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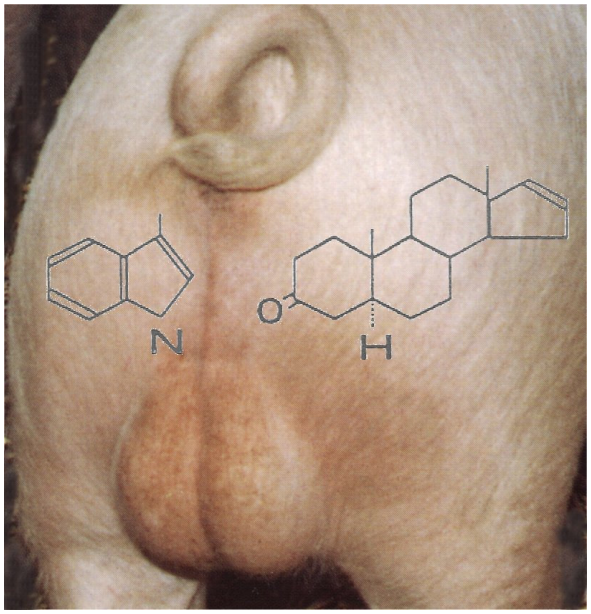
Boar taint in pigs fed raw potato starch



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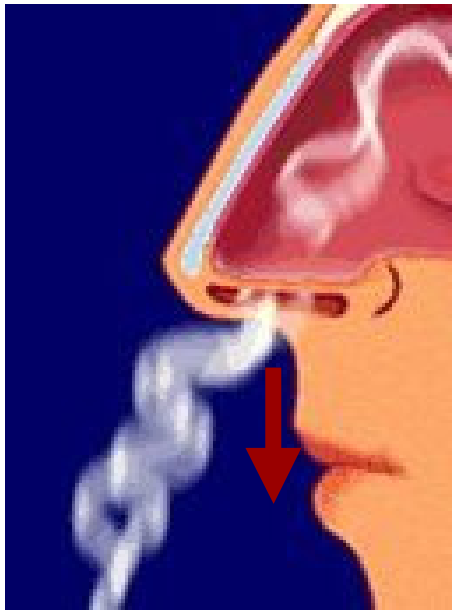

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High frequency of androstenone and skatole in Swedish pigs in EU-study

Androstenone

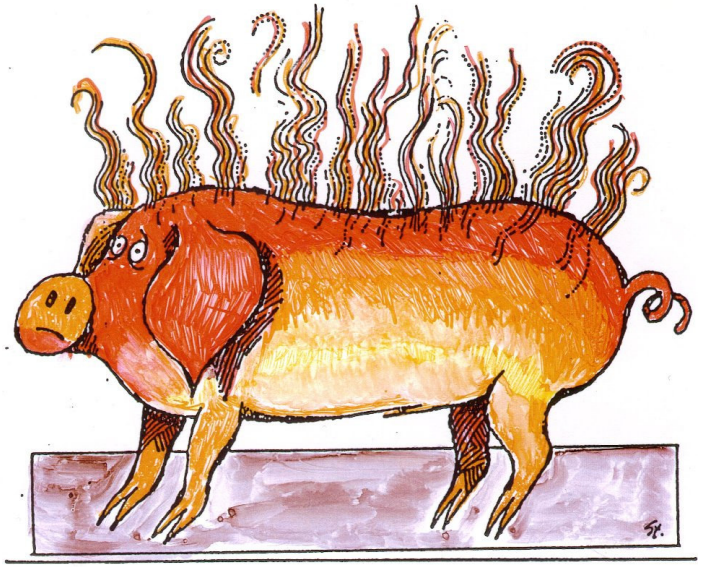
- 42% of the entire male pigs had above 1.0 µg/g

Skatole

- 12% of the entire male pigs had above 0.20 µg/g

Necessary to decrease frequency.

Reduce the frequency of entire male pigs with boar taint by:



Genetics

- Selection

Environment

- Herd and season
- Feed and feeding intensity
- Weight and age at slaughter
- Immunocastration
- Reduce sexual stimulation, fighting, stress?

Swedish trial where we wanted to evaluate the effects of:

- Raising system (mixed or single-sex) and weight at slaughter (90 or 115 kg) on performance, carcass and technological meat quality in entire male and female pigs
- Dietary supplement of raw potato starch on boar taint and levels of androstenone, skatole and indole
- Pre-slaughter routines (pen-wise or mixed with un-familiar pigs)
- Sexual maturation
- Aggressive and sexual behaviour of pigs raised in mixed or single-sex pens

Design of the experiment

	Mixed		Single-sex	
			Males	Females
No. / pen	7	9 → 6	9 → 6	9 → 6
Weight at slaughter, kg	115	90/115	90/115	90/115

- 408 LY-pigs in total
- Slaughter 1 or 2 times per pen. In 7-pig pens, all were slaughtered at mean weight 115 kg. In 9-pig pens, the 3 most fast-growing pigs were slaughtered at mean weight 90 kg
- The remaining pigs were slaughtered at mean weight 115 kg

Some results from our trial

Entire male pigs fight more...

Skin damage (scale 0 to 5)

Skin damage when mixed with animals from other pens at lairage - effect of sex and mixing

	Non-mixed	Mixed
Entire males	0.23a	1.09b
Females	0a	0.35a

Scale: 0-5 Effect of mixing: p = 0.001; effect of sex: p = 0.008

Frequency of high skatole levels in back fat at slaughter (only male pigs)

	Weight at slaughter, kg		
	90	115	
Potato flour	No	No	Yes
Skatole ≥0.20 ppm (µg/g)			
Year 1, number	0/30	9/33	0/33
%	0	27	0
Year 2, number	5/28	5/36	1/36
%	18	14	3

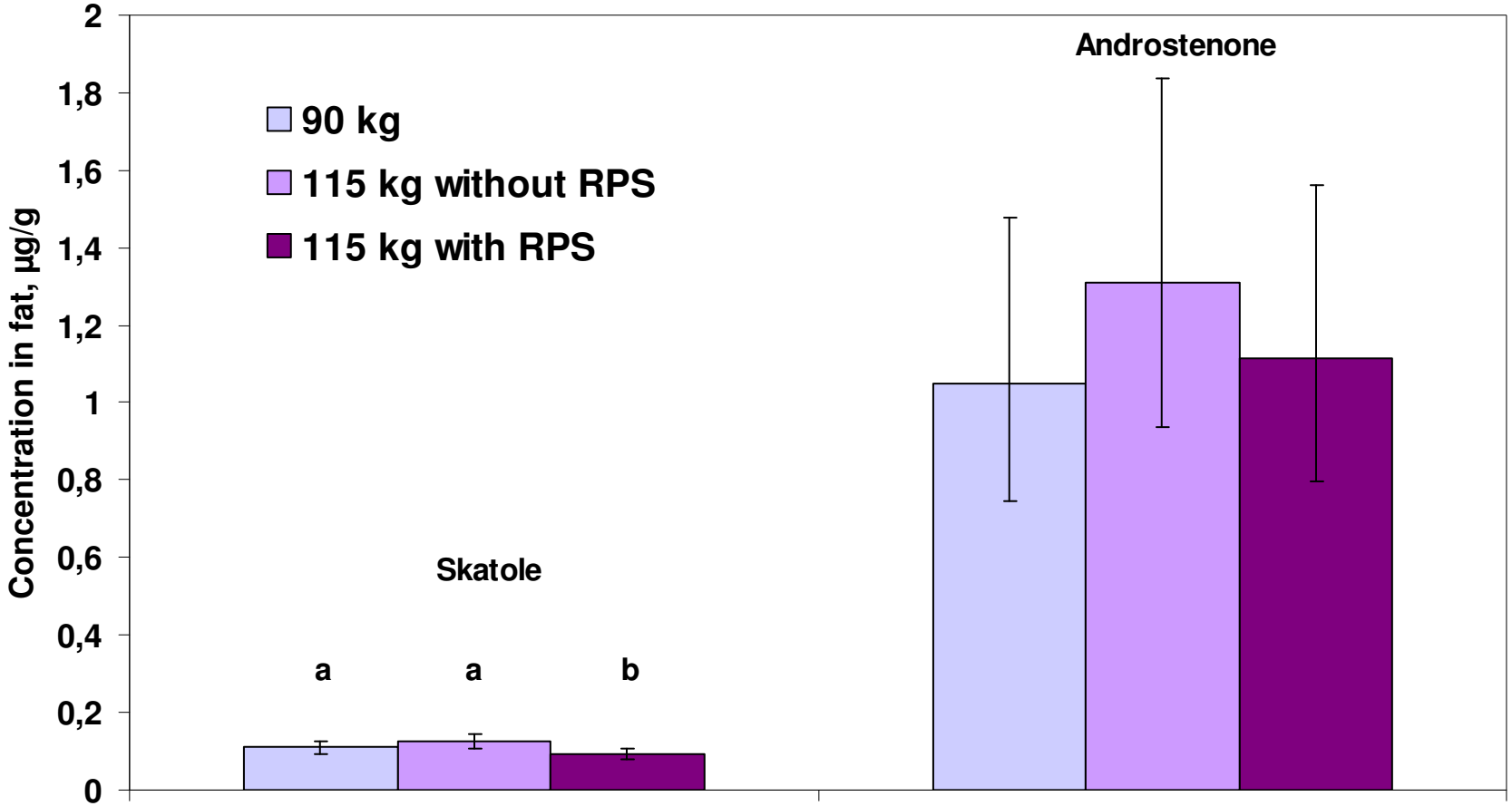
Possible explanations to the decrease in skatole level with potato flour

- Resistant starch is fermented in the gut to short chain fatty acids, mostly acetate and butyrate.
- Butyrate will decrease apoptosis in the gut wall - less tryptophan will give less raw material for the skatole production.
- The micro-flora in the gut might change.
- Faster passage through the gut
  - lower absorption of skatole.

Beatrix Potter, 1913

Frequency of high androstenone levels in back fat at slaughter (only male pigs)

	Weight at slaughter, kg		
	90	115	
Potato flour	No	No	Yes
Androstenone ≥1 ppm (µg/g; HPLC)			
Year 2, number	6/28	15/36	13/36
%	21	42	36



Levels of skatole and androstenone in fat from entire male pigs at different weights and diets.

Conclusions rearing and slaughter

- No effect of single sex or mixed rearing on growth rate, meat percentage or weight or length of sexual organs.
- Male pigs have approx. 1.5 units higher meat percentage than female pigs but have the same growth rate.
- Mixing with unknown pigs during transport to slaughter house or during lairage should be avoided – otherwise problem with skin damage, especially for male pigs.

Conclusions boar taint

- Skatole levels in fat were lower in male pigs slaughtered at 90 kg the first year but not the second
- Skatole levels could be decreased by feeding potato flour during 2 weeks before slaughter
- Indole levels were not influenced by potato flour
- Androstenone levels in fat were only slightly lower at lower weight at slaughter and was not influenced by potato flour.

Thank you for your attention!