GEORG-AUGUST-UNIVERSITÄT
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Selection of assessors for boar taint evaluation:

Effects of varying olfactory acuity to androstenone

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Meier-Dinkel L, Sharifi AR, Frieden L, Tholen E, Wicke M, Mörlein D (2013). EAAP Nantes

skatole

learning

prior experience

fat content

information

androstenone

rejection thresholds

sensitivity

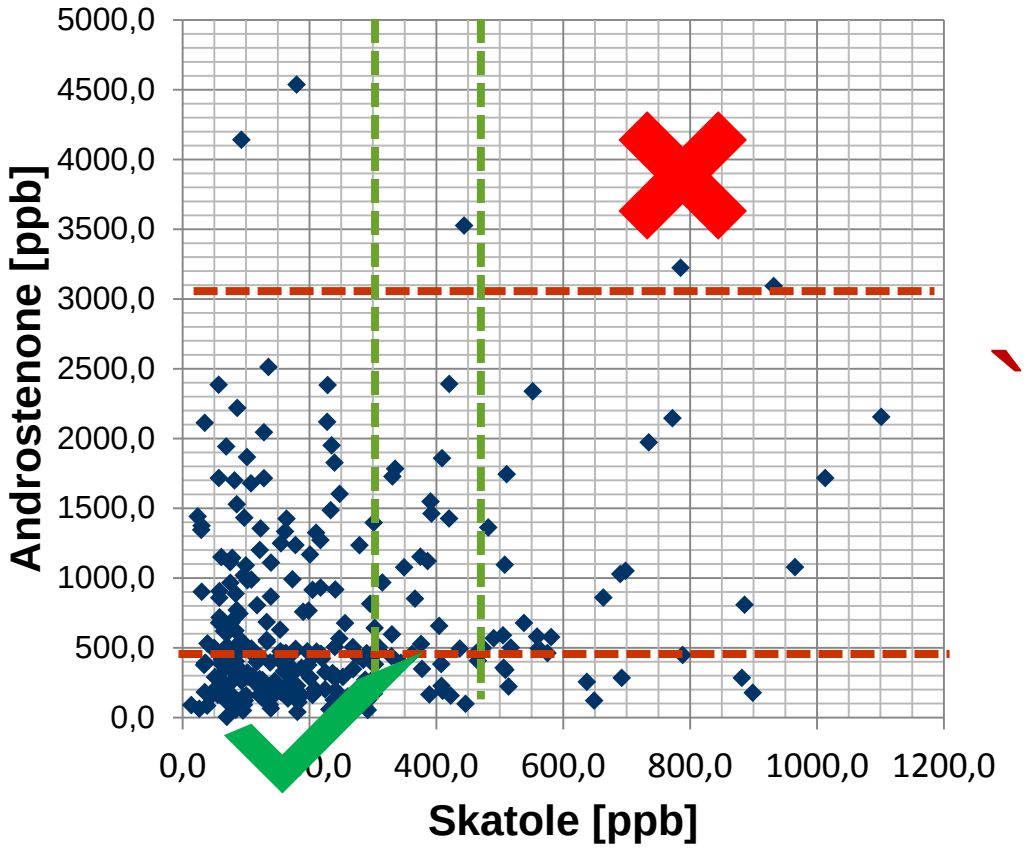
OR7D4

indole

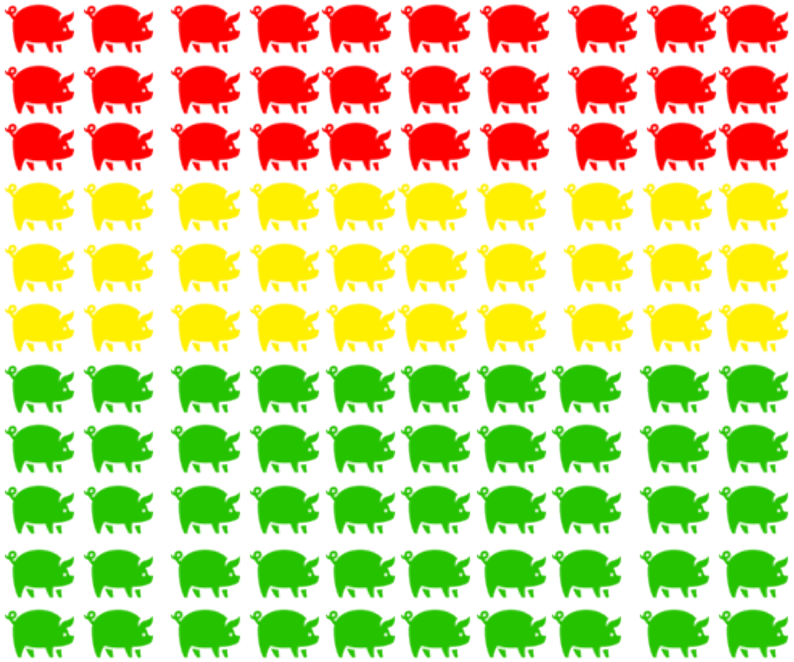
repeated

exposure

Disagreement on the prevalence of boar taint



Disagreement on the prevalence of boar taint



30-60%

Walstra et al., 1999. Meat Science.
Ampueiro et al., 2011. Animal.

3-9%

Mathur et al., 2012. Meat Science.

Main objectives

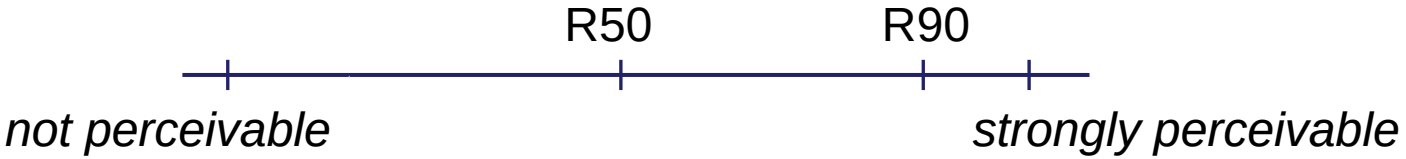
1. to establish a trained panel
2. to characterise panelists‘ olfactory acuity to androstenone
3. to perform sensory evaluation of low fat loin samples
4. to analyse the variance of sensory data w.r.t. olfactory acuity

Meier-Dinkel et al., 2013. *Meat Science* 94, 19–26.

Material and methods

- 16 panellists, 11 weeks of training
- triplicate triangle tests, ~150 ng and ~15 ng androstenone on paper smell strips

- Boar loins & standard (castrate, female)
- LOW, MED, HIGH in androstenone & skatole
- 3 replicates per assessor, 4 to 6 animals per category
- 8 g cubes, covered, cooked at 170°C for 8 minutes
- attributes: androstenone and skatole odour / flavour

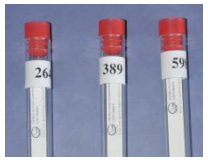


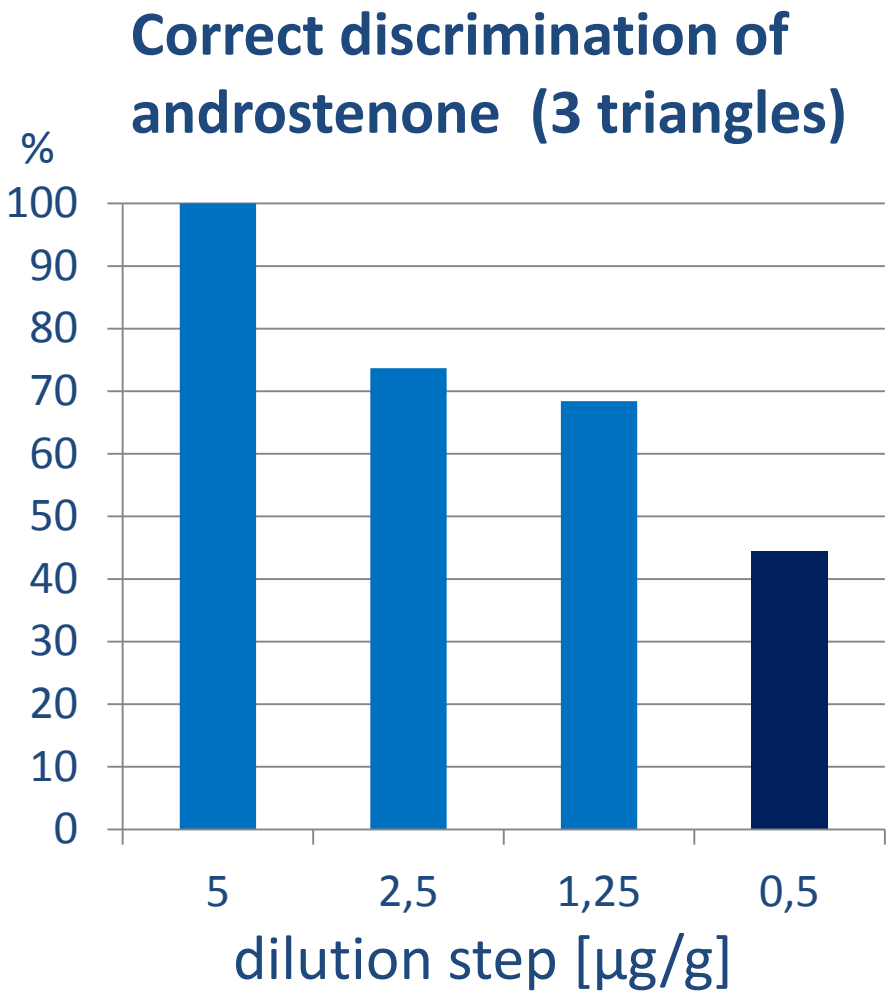
Smell strips

- cardboard paper
- stock solutions in methanole
- various working solutions in propylene glycol
- 30 µl on the strip
- put in PP test tube, dry for ~ 24 hrs, cover
- coded label, use within 5 days

Meier-Dinkel et al., 2013. Meat Science 94, 19–26

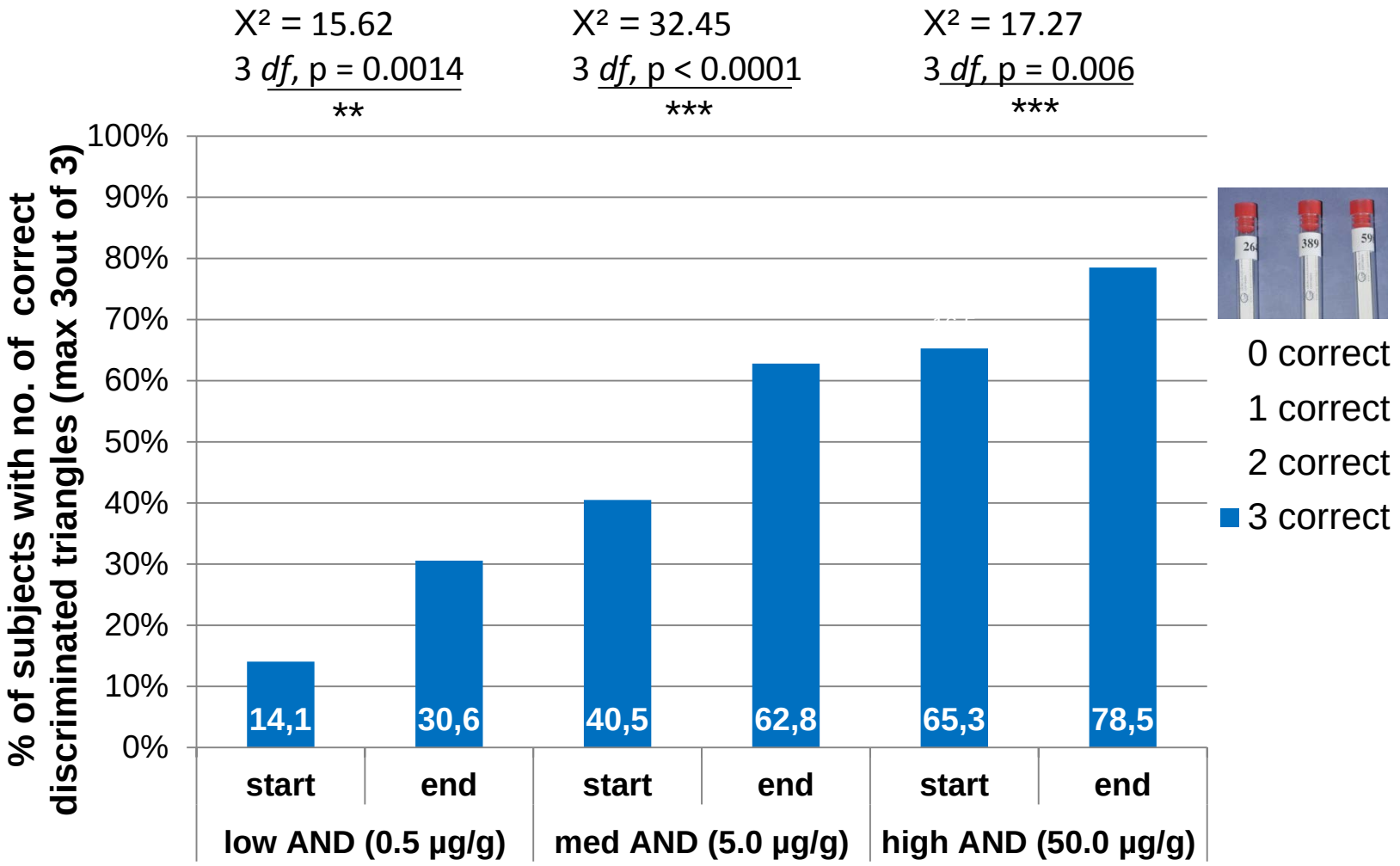
Trained panelists sensitivity w.r.t. odorant level





Learning to smell with repeated exposure

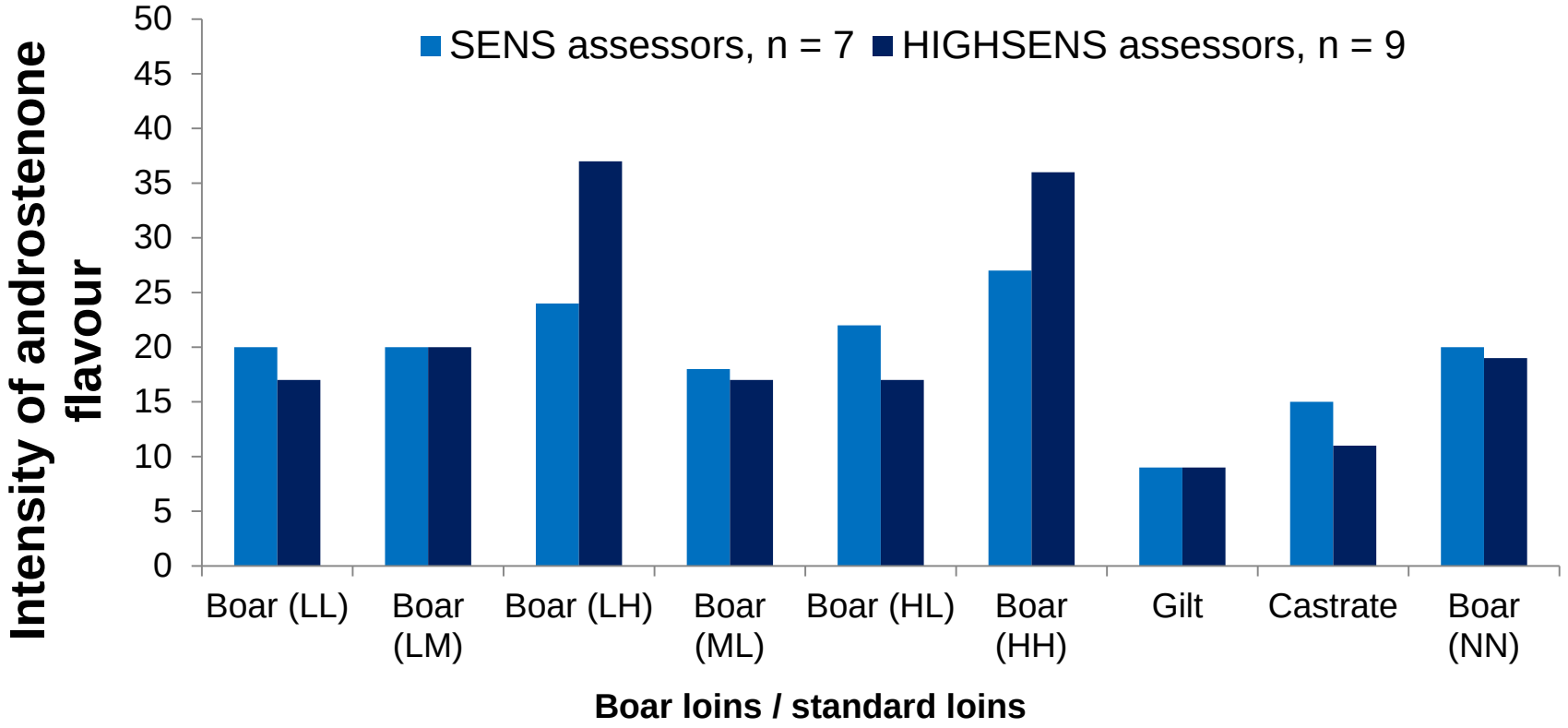
sensitivity w.r.t. odorant concentration (n=121)



Mörlein et al., 2013. *Meat Science* 94, 425–431.

Effect of trained assessors‘ sensitivity on androstenone flavour

0 = not perceivable,
100 = strongly perceivable



(skatole/androstenone level)

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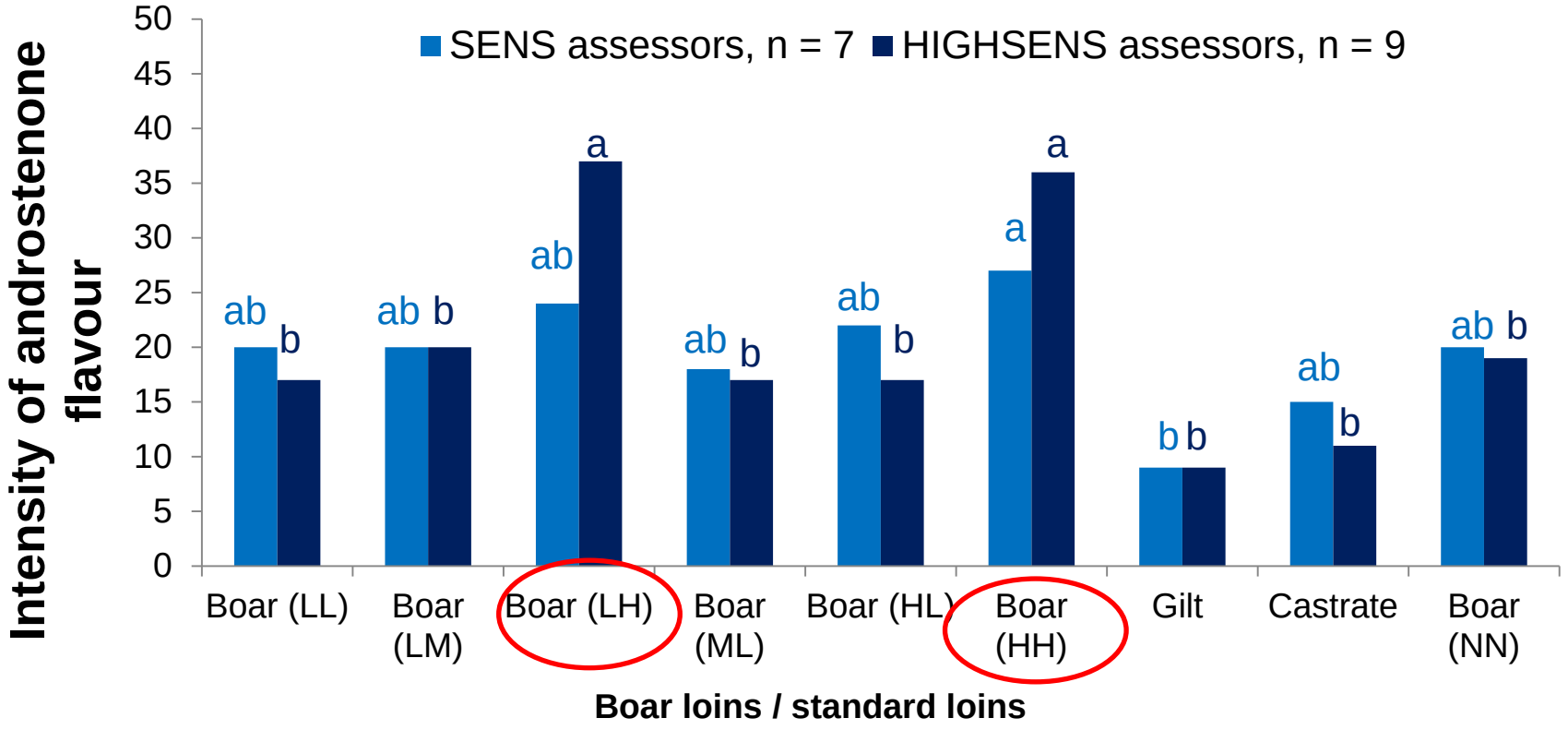

(skatole/androstenone level)

Conclusions

- assessors‘ sensitivity affects perceived androstenone intensity
- HIGHSENS assessors discriminated boar loins >1.5 to 2.0 ppm backfat androstenone
- smell strips for objective evaluation of olfactory acuity: cheap, little amount of odorant, ease of use
- worst case scenarios /w HIGHSENS assessors

Contributions:

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Data analysis: Analysis of variance

$y_{ijkr} = \mu + p_i + s_j + p_i \times s_j + A_k + p_i \times A_k + e_{ijkr}$

where

- y_{ijkr} is the intensity of the sensory attribute;
- μ is the general mean;
- P_i is the fixed effect of product (meat type: 1 to 9);
- S_j is the fixed effect of androstenone sensitivity (SENS and SENSHIGH);
- $P_i \times S_j$ is the meat type x sensitivity interaction effect;
- a_k is the random effect of assessor;
- $P_i \times a_k$ is the random effect of the assessor × product interaction;
- e_{ijkr} is the residual error.

LSD-test with Bonferroni adjustment

Meier-Dinkel, L., Sharifi, A. R., Tholen, E., Frieden, L., Bücking, M., Wicke, M., & Mörlein, D. (2013). Sensory evaluation of boar loins: Trained assessors' olfactory acuity affects the perception of boar taint compounds. *Meat Science*, 94(1), 19–26.