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Improving Sensory Properties of Wet Aged Beef Using Active VAC-Guard Packaging Solutions

Objective: The most common way beef ages is through wet aging (vacuum packaging). During the aging process the vacuum packed meat is in contact with meat serum (drip loss), which can cause negative sensory effects such as sour and metallic taste and odor. The main goal of this study was to find an alternative for wet aging while improving the sensory quality of wet aged beef. One of these alternatives was the use of VAC-Guard, an active absorbent pad.

Compared

- Conventional vacuum packaging without an absorbent pad
- Vacuum packaging with an active VAC-Guard absorbent pad

Material: Fresh beef was cut in 1kg pieces and vacuum packed without an absorbent pad and with a VAC-Guard pad. Samples were stored for 6 weeks at 4°C then analyzed at 2, 4 and 6 weeks.

Test Methods

- Warner-Bratzler sheer force analysis
- Sensory evaluation of the beef taste which includes,
    - Sour
    - Metallic
    - Beefy
    - Tenderness
    - Juiciness
- Sensory evaluation of the packaging specifically sour- and off-odor.
- Drip loss

Results: After 14 days, significant improvement of beef tenderness sensory evaluation during the 42 days of storage was found for both conventional and VAC-Guard packages (Figure 1A). At the end of storage time, the beef with VAC-Guard was improved compared to conventional vacuum packaged beef. At Day 28 and 42 of storage the sour taste with VAC-Guard was significantly reduced, while the beefy taste was significantly improved (Figure 1B, 1C).

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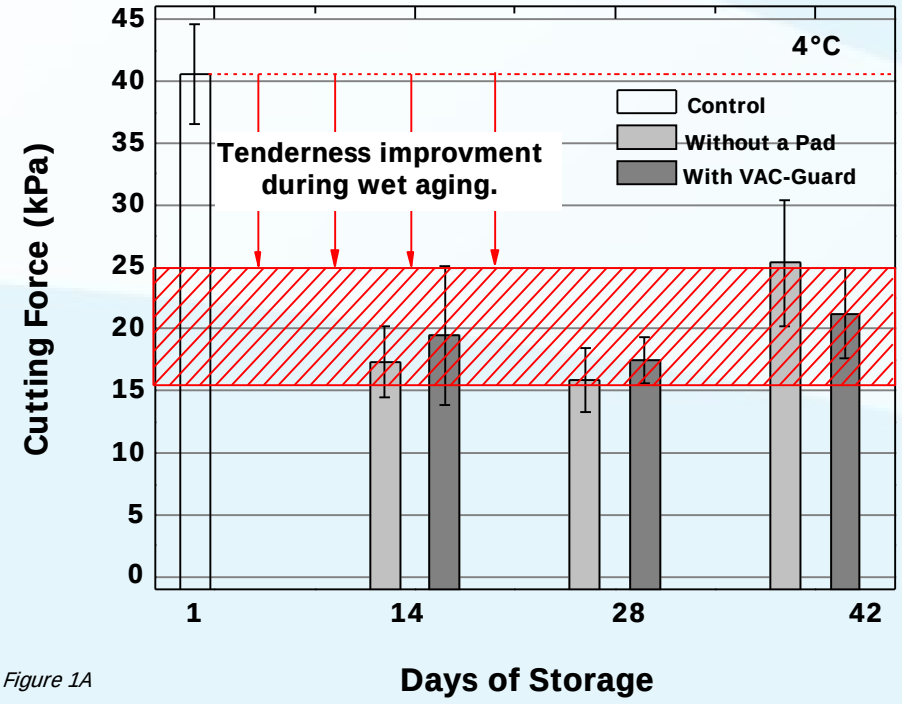

Figure 1A

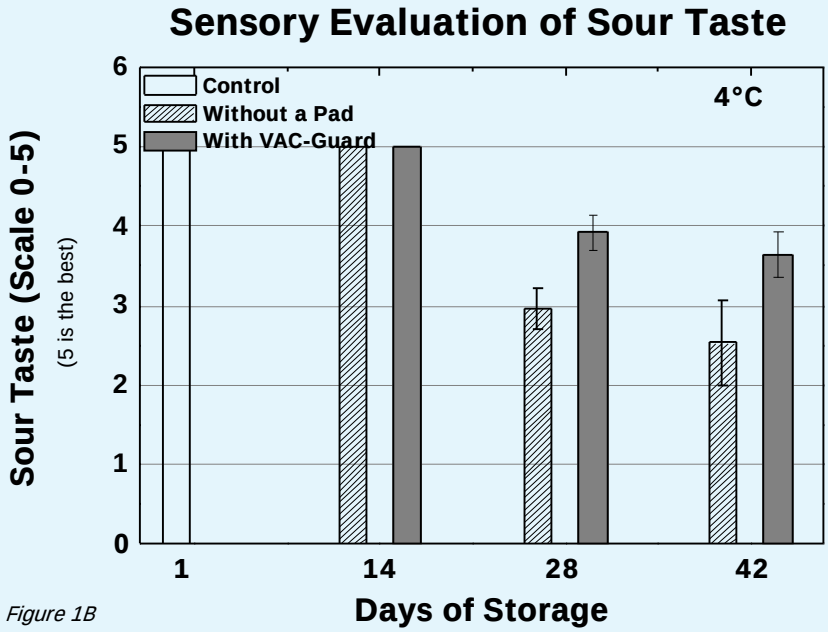

Figure 1B

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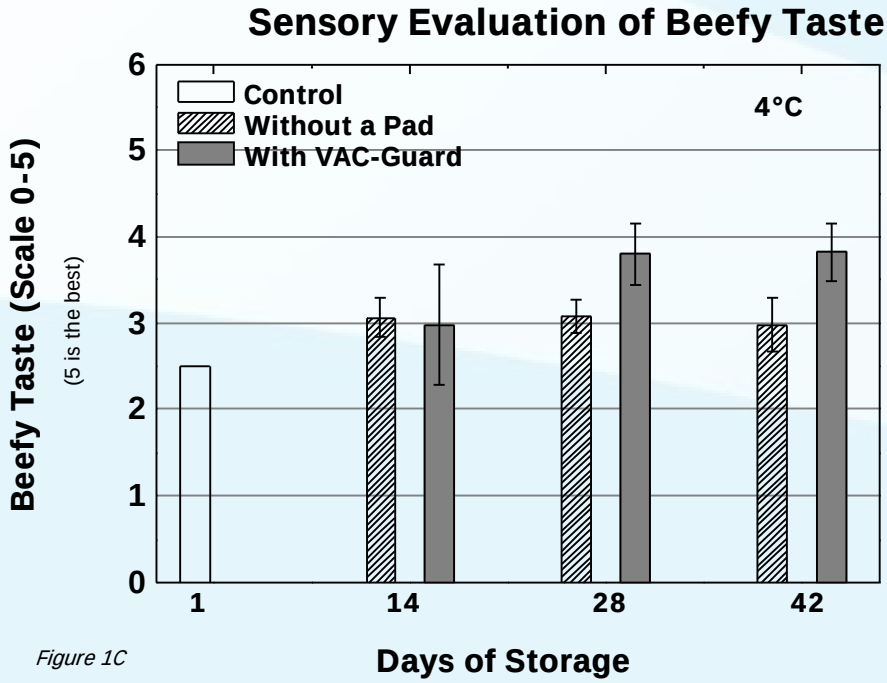

Figure 1C

During storage a reduction of sour- and off-odors in the package with VAC-Guard compared to conventional vacuum packaging was noted.

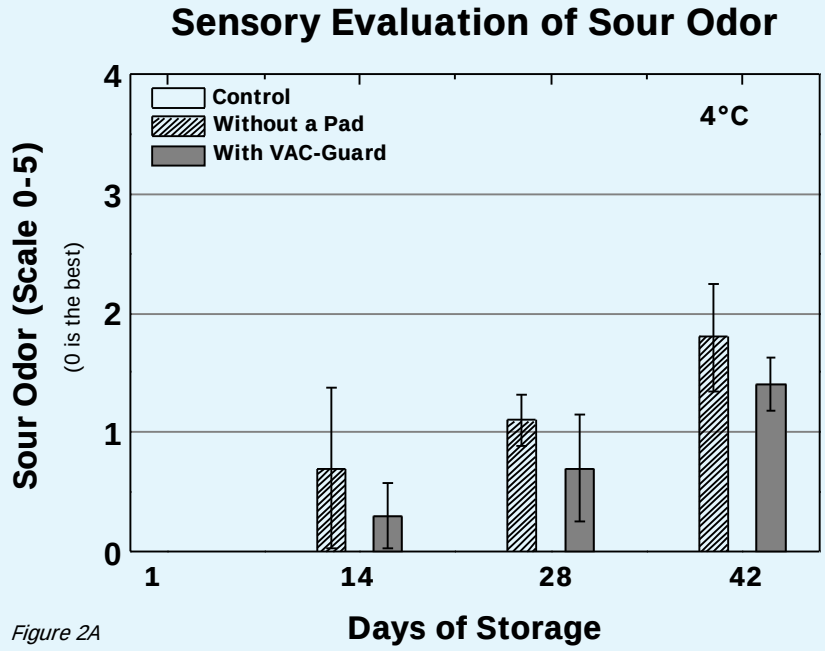

Figure 2A

Improving Sensory Properties of Wet Aged Beef Using Active VAC-Guard Packaging Solutions

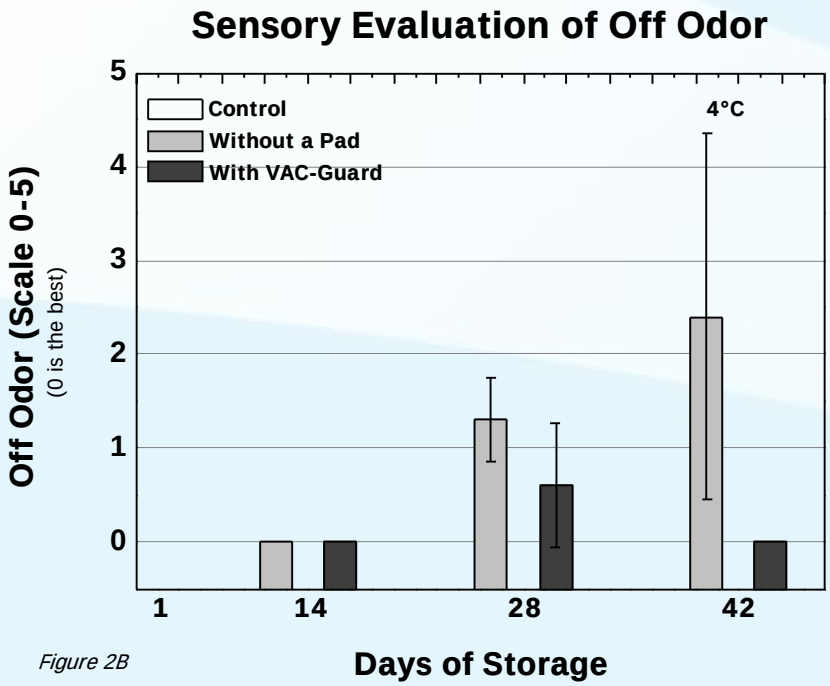

Figure 2B

During storage a high amount of drip loss in conventional vacuum package was found. Compared to this, the drip loss in VAC-Guard packages was almost completely absorbed by Day 14 and 28. At 42 days a significant reduction of drip loss was observed.

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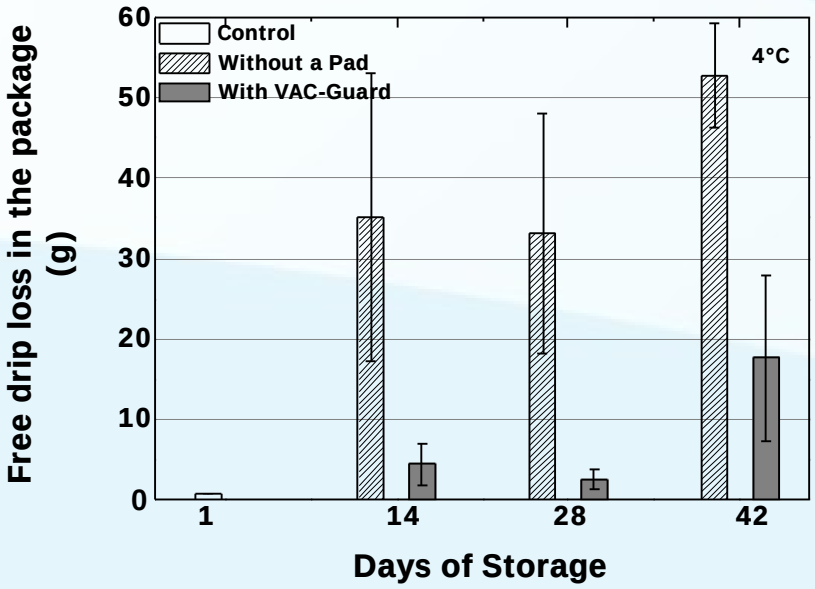

Conclusion: The results of the scientific study showed a significant improvement in beef quality during storage. The tenderization (aging) process was found in both packaging options. However, the option with VAC-Guard showed significant improvement compared to conventional vacuum packaging in the following parameters:

- Significant reduction of sour taste
- Significant improvement of beefy taste
- Reduction in off odors in the package
- Reduction of sour odors in the package
- Significant reduction of drip loss in the package

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According to the results from the study and comparison with scientific literature, the VAC-Guard improvement of the sensory properties of beef during the aging period was similar to the improvement after a dry aging process, and the negative effects of wet aging are significantly minimized.

Study conducted by Filip Tintchev[1], Heiko Pommeranz, and Ute Bindrich[2].
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