

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)
- ...



PIGCAS (2009), EFSA (2004)
von Borell et al (2009), Prunier et al (2006)



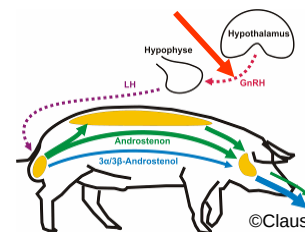
Session 40 - Theatre 9

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

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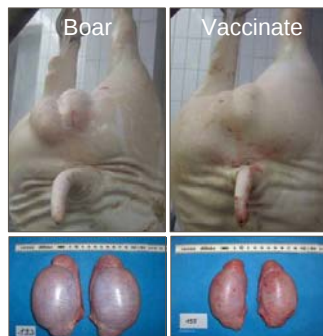


Vaccination against boar taint



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

Cronin et al (2003)
Appl.Anim.Behav.Sci. 81: 111-126

Animals

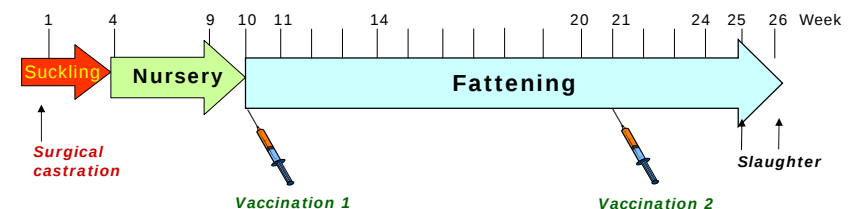


230 crossbred male piglets in total

- from 55 sows (1–7 piglets / litter)
- EURO 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

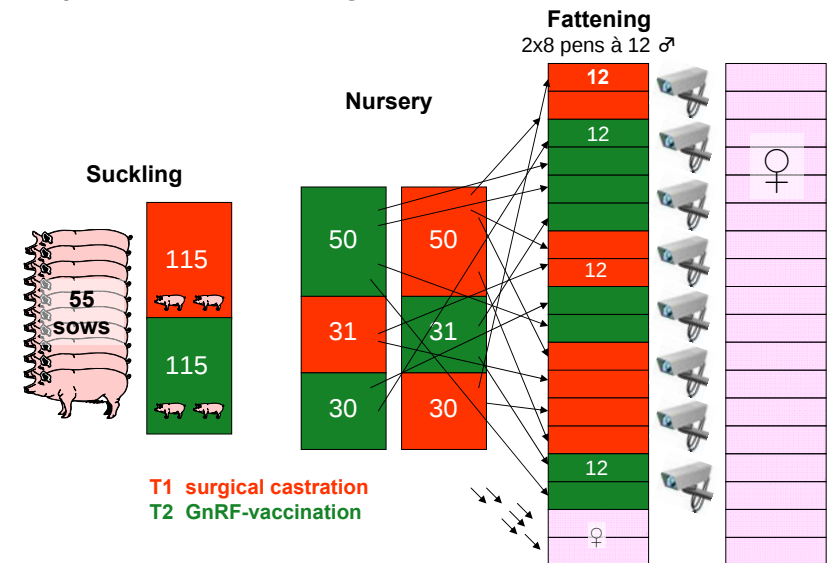
multi space feeders, dry feed



Fattening

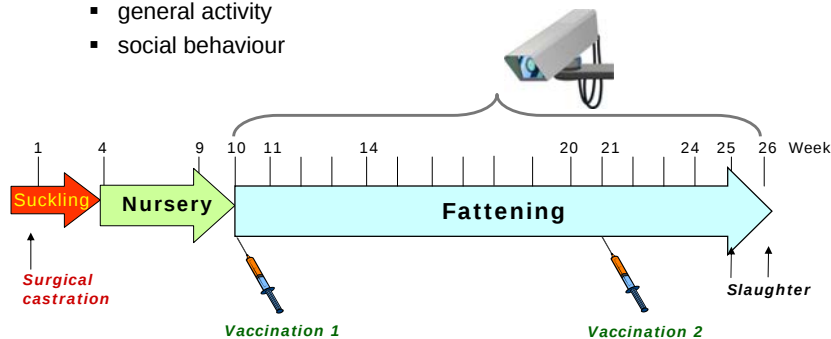
- Treatments groups randomly assigned to pens
- no mixing of nursery groups
- 12 animals/pen (0,9 m²/pig)
- partially slatted floors, no straw
- liquid feeding (3x), 1 nipple drinker/pen

Experimental design



Behaviour assessment

- Whole fattening period (week 10 to 26)
- 24 hour video once a week
- observations focused on:
 - general activity
 - social behaviour

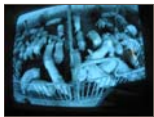


General activity

- 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 ($P=0.05$)

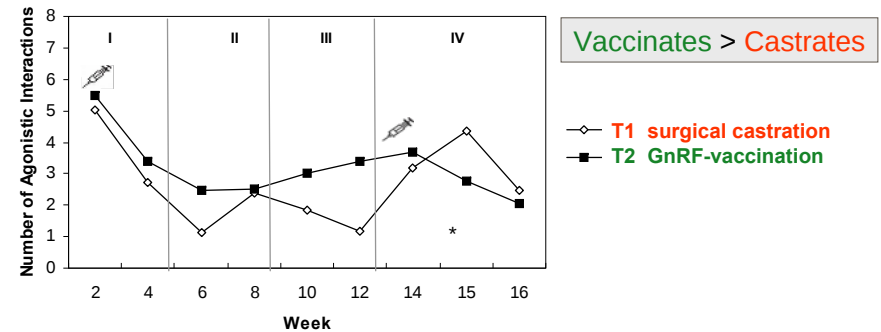


Social behaviour



- 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 Bonferoni Holm Test ($P=0.05$)

General activity - Standing

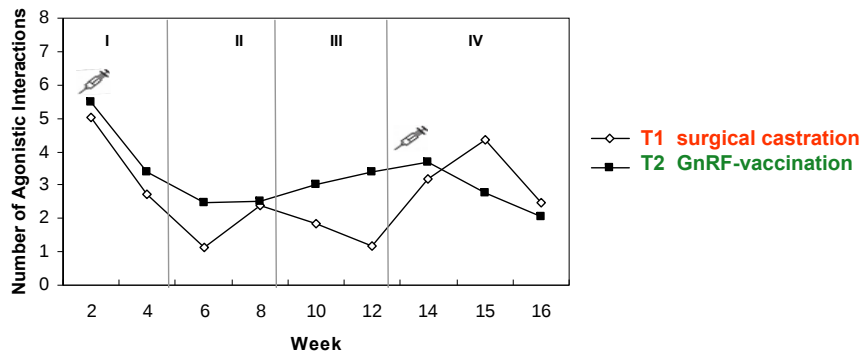


	T1	T2	P
Fattening period	9,31	10,74	0.023
Fattening phase I	10,19 ^b	11,51 ^{bc}	0.046
Fattening phase II	8,36 ^a	10,45 ^c	NS
Fattening phase III	10,73 ^b	12,50 ^b	NS
Fattening phase IV	7,95 ^a	8,49 ^a	NS

	T1	T2	P
Fattening phase IV	7,95 ^a	8,49 ^a	NS
Week 13	8,71	10,89 ^a	NS
Week 14	7,20	7,65 ^b	NS
Week 15	7,94	7,36 ^b	NS
Week 16	7,88	8,05 ^b	NS

* LS Means; NS not significant

Agonistic interactions (sum)



	T1	T2	P
Fattening period	2,09	2,70	NS
Fattening phase I	2,77 ^b	3,87 ^b	NS
Fattening phase II	1,98 ^{ab}	2,32 ^{ac}	NS
Fattening phase III	1,37 ^a	2,88 ^{bc}	0,03
Fattening phase IV	2,56 ^{ab}	2,05 ^a	NS

Aggression:
Vaccinates = Castrates

* LS Means; NS not significant

Agonistic behaviours

	Biting & Fighting			Displacing & Head Knocking		
	T1	T2	P	T1	T2	P
Fattening period	0,88	1,12	NS	1,14	1,51	0,03
Fattening phase I	1,11	1,79 ^b	NS	1,57 ^b	2,04	NS
Fattening phase II	0,78	0,93 ^{ab}	NS	1,08 ^{ab}	1,37	NS
Fattening phase III	0,66	1,34 ^b	NS	0,70 ^a	1,47	0,04
Fattening phase IV	1,04	0,72 ^a	NS	1,42 ^{ab}	1,26	NS

Intensive aggression (→ lesions):
Vaccinates = Castrates

* LS Means; NS not significant

Other behaviours

	Playing			Mounting			Manipulating of pen mate		
	T1	T2	P	T1	T2	P	T1	T2	P
Fattening period	0,09	0,12	NS	0,05	0,17	0,01	2,29	2,57	NS
Fattening phase I	0,19	0,42 ^b	NS	0,27 ^b	0,36 ^b	NS	2,54	3,12	NS
Fattening phase II	0,07	0,31 ^b	NS	0,06 ^{ab}	0,27 ^b	NS	1,73	1,94	NS
Fattening phase III	0,06	0,14 ^b	NS	0,04 ^{ab}	0,31 ^b	NS	2,04	2,64	NS
Fattening phase IV	0,07	0,01 ^a	NS	0,01 ^a	0,03 ^a	NS	3,08	2,74	NS

Mounts:
Vaccinates > **Castrates**
 0.05 vs 0.17 mounts in 2 hours

* LS Means; NS not significant

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

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Thank you for your attention !