Quality of dry-cured hams from entire males in relation to boar taint level[1]

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[1] from Kaltnekar et al. (2016). Acta Agric Slov, suppl. 5, 132–137.

Kaltnekar et al. (2016). Acta Agric Slov, suppl. 5, 132–137.

Rationale of study

- PGI dry-cured ham *Kraški pršut* is the most known and appreciated meat product among Slovenian consumers
- But, the origin of raw material is not prescribed; majority of green hams come from EU markets; from standard fattening systems
- In future the rearing of entire males (EM) may take significant share in European pig production.
- Raw material from EM brings a risk of boar taint, changed seasoning aptitude of the meat
- Interest to know more about the aptitude of EM meat for dry-cured hams

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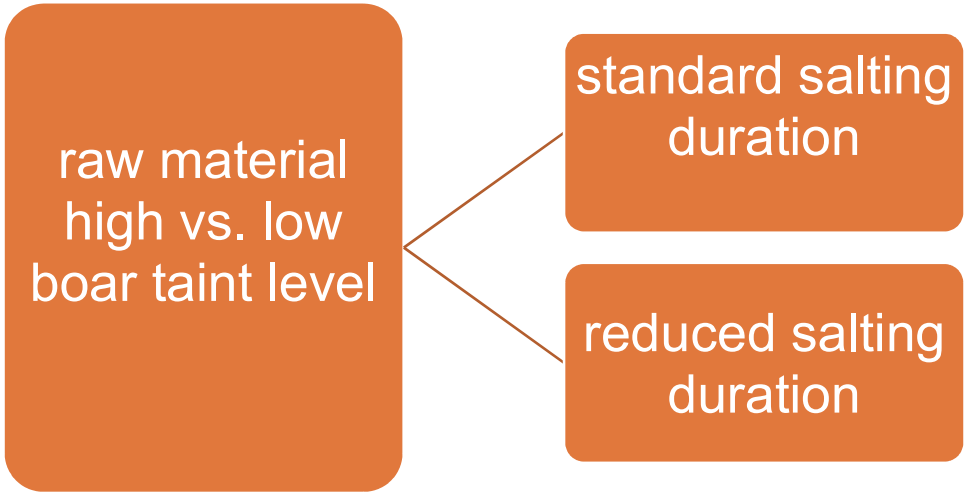
Aim of the study

Kaltnekar et al. (2016). Acta Agric Slov, suppl. 5, 132–137.

To evaluate dry-cured ham quality from entire males with different level of boar taint under two different salting regimes



Material and methods

Kaltnekar et al. (2016). Acta Agric Slov, suppl. 5, 132–137.

- 16 green hams from 8 boars (LN×LW)×Pi
- Left thighs (n=8) – standard salting HS-18 d
- Right thighs (n=8) – shortened salting LS-6 d

(foto: T. Kaltnekar)

Process according to „*KRAŠKI PRŠUT*“ *PGI* specification

- Salting – 6 (LS) or 18 (HS) days, 2 - 4°C, 60 – 90% RH
- Resting – 89 (LS) or 77 (HS) days, 4 - 6°C, 70 – 85% RH
- Drying – till 26% weight loss, 14 - 20°C, 60 – 80% RH
- Greasing – 26% weight loss
- Ripening – until 16 months, 12 – 18°C, 60 – 80% RH
- Deboning, sampling

- Low boar taint - LBT (n=8); A< 0.78 µg/g (median of A; s.c.fat of dry-cured ham)
- High boar taint – HBT (n=8); A>

Measurements

Kaltnekar et al. (2016). Acta Agric Slov, suppl. 5, 132–137.

- Green ham – pH, weight, fat
- Ham weight => processing yields
- A and S conc.(HPLC)
- Chemical analysis (moisture, aw, NaCl, PI)
- Instrumental texture (force decay coefficient, texture profile)
- Sensory analysis
- Statistical analysis (ANOVA; BT+ S+ BT×S)

NS except for off-flavour

RESULTS

- No effect/association of „boar taint level“ on green ham traits and processing losses

Kaltnekar et al. (2016). Acta Agric Slov, suppl. 5, 132–137

	Boar taint		*p*-value
	LBT	HBT	Boar taint
Green ham traits			
Ham weight (kg)	12.9	12.6	0.688
pH SM	5.50	5.46	0.305
Fat thickness (mm)	16	13	0.108
Processing losses (%)			
Salting 6 days	1.8	2.1	0.182
Salting 18 days	-	-	-
Resting	19.2	20.9	0.207
Drying	26.4	28.3	0.234
Ripening	35.2	38.0	0.237

RESULTS

- hams with HBT were more proteolysed than LBT hams (in particular evidenced in BF)

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	Boar taint		*p*-value
	LBT	HBT	Boar taint
SM muscle			
Salt (g/kg)	50.8	54.0	0.472
Dry matter (g/kg)	470.5	489.9	0.186
IMF (g/kg)	40.8	43.0	0.574
NPN (g/kg)	13.6	14.8	0.045
Proteolysis index (%)	23.1	24.3	0.183
a_w	0.921	0.913	0.397
BF muscle			
Salt (g/kg)	58.9	64.4	0.217
Dry matter (g/kg)	390.5	404.4	0.198
IMF (g/kg)	29.9	29.5	0.874
NPN (g/kg)	13.8	15.5	0.048
Proteolysis index (%)	30.0	33.3	0.042
a_w	0.920	0.912	0.227
Subcutaneous fat			
Androstenone (µg/g)	0.65	1.32	0.005
Skatole (µg/g)	0.08	0.24	0.013

RESULTS

- hams with HBT had softer (instrumental) texture (BF)

Kaltnekar et al. (2016). Acta Agric Slov, suppl. 5,

	Boar taint		*p*-value
	LBT	HBT	Boar taint
SM muscle			
Force decay coefficient	0.63	0.65	0.148
Hardness (N)	69.9	74.5	0.671
Cohesiveness	0.49	0.43	0.119
Gumminess (N)	35.2	43.0	0.426
Springiness (mm)	3.4	3.2	0.377
Chewiness (N)	128.3	140.8	0.737
Adhesiveness (N*mm)	−2.1	−3.5	0.003
BF muscle			
Force decay coefficient	0.69	0.70	0.890
Hardness (N)	38.7	29.3	0.067
Cohesiveness	0.52	0.40	0.016
Gumminess (N)	21.4	12.9	0.047
Springiness (mm)	3.6	3.6	0.964
Chewiness (N)	81.7	43.9	0.049
Adhesiveness (N*mm)	−0.9	−1.5	0.127

RESULTS

- Hams with HBT had
  higher bitterness,
  higher pastiness,
  less typical cured odour,
  higher off-flavour

  Interaction BT x Salting

Kaltr uppl. 5, 132-

	Boar taint		*p*-value
	LBT	HBT	Boar taint
Entire slice			
Meat colour uniformity	6.3	6.4	0.647
Meat colour intensity	5.2	5.3	0.667
Marbling	2.4	2.3	0.783
Typical cured odour	5.6	5.0	0.038
Subcutaneous fat			
Fat whiteness	5.5	5.6	0.929
Fat sweetness	3.8	3.7	0.531
Fat off-flavour	0.9	1.4	0.081
Fat rancidity	1.7	1.6	0.974
SM muscle			
Bitterness	0.8	1.1	0.053
Sourness	1.6	1.6	0.822
Pastiness	1.0	2.2	0.017
Sweetness	0.9	1.0	0.662
Saltiness	5.2	4.8	0.227
Juiciness	4.3	4.0	0.357
Solubility	4.9	5.2	0.109
Off-flavour	0.9	1.5	0.006
BF muscle			
Bitterness	0.8	1.2	0.014
Sourness	2.1	2.2	0.438
Pastiness	1.4	2.9	0.019
Sweetness	0.9	1.0	0.138
Saltiness	5.9	5.7	0.421
Juiciness	5.3	5.3	0.856
Solubility	5.0	5.5	0.019
Off-flavour	1.0	1.7	0.002

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RESULTS

Interaction Salting x BT

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- Hams with HBT had significantly more pronounced off-flavours only in low salt group

Table 1 *Effect of salting and boar taint level on perceived off-flavours (Kaltnekar et al., 2016)*

	HS		LS		P-value			
Off-flavours	LBT	HBT	LBT	HBT	Salting	Boar taint	S × BT	RMSE
Biceps femoris	0.8[a]	1.0[a]	1.3[a]	2.5[b]	0.000	0.002	0.014	0.3
Semimembranosus	0.6[a]	0.8[a]	1.2[a]	2.1[b]	0.001	0.006	0.071	0.3
Fat	0.9	1.1	1.0	1.6	0.254	0.081	0.330	0.4

LS- shortened salting; HS- standard salting; LBT-low boar taint; HBT-high boar taint

CONCLUSION

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- off flavours were less perceived in saltier hams; either salt covers off-flavours or there are additive effects of boar taint substances and proteolysis products

- Higher boar taint level was associated with higher proteolysis - additional issue for dry-cured ham production from EM (esp. in combination with low salt content).

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Thank you for your attention

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These results issue from the graduation thesis of Tadej Kaltnekar.

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