The behaviour of male fattening pigs following either surgical castration or vaccination with a GnRF vaccine

**Background**

Surgical castration without anaesthesia/analgesia in 1st week of life (Directive 2001/93/EC)

Painful procedure → welfare discussion → alternatives?

- Surgical castration with anaesthesia/analgesia:
  - Lokal anaesthesia
  - General anaesthesia
  - NSAID

- Non-surgical methods:
  - Fattening of entire males
  - Vaccination against boar taint
  - (Sperm-Sexing)

Vaccination against boar taint

GnRF-Vaccine (ImprovacTM, Pfizer Ltd)

Immunocastration of males after 2nd dose → antibodies against own GnRF → testis atrophy → cease of androstenon synthesis!

Efficacy
+ feed conversion
+ carcass quality
± costs
- same effect in human

? Behaviour

Appl.Anim.Behav.Sci. 81: 111-126

**Animals**

230 crossbred male piglets in total
- from 55 sows (1–7 piglets / litter)
- EUROC Hybrid x Pietrain
- farrowing crates

2 treatment groups randomly allocated (5.07 ± 0.85d)
- T1 surgical castration (n=115)
- T2 GnRF-vaccination (n=115)
Housing

**Nursery**
- Pigs randomly assigned to pens
  - T1: 52, 31 and 30 pigs / pen
  - T2: 50, 31 and 30 pigs / pen
- Slatted floors, no straw
- Multi space feeders, dry feed

**Fattening**
- Treatments groups randomly assigned to pens
- No mixing of nursery groups
- 12 animals/pen (0.9 m²/pig)
- Partially slatted floors, no straw
- Liquid feeding (3x), 1 nipple drinker/pen

Experimental design

**Nursery**
- 2x8 pens à 12 pigs

**Fattening**
- 2x8 pens à 12 pigs

Suckling
- 115 sows

Behaviour assessment

- Whole fattening period (week 10 to 26)
- 24 hour video once a week
- Observations focused on:
  - General activity
  - Social behaviour

General activity

- Recording of postures (walking / standing, sitting, lying)
- Scan sampling from 24-hour videos in 5-min interval (groupwise)
- PROC MIXED with repeated measurement design (SAS 9.1);
  Fixed: treatment (T1, T2), fattening phase (I-IV), observer, treatment*phase;
  Tukey Test (P=0.05)
Social behaviour

- Analysed in every 2nd week
- 4 x 2hours observation blocks / day starting at 00:30, 07:30, 12:30; 16:45
- 4 individually marked focus animals / pen
- continuous observation
- displacing, head knocking, biting, fighting, mounting, playing, manipulating of pen mates
- PROC GENMOD with repeated measurement design:
  Fixed: treatment, fattening phase, observation block, observer, treatment*phase, treatment*block;
  PROC MULTTEST and Bonferroni Holm Test (P=0.05)

General activity - Standing

Vaccinates > Castrates

Agonistic interactions (sum)

Vaccinates = Castrates

Agonistic behaviours

Intensive aggression (→ lesions):
Vaccinates = Castrates

* LS Means; NS not significant
Other behaviours

<table>
<thead>
<tr>
<th></th>
<th>Playing</th>
<th></th>
<th>Mounting</th>
<th></th>
<th>Manipulating of pen mate</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T1</td>
<td>T2</td>
<td>P</td>
<td>T1</td>
<td>T2</td>
<td>P</td>
</tr>
<tr>
<td>Fattening period</td>
<td>0.09</td>
<td>0.12</td>
<td>NS</td>
<td>0.05</td>
<td>0.17</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>2.29</td>
<td>2.57</td>
<td>NS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fattening phase I</td>
<td>0.19</td>
<td>0.42^</td>
<td>NS</td>
<td>0.27^</td>
<td>0.36^</td>
<td>NS</td>
</tr>
<tr>
<td></td>
<td>2.54</td>
<td>3.12</td>
<td>NS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fattening phase II</td>
<td>0.07</td>
<td>0.31^</td>
<td>NS</td>
<td>0.06^</td>
<td>0.23^</td>
<td>NS</td>
</tr>
<tr>
<td></td>
<td>1.73</td>
<td>1.94</td>
<td>NS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fattening phase III</td>
<td>0.06</td>
<td>0.14^</td>
<td>NS</td>
<td>0.04^</td>
<td>0.33^</td>
<td>NS</td>
</tr>
<tr>
<td></td>
<td>2.04</td>
<td>2.84</td>
<td>NS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fattening phase IV</td>
<td>0.07</td>
<td>0.01^</td>
<td>NS</td>
<td>0.01^</td>
<td>0.03^</td>
<td>NS</td>
</tr>
<tr>
<td></td>
<td>3.08</td>
<td>2.74</td>
<td>NS</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* LS Means; NS not significant

Mounts:

Vaccinates > Castrates

0.05 vs 0.17 mounts in 2 hours

Conclusion

- “GnRF-vaccination does not increase behavioural problems of male fattening pigs kept in small single sex groups”
- Welfare benefit compared to surgical castration
- Evaluation has to include practicability, economy, consumer

Acknowledgement

- Mario Koller, Simone Laister, Barbara Noack
- Tatjana Sattler, Stefanie Schmidt, Maxi Schöenefeldt
- Andre Pfützner
- Fiona Brock, Ingolf Horst

Thank you for your attention!