Factors causing a higher level of liver abscesses in organic compared with conventional dairy herds

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Feed related causes of liver abscesses:

- Low structure intake
- High starch intake

**RUMEN**
- Low pH
- Rumen acidosis
- Rumen parakeratosis
- Fusobacterium necrophorum
- Actinomyces pyogenes

**LIVER**
- Abscesses
- Abscesses in the rumen wall

**PORTAL VEIN**
- Bacteria
Higher frequency of liver abscesses in organic dairy herds and large breeds

- Danish HF
- Danish red Dairy breed
- Jersey

% Cows with liver abscesses

Conventional herds
Organic herds
Aim of project

To identify feeding and management factors related to the high level of liver abscesses in organic herds by

1) A questionnaire
2) Analysis based on data from the Danish Cattle Data Base
Questionnaire

• 91 organic herds
• Large breed
• Slaugther more than 20 cows per year
• Standardised slaugtherhouse recordings
• Data included:
  
  winter and summer feed ration, feeding and grazing routines during 3 seasons (2001-2003)
Average feed level and nutrient content in organic and conventional rations

<table>
<thead>
<tr>
<th></th>
<th>Winter</th>
<th>Summer</th>
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</thead>
<tbody>
<tr>
<td><strong>Net Energy Intake, Scandinavian Feed Units</strong></td>
<td><strong>18.4</strong></td>
<td><strong>18.5</strong></td>
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<tr>
<td></td>
<td><strong>19.6</strong></td>
<td><strong>19.5</strong></td>
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<tr>
<td><strong>Fatty acids, gram per SFU</strong></td>
<td><strong>28.6</strong></td>
<td><strong>28.8</strong></td>
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<td></td>
<td><strong>36.0</strong></td>
<td><strong>34.0</strong></td>
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<tr>
<td><strong>Starch, gram per SFU</strong></td>
<td><strong>200</strong></td>
<td><strong>174</strong></td>
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<td><strong>167</strong></td>
<td><strong>147</strong></td>
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<tr>
<td><strong>Digestible cell walls, gram per SFU</strong></td>
<td><strong>376</strong></td>
<td><strong>343</strong></td>
</tr>
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<td><strong>361</strong></td>
<td><strong>365</strong></td>
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Effect of energy intake from commercial concentrates on the herd level of liver abscesses ($p = 0.019$)

![Bar chart showing the percentage of liver abscesses at different energy intake levels from commercial concentrates.](chart.png)

- **Net energy intake of comm. conc. (SFU per day):**
  - $<0.64$
  - $0.64-3.1$
  - $3.2-4.6$
  - $>4.6$

- **% Liver abscesses:**
  - $10$
  - $8$
  - $6$
  - $4$
Effect of energy level from grain on the herd level of liver abscesses (ns)

% Liver abscesses

Net energy intake of grain (SFU per day)
Effect of the level of pasture intake on the herd level of liver abscesses (p=0.012)
Analysis
Danish Cattle Data Base

- 244 organic herds
- 666 conventional herds
  (loose housing ✓ grazing ✓)
- Danish Holsteins
- Milk tank recordings of the herds
  (January 2001 to June 2003)
- Standardised slaughterhouse recordings
  (July 2001 to June 2003)
Effect of minimum milk fat % during Summer season

% Liver abscesses

Conventional herds

Organic herds
Effect of variation in milk fat %

% Liver abscesses

Conventional herds

Organic herds

0.15 0.18 0.20 0.23 0.25 0.28
Conclusions

- Organic dairy feed rations had a
  - higher starch level
  - lower level of digestible cell walls in summer rations
- Higher frequency of liver abscesses were found in herds with high grazing levels and high grain/low commercial concentrate intake
- The effect of high grazing levels are probably related to unbalanced feeding
- Low minimum milk fat % during Summer and high variation in milk fat % in general, corresponded to higher levels of liver abscesses
Thank you for your attention!