

How can side-streams from seafood production become new ingredients without adding off-flavours?

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Introduction and aim

- In the seafood processing industry, the current exploitation of the aquatic biomass is hampered by inefficiencies as up to 70 % end up as side-streams, which are used either for low-value purposes or, in worse cases, wasted.
- In order to utilise this currently unexploited or poorly exploited biomass for more high-value purposes it is crucial to overcome the hurdles and bottlenecks related to transportation, handling, preservation and storage of this unexploited biomass. If the side-streams should become new ingredients, one needs to know if there is or will be developed off-flavours during storage and in the different processes that is needed for the production of the ingredients at all steps.
- In the WaSeaBi project, one of the cases deals with side-streams from cod filleting, namely head, frame and guts.

The results presented are from two studies.

- The first aim** was to investigate the effect of antioxidant dipping of the side-streams to prevent oxidation during storage as a preservation method before further processing.
- The second aim** was to use the side-stream for enzymatic production of savoury ingredient.

Material and methods

- Side-streams: frame, head and gut



- Storage: On ice at 5°C for 7 days.

Methods:

- sensory profiling (trained and tested expert panel; selected samples)
- Peroxide value (PV), tocopherols, TBA-reactive substances (TBARS). Results not shown.

Results

- The results from the first study showed that it was possible to prevent oxidation, but there were development of off-flavours.
- 2% Duralox and 0.2% Rosemary had the highest effect on preventing rancidity (Figure 1).
- The description of off-odour for the gut sample (No dipping) was fermented / ensilage, whereas for frame samples (0.05 and 0.2% Rosemary), it was green tea / flowerish (Figure 1).

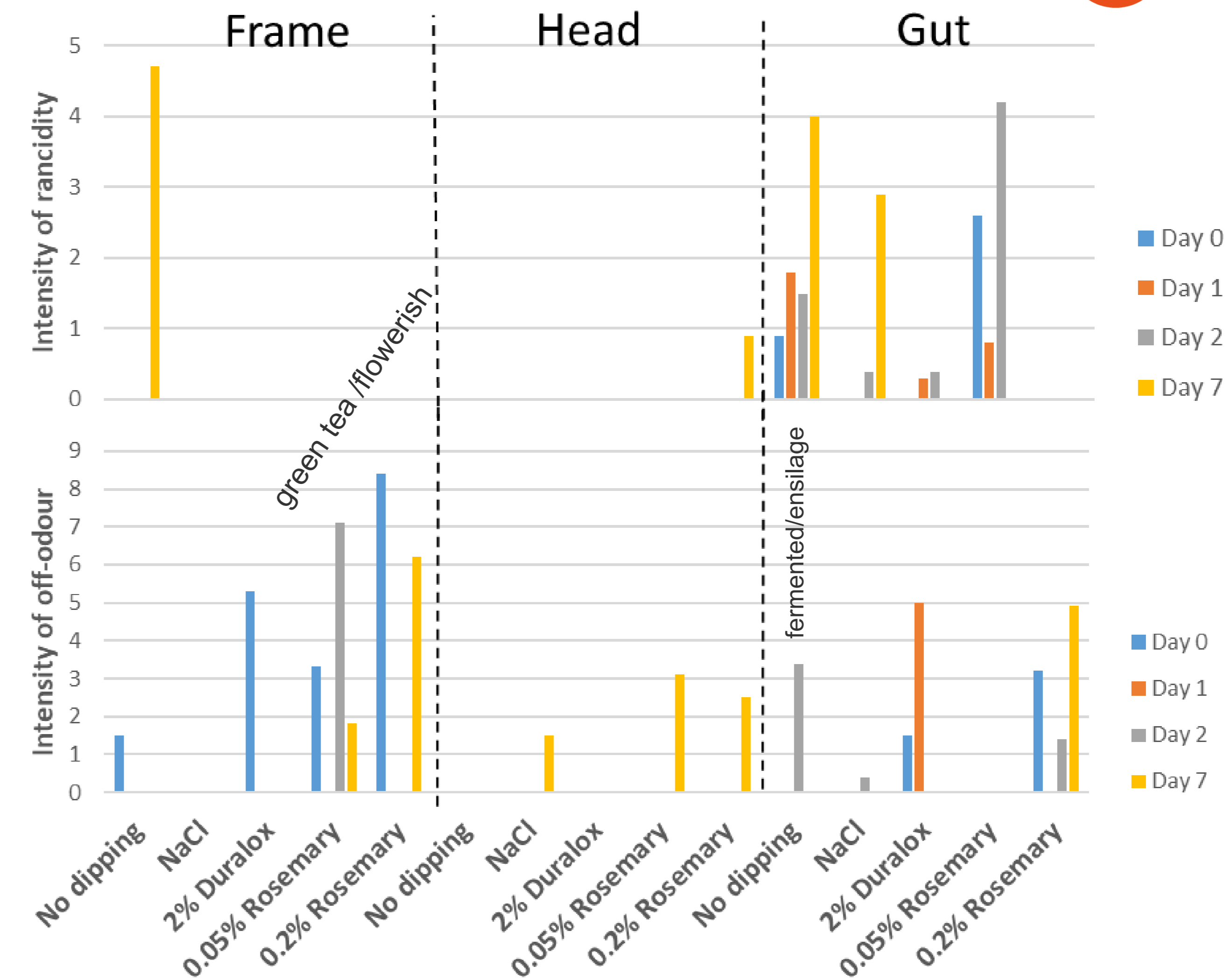


Figure 1. Intensity of rancid and off-odour developed during storage.

- The second study of enzymatic production of glutamic acid from cod frame side-stream focused on obtaining the highest possible concentration of free glutamic acid in the hydrolysed protein fraction. Two batches were produced for sensory evaluation.
- Due to the covid-19 situation the sensory profiling will be done later, but the pre-sensory test showed that there was high intensity of umami in the samples.

Conclusions

- It was found that it was possible to prevent oxidation, but not without development of off-flavours.
- In the sensory pre-test showed that it could be possible to produce a new umami ingredient.

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