Fully automated and rapid at-line method for measuring boar taint related compounds in back fat.

Rune Isak Dupont Birkler
Danish Meat Research Institute (DMRI), Denmark
RUB@TEKNOLOGISK.DK

August 27th 2018
Background
Stop for castration?
Boar taint compounds
• Skatole
• Androstenone
Requirements to new analytical method

• Simultaneous detect and quantify both skatole and androstenone
• 45 minutes from sample is taken to result is available
• More than 280 samples per hour
• Price approx. 1 €
• Fully automated analytical system with a minimum of maintenance
Brief resume of the analytical method

- 24 back fat samples (0.3 - 0.5 g)

2.50 mL acetonitrile + internal standards

2.50 mL brine, 0.08 M NaOH

Homogenize samples
Extraction of skatole and androstenone
Centrifugation – phase separation

Transfer to LazWell™-plate → Evaporate solvent → LDTD-MS/MS analysis
Validation of the Analytical Method

- Specificity
- Limit of detection (LOD)
- Limit of quantification (LOQ)
- Trueness
Specificity
- LDTD-MS/MS
- 2 transitions for each compound

Androstenone

Skatole
Limit of detection (LOD) and limit of quantification (LOQ)

<table>
<thead>
<tr>
<th></th>
<th>LOD</th>
<th>LOQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skatole</td>
<td>0.02 µg/g</td>
<td>0.05 µg/g</td>
</tr>
<tr>
<td>Androstenone</td>
<td>0.05 µg/g</td>
<td>0.1 µg/g</td>
</tr>
</tbody>
</table>

**Sorting limits**
Skatole equivalents 0.25 µg/g
Androstenone to be determined
Trueness
Comparison: HPLC-UV analytical method vs LDTD-MS/MS

Androstenone
Conclusion

• LDTD-MS/MS analysis at 10 seconds
• 2880 samples per 8 hour workday (360 per hour)
• Less than 40 minutes from sample to analytical result
• Price 1€ per sample
• Robust analytical system
Further perspectives

• Automation of developed method at a Danish slaughterhouse
• Determination of sorting level for androstenone
• Apply analytical method at DMRI for research projects
  • Immunocastration
  • Breeding programs
Questions?