Optimising heat treatment of meat products using low cooking temperatures

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AIM

To study if heat treatment to low core temperatures of 65°C and 70°C, respectively, could:

- reduce cooking loss and process time
- result in a better and more uniform quality

CONCLUSION

Heat treatment to a low core temperature resulted in significantly lower cooking loss and shorter process time. The products were significantly juicier and had a more cohesive and less crumbly texture, and the quality was more uniform than for products heat treated to 75°C. Heating to 65°C resulted in significantly more springiness texture, which can potentially improve the sliceability.

MATERIALS AND METHODS

Pork loins were injected with brine to a 30% weight gain, stuffed in casings, dried at 65°C/25 min., smoked at 65°C/45% RH/25 min. followed by heat treatment to a core temperature of either:

- 65°C/5 min
- 70°C/30 sec.
- 75°C/5 sec. (reference)

Three replicates were made for each temperature, n=36.

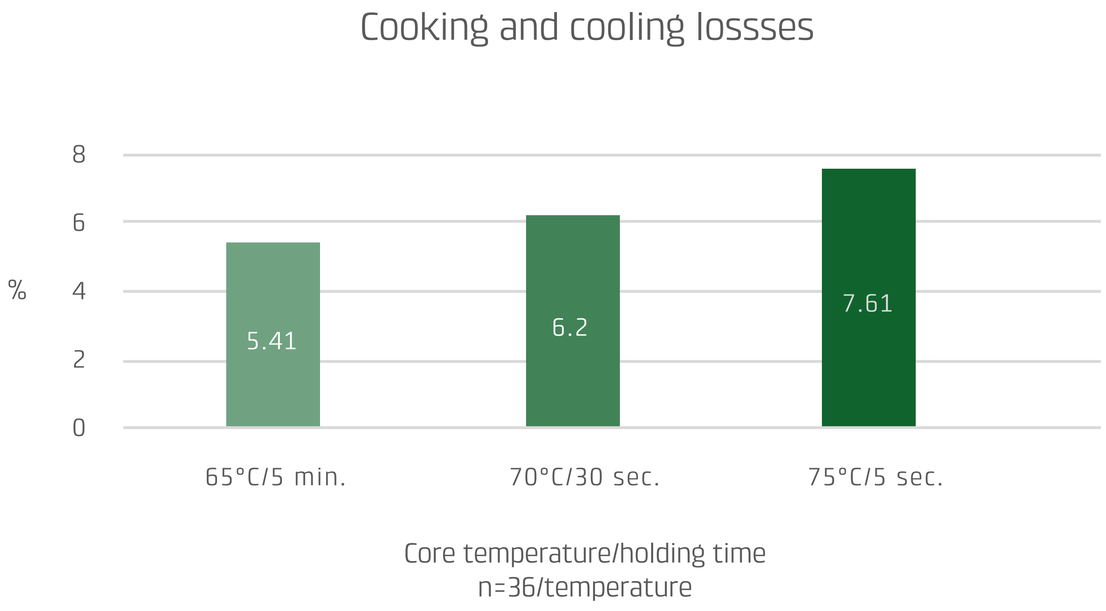
MEASUREMENT

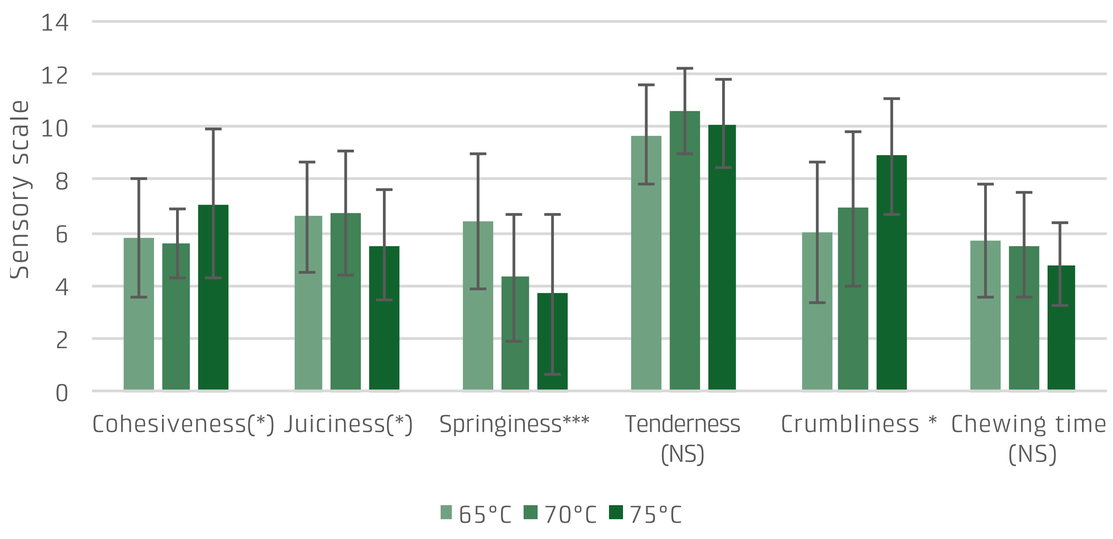
- Cooking and cooling loss (cooled to 2°C)
- Process time
- Sensory profile

FINAL PRODUCT

2,4% NaCl
60 ppm nitrite

RESULTS





On average, the cooking loss was reduced by 28.9% at 65°C and 18.5% at 70°C compared with 75°C.

The standard deviation was markedly lower when using lower cooking temperatures resulting in a more uniform product quality.

Process times for the heat treatments were reduced by 16 minutes at 70°C and 33 minutes at 65°C.

(*): p<0.10, *: p<0.05, ***: p<0.001
The products heat treated to temperatures <75°C were significantly juicier and had a more cohesive texture compared with the reference that was crumblier. The product heat treated to 65°C had a significantly more springiness (elastic) texture, which can potentially improve the sliceability.

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