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Research Station ALP

52nd ICoMST, Dublin, 13th – 18th August 2006

EFFECT OF FAT SCORE ON THE QUALITY OF VARIOUS MEAT PRODUCTS

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1. Introduction

- Increase of lean tissue and decrease of adipose tissue deposition in pig carcasses due to breeding strategies
- Close relationship between the intake and the concentration of polyunsaturated fatty acids (PUFA) in porcine adipose tissue

⇒ Increased PUFA tissue levels → often associated with:
- higher oxidation rates (→ rancid)
- impaired texture (→ soft, greasy, oily)

What are the effects of different fat scores (FS) on the quality of four different meat products? → of interest: nutrient content, fatty acid profile, sensory traits, texture, oxidation rate, a_w-value, meat:fat-ratio

Raw cured bacon:
- left: oily, greasy
- upper right: rather fatty
- lower right: good meat:fat-ratio, good fat firmness

2. Material & methods

- Slaughtering of 47 Large White gilts in two series from the trial of Bee (2005)
- Fat score determined individually by the method described by Scheeder et al. (1999) → similar to iodine number
- Production of four different meat products at the ABZ Spiez from the 47 pig carcasses:
  - Raw cured bacon (RCB): n=47
  - Salami (SAL): n=20
  - Pork hamburger (PHB): n=14
  - Vienna sausage (VIS): n=14

Sampling for fat-score determination

3. Results

Tab. 1: Evaluation of raw material by ABZ-specialists

RCB	During salting: high FS: tendency to wet FS ≥ 65: extremely wet During cutting: no remarks
SAL	FS ≤ 63: good stuffing FS ≥ 65: greasy, sticky, wet stuffing
PHB	Only small differences
VIS	No remarks

Texture analysis of SAL

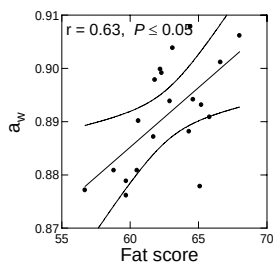

Fig. 1: FS and a_w-value in the SAL

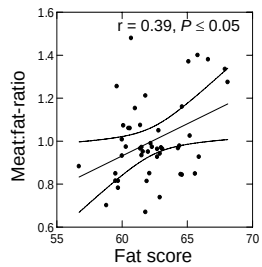

Fig. 2: FS and meat:fat-ratio in the RCB

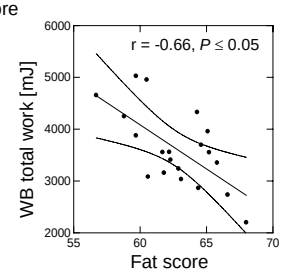

Fig. 3: FS and WB total work in the SAL

Tab. 2: Further correlations with fat score ($P \leq 0.05$)

Product and charactetristics	Correlation
RCB: - Saturated fatty acids	-0.55
- Sensory traits: spicy, smoky, fibrous	0.33 to 0.41
- 1-octen-3-ol (→ oxidation)	0.51
- Needle penetration force, 10-15 mm	-0.31
- Fat area (8. and 11. rip)	-0.46
SAL: - Saturated fatty acids	-0.68
- 1-octen-3-ol (→ oxidation)	0.46
VIS: - Saturated fatty acids	-0.70
PHB: None	-

4. Conclusions

- Several FS-related effects were observed for the cured and air-dried products like SAL and RCB, but not for the VIS and PHB → FS only related to:
  - SAL: raw-material characteristics, fat oxidation, texture, shelf life (a_w-value)
  - RCB: raw-material characteristics, meat:fat-ratio, fat oxidation, fat firmness
  - No significant correlations between FS and the other parameters
- It is not possible to redefine the actual FS-limit based on the present data → redefining the FS-limit (actual FS-limit: 62) should be a matter of market-related considerations between stakeholders