Meat quality of Norwegian lambs finished on semi-natural pastures, concentrate or ryegrass pastures

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Introduction

- Type of fattening system may influence lamb meat quality
- Length of fattening period may influence fatty acid composition
Introduction

- European consumers divide meat into taste of
  - “milk or concentrate”
  - “grass”

- Positive association:
  - Natural
  - Local
  - Traditional

- Pasture-fed lambs in Norway may be appreciated
Objective

- Compare meat from suckling lambs slaughtered directly from a semi-natural lowland pasture or subjected to pre-slaughter diets
Design

Control. Continues grazing on semi-natural lowland pasture
Grazing semi-natural pasture Concentrate/silage, 44 days
Grazing semi-natural pasture Ryegrass pasture, 44 days
Grazing semi-natural pasture Conc/silage, 24 days
Grazing semi-natural pasture Ryegrass, 24 days

M. Longissimus dorsi used for descriptive fatty acid analyses and sensory profile

15 carcasses from each treatment
### Results fatty acid composition

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Conc44</th>
<th>Conc24</th>
<th>Rye44</th>
<th>Rye24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palmitic (C16:0)</td>
<td>27.4&lt;sup&gt;ab&lt;/sup&gt;</td>
<td>28.0&lt;sup&gt;ab&lt;/sup&gt;</td>
<td>28.3&lt;sup&gt;a&lt;/sup&gt;</td>
<td>27.1&lt;sup&gt;b&lt;/sup&gt;</td>
<td>27.0&lt;sup&gt;b&lt;/sup&gt;</td>
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<tr>
<td>Stearic (C18:0)</td>
<td>19.8&lt;sup&gt;b&lt;/sup&gt;</td>
<td>19.5&lt;sup&gt;b&lt;/sup&gt;</td>
<td>18.7&lt;sup&gt;b&lt;/sup&gt;</td>
<td>22.9&lt;sup&gt;a&lt;/sup&gt;</td>
<td>19.0&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>T-vaccenic (C18:1&lt;sup&gt;t-11&lt;/sup&gt;)</td>
<td>5.9&lt;sup&gt;a&lt;/sup&gt;</td>
<td>4.1&lt;sup&gt;c&lt;/sup&gt;</td>
<td>4.7&lt;sup&gt;b&lt;/sup&gt;</td>
<td>6.6&lt;sup&gt;a&lt;/sup&gt;</td>
<td>5.7&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Oleic (C18:1&lt;sup&gt;n-7&lt;/sup&gt;)</td>
<td>32.2&lt;sup&gt;b&lt;/sup&gt;</td>
<td>35.2&lt;sup&gt;a&lt;/sup&gt;</td>
<td>34.3&lt;sup&gt;a&lt;/sup&gt;</td>
<td>31.3&lt;sup&gt;b&lt;/sup&gt;</td>
<td>34.6&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td>Linoleic (C18:2&lt;sup&gt;n-6&lt;/sup&gt;)</td>
<td>1.38&lt;sup&gt;ab&lt;/sup&gt;</td>
<td>1.65&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.51&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.20&lt;sup&gt;bc&lt;/sup&gt;</td>
<td>0.99&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>α-Linolenic (C18:3&lt;sup&gt;n-3&lt;/sup&gt;)</td>
<td>1.66&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.96&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.52&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.59&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.59&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Ω-6/Ω-3</td>
<td>0.83&lt;sup&gt;bc&lt;/sup&gt;</td>
<td>1.80&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.00&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.78&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.63&lt;sup&gt;c&lt;/sup&gt;</td>
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Discussion: Fatty acid composition

- **Concentrate:**
  - Oleic acid (C18:1n-9)
  - Linoleic acid (C18:2n-6)
- **Green plants and pastures:**
  - Stearic acid (C18:0)
  - trans-vaccenic acid (C18:1t-11)
  - α-linolenic acid (C18:3n-3)
- Ω-6/Ω-3 ratio < 4
Conclusion

- Concentrate and silage for 44 days affect fatty acid composition
- Pre-slaughter fattening for 24 days no effect on meat quality
- Separate marketing?
Thank you for your attention