Carcase weight is not a reliable tool to minimize consumer acceptance risk of boar taint in pork

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Background: Boar taint

- Australia stopped castrating entire male pigs in the 1980s
  - Lighter slaughter weights (<80kg liveweight)
- Recent increase in consumer complaints relating to boar taint
  - Heavier slaughter weights (105 to 120kg liveweight)

- Boar taint is an off-odour/flavour in pork from entire male carcases
- Main boar taint compounds are androstenone and skatole
- Generally accepted international consumer sensory threshold for;
  - Androstenone is $1 \mu g/g$
  - Skatole is $0.2 \mu g/g$

Caution: Consumer thresholds use an absolute cut-off to describe a subjective experience
Background: Boar taint in entire male pigs

Approximately 25% of fat samples were above the androstenone and skatole sensory thresholds

Low risk (below sensory threshold)
Issue

- Australia stopped castrating entire male pigs in the 1980s
- Lighter slaughter weights (<80kg liveweight)

Commercial supply chains are currently using slaughter weight strategies to minimise risk of boar taint
Background: Minimising boar taint risk

- Boar taint risk (%) greater for baconer pigs
- But risk in porker pigs still considerable

![Bar graph showing boar taint risk](image)

(D’Souza et al., 2011)
Background:
Correlation between boar taint risk & carcase weight

- Poor correlations found between carcase weight and androstenone and skatole levels in fat

D'Souza et al., 2011
Hypothesis

Carcase weight is not a reliable tool to minimise the consumer acceptance risk of inferior eating quality for pork from entire male pigs.

Question:
Are Australian consumers able to discern between pork from different carcase weight ranges with different levels of boar taint compounds in fat?
# Experimental design

- A total of 10 pigs/treatment were used in a 2 x 2 factorial study
- The main treatments were:

<table>
<thead>
<tr>
<th>Carcase weight</th>
<th>Porker (62kg)</th>
<th>Baconer (80kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boar taint level</td>
<td>Low; 0.1 μg/g androstenone (0.14μg/g), &lt;0.2 μg/g skatole (0.04μg/g)</td>
<td>High; &gt;1 μg/g androstenone (2.08μg/g), &gt;0.2 μg/g skatole (0.24μg/g)</td>
</tr>
</tbody>
</table>

- Objective and sensory quality assessments conducted on *M.Longissimus thoracis*
- Pork steaks were cooked to 70°C internal temperature (flat-plate grill)
## Results: Average sensory scores (main effects only)

<table>
<thead>
<tr>
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<th>Boar taint levels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>s.e.d.</td>
</tr>
<tr>
<td>Porker</td>
<td>Baconer</td>
</tr>
</tbody>
</table>

| Overall liking¹ | 56.4 | 54.7 | 56.3 | 56.4 | 2.70 | n.s. |
| Quality score² | 3.18 | 3.10 | 3.15 | 3.10 | 0.129 | n.s. |

¹0 = Dislike extremely; 100 = Like extremely
²1 = Unsatisfactory; 2 = Below average; 3 = Average; 4 = Above average; 5 = Excellent
Results: Fail rate% and would not re-purchase %

- **Fail Rate %**
  - Carcase weight: Low vs. High
  - Boar taint levels: Low vs. High

- **Would not re-purchase intention %**
  - Carcase weight: Low vs. High
  - Boar taint level: Low vs. High

Fail rate: % of steaks quality graded <3

* P<0.05
Conclusion

• Carcase weight had a minimal effect on fail rate % and re-purchase intention %
• Boar taint levels had a significant effect on fail rate % and the ‘would not re-purchase intention’

Based on these data, carcase weight is not a reliable tool to minimise the consumer acceptance risk of boar taint
Acknowledgements

CRC for High Integrity Australian Pork

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