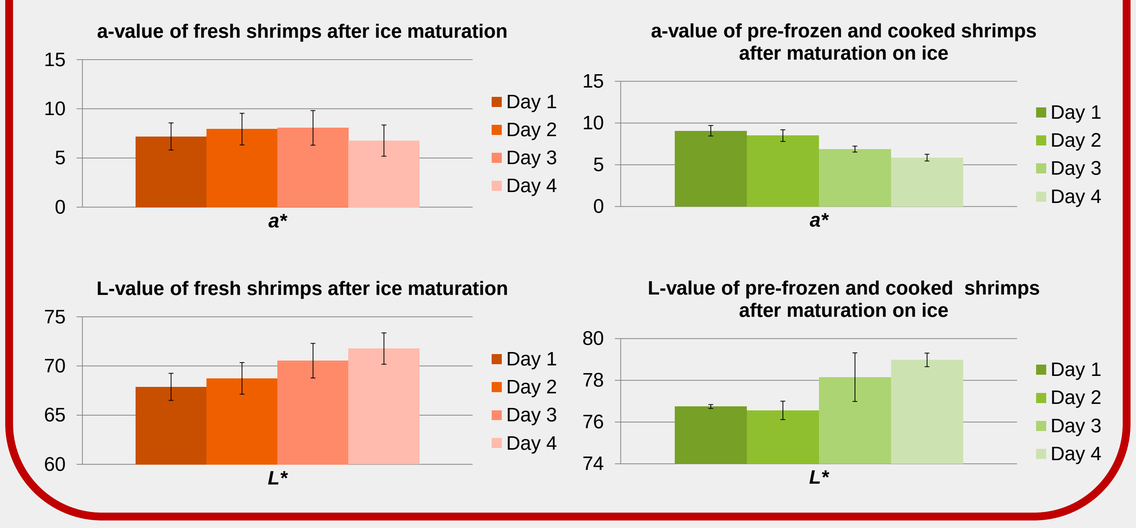
Both the work needed to peel the shrimp muscle and the maximum force needed to complete the peel are decreasing as the maturation takes place. For the fresh shrimps the work need to peel the shrimps are 1-2.5 mJ less than for the pre-frozen shrimps after the same maturation period.



COLOUR

One of the most important quality indicators of the shrimps is the red colour. Unfortunately, during maturation on ice the red colour is vanishing from the muscle.

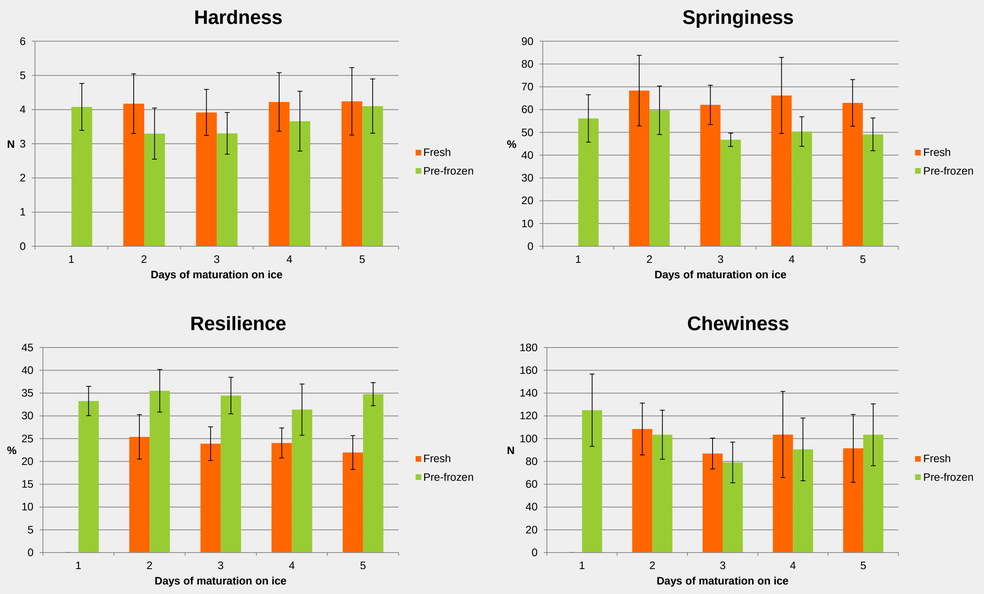
A VideometerLab is used to detect the colour of the shrimps, which is here presented as *L*a*b**-components, where *L** and *a** shows that the shrimps are getting lighter and less red as the maturation takes place.



TEXTURE

The texture is analysed by a texture profile analysis (TPA) with 50% strain, 1 mm/sec as pre-test, test and post-test speed and 10 sec. wait time.

The textural changes during maturation show differences between fresh and pre-frozen shrimps, where fresh shrimps are a bit harder and more elastic than the pre-frozen shrimps.



CONCLUSIONS AND PERSPECTIVES

During maturation of shrimps on ice the shrimps gets **easier to peel** as the work needed to peel the shrimp decreases. However, the shrimp muscle looses some of its initial red colour and thus appear **more pale**, which is a **loss in quality**.

Some **textural changes** take place during maturation, however the differences between fresh and pre-frozen raw material are mostly affecting the texture profile.

As the TECHSHELL project is aiming at reducing the maturation time to one day, different approaches to fresh and pre-frozen shrimps might be the best solution.

The knowledge presented here will be used in relation with test of different technologies, for shortening the maturation time, in order to evaluate if the peelability is improved without compromising quality.

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