Feeding chicory (*Cichorium intybus*) selectively reduces *Ostertagia ostertagi* infections in cattle

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### Background:
- In vivo anthelmintic (AH) effects of forage chicory have been reported in sheep and deer, but not in cattle
- Potential anti-parasitic effects of bioactive plants like forage chicory may be direct or indirect through improved nutrition

### Objectives:
- To test the AH effects of a forage chicory diet against gastrointestinal nematodes in calves fed with iso-protein and iso-energetic diets (Study 1) and in calves under grazing conditions (Study 2)

### Study 1: AH effects of ensiled forage chicory in calves experimentally infected with *Ostertagia ostertagi* and *Cooperia oncophora* and fed with iso-protein and iso-energetic diets

**Methods:**
- 2-4 months-old calves were allocated into chicory (n=9) or control (n=6) groups and fed with ensiled chicory or ryegrass hay, resp., from start of study until slaughter. Calves were stabilized throughout the study

**Study design:**

<table>
<thead>
<tr>
<th>Study 1</th>
<th>Infection</th>
<th>Start FEC</th>
<th>Slaughter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chicory</td>
<td>D-15</td>
<td>D0</td>
<td>D46</td>
</tr>
<tr>
<td>Control</td>
<td>D19</td>
<td>D0</td>
<td>D46</td>
</tr>
</tbody>
</table>

**Results:**
- No differences in weight gain between groups until D21
- From D21 until slaughter, chicory and control groups had mean growth rates of 768 and 370 g/day, resp. (P=0.004)
- No differences in serum pepsinogen, FEC or DM/CP/E intakes between groups
- Chicory-fed calves had a significant reduction in the worm burden of *O. ostertagi* (P<0.001) but not of *C. oncophora* (P=0.1), compared with controls

### Study 2: AH effects of grazing a pure forage chicory sward in calves experimentally infected with *Ostertagia ostertagi*

**Methods:**
- 4-6 months-old calves were allocated into chicory (n=10) or control (n=10) groups and grazed pure-chicory or ryegrass/clover fields, resp., from start of study until slaughter

**Study design:**

<table>
<thead>
<tr>
<th>Study 2</th>
<th>Infection</th>
<th>Start FEC</th>
<th>Slaughter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chicory</td>
<td>D-7</td>
<td>D17</td>
<td>D36</td>
</tr>
<tr>
<td>Control</td>
<td>D0</td>
<td>D17</td>
<td>D36</td>
</tr>
</tbody>
</table>

**Preliminary results:**
- Estimated weight gains in chicory and control groups: 366 and 748 g/day, resp. (P<0.001)
- No differences in FEC between groups until D20
- From D22 onwards: significant FEC reduction in the chicory group (P<0.05)
- No differences in serum pepsinogen between groups
- Marked reduction in O. ostertagi adult counts in the chicory group

### Conclusions:
- Study 1: Feeding with chicory silage significantly reduced *O. ostertagi* but not *C. oncophora* adult burdens in calves, without compromising animal growth
- Study 2: Grazing of pure chicory significantly reduced excretion of *O. ostertagi* eggs and adult burdens in calves, but poor animal growth was observed
- The time course of infection indicates that main effect of a forage chicory diet is on survival of *O. ostertagi* adults

### Acknowledgements:

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