Does permanent access to straw affect the occurrence of gastric ulceration in pigs at slaughter?

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Introduction

- Straw = beneficial ~ animal behaviour (tail biting) (Taylor et al., 2012)

- Straw $\Rightarrow$ ↓ gastric ulceration
  - confounded by system comparison
  - not from commercial conditions

Does permanent access to straw affect the occurrence of gastric ulceration in a standardised, conventional production system?
Materials & methods

- Growing pigs from 30-100 kg
- Resident herd at AU-FOULUM
- Floor: 1/3 concrete, 1/3 drained and 1/3 slatted
- Pen area: 5.4 m x 2.5 m
- 18 pigs per pen, 0.7 m²/pig
- Commercially available dry feed, 3 feeding places per pen, *ad lib.*
Straw treatments

- Straw (whole wheat) once daily
- Left-over straw removed twice a week
- Provided manually on to the solid floor

- Data from 45 pigs (3 from each of 15 pens)
- N = 18 pigs with access to 10 g straw
- N= 27 pigs with access to at least 500 g straw

Photos by Hyologisk, Denmark
Data collection

• Euthanised, no prior feed withdrawal
• Stomachs and esophagi removed
• Opened along the greater curvature
• Cleaned with cold water
• Scored according to gross morphological findings and histological examination (scale from 0-10)
• Dimensions of the non-glandular (pars oesophagea) quantified

No differences found here
<table>
<thead>
<tr>
<th>GROSS MORPHOLOGY</th>
<th>Simple scale</th>
<th>Detailed scale</th>
<th>10 g</th>
<th>Permanent</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>0</td>
<td>33</td>
<td>33</td>
<td>NS</td>
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<tr>
<td>Hyperkeratinosis</td>
<td>1-3</td>
<td>17</td>
<td>41</td>
<td>NS</td>
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<td>Erosion</td>
<td>4-6</td>
<td>17</td>
<td>19</td>
<td>NS</td>
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<tr>
<td>Ulceration</td>
<td>7-9</td>
<td>33</td>
<td>7</td>
<td>P&lt;0.05</td>
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<tr>
<td>Stricture</td>
<td>10</td>
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</table>

Within both groups 67% of the stomachs showed signs of gastric pathology.

Permanent access to straw leads to lower occurrence of gastric ulceration at slaughter.
Discussion

- The mechanisms behind the effect of straw have not been examined in this small study
- Nutritional as well as environmental factors
- Increasing the amount of straw
  - ↓ penmate directed oral behaviour
  - ↑ level of activity (Pedersen et al., subm.)

Knowledge about nutritional and environmental effects and their interaction is needed
Conclusion

• Irrespective of the amount of straw provided, 2/3 pig showed signs of gastric pathology

• The proportion of pigs with severe pathological changes (ulcerations) was decreased by the permanent access to straw

• Provision of large amounts of straw may be one way to limit the occurrence of severe gastric ulcers

How much straw is enough to get this effect?
Maybe the first little pig wasn’t that stupid after all.....

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Introduction

- **EU-regulation:** pigs must have permanent access to suitable rooting material (2001/93/EC)

- **Straw** has received more focus than other materials and can be beneficial from a welfare point of view
  - preferred (Studnitz et al., 2007)
  - ↓ manipulation of pen mates (Pedersen et al., in press)
  - ↓ risk of tail biting (Taylor et al., 2012)

But how does straw affect the health of growing pigs?