Polioencéphalomalacie thiamine et soufre

Claude Jean-Blain
Figure 9 - Rumen artificiel de type RUSITEC.

Les aliments ou substrats, sont placés dans les deux sacs de nylon fixés dans le compartiment central du fermenteur. Le diamètre des mailles du nylon est tel, que les bactéries peuvent circuler librement de l'extérieur à l'intérieur des sacs, et inversement.
Tabl.1 - Effet de l'ajonction de thiamine, des conditions acidogènes et d'un niveau élevé de sulfate sur la production totale de thiamine, les proportions relatives des formes phosphorylées et libres, la synthèse nette de thiamine et l'activité thiaminasicque en rumen artificiel. (Alves de Oliveira et al 1997)

<table>
<thead>
<tr>
<th>Adjonction de thiamine</th>
<th>Conditions acidogènes</th>
<th>Niveau de soufre</th>
<th>Production totale de Thiamine nmol/j</th>
<th>TPP %</th>
<th>TMP %</th>
<th>Thiamine libre %</th>
<th>Synthèse Nette de Thiamine Nmole/j</th>
<th>Activité thiaminasicque en mU</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>bas</td>
<td>334</td>
<td>84.9</td>
<td>9.5</td>
<td>5.6</td>
<td>334</td>
<td>0.02</td>
</tr>
<tr>
<td>+</td>
<td>-</td>
<td>bas</td>
<td>442</td>
<td>81.3</td>
<td>9.1</td>
<td>9.5</td>
<td>146§</td>
<td>0.05</td>
</tr>
<tr>
<td>-</td>
<td>+</td>
<td>bas</td>
<td>319</td>
<td>88.9</td>
<td>7.7</td>
<td>3.4</td>
<td>319</td>
<td>0.03</td>
</tr>
<tr>
<td>+</td>
<td>+</td>
<td>bas</td>
<td>496</td>
<td>73.6</td>
<td>9.6</td>
<td>16.7</td>
<td>200 §</td>
<td>0.01</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>haut</td>
<td>250</td>
<td>89.1</td>
<td>8.7</td>
<td>2.2</td>
<td>250</td>
<td>0.04</td>
</tr>
<tr>
<td>+</td>
<td>-</td>
<td>haut</td>
<td>416</td>
<td>84.1</td>
<td>10.0</td>
<td>5.8</td>
<td>120 §</td>
<td>0.02</td>
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<tr>
<td>-</td>
<td>+</td>
<td>haut</td>
<td>282</td>
<td>90.2</td>
<td>5.5</td>
<td>4.2</td>
<td>282</td>
<td>0.01</td>
</tr>
<tr>
<td>+</td>
<td>+</td>
<td>haut</td>
<td>396</td>
<td>88.3</td>
<td>6.7</td>
<td>4.9</td>
<td>100 §</td>
<td>0.01</td>
</tr>
<tr>
<td>Déviation standard</td>
<td></td>
<td></td>
<td>25</td>
<td>2.8</td>
<td>1.1</td>
<td>2.6</td>
<td>25</td>
<td>0.01</td>
</tr>
</tbody>
</table>

§ : thiamine totale – 296 nmoles rajoutées

Signification statistique

<table>
<thead>
<tr>
<th>Addition de thiamine</th>
<th>***</th>
<th>*</th>
<th>NS</th>
<th>*</th>
<th>***</th>
<th>NS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions acidogènes</td>
<td>NS</td>
<td>NS</td>
<td>*</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Haut niveau de soufre</td>
<td>**</td>
<td>*</td>
<td>NS</td>
<td>*</td>
<td>*</td>
<td>NS</td>
</tr>
</tbody>
</table>

* P<0.05 ; ** P< 0.01 ; *** P< 0.001 NS non significatif
Table III. Effect of sulfur level on thiaminase activity in the rumen content of lambs receiving a thiamine-free semi-synthetic diet (10^{-4} \, \mu\text{mol of thiamine decomposed mL}^{-1}\, \text{min}^{-1}) (\text{means} \pm \text{SEM}) \^{a}.

<table>
<thead>
<tr>
<th>Time (weeks)</th>
<th>Control group (n = 3)</th>
<th>Experimental group (n = 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.88 ± 0.75</td>
<td>11.65 ± 8.37</td>
</tr>
<tr>
<td>2</td>
<td>1.05 ± 0.25</td>
<td>6.75 ± 3.99</td>
</tr>
<tr>
<td>3</td>
<td>1.64 ± 0.89</td>
<td>9.76 ± 5.56</td>
</tr>
<tr>
<td>5</td>
<td>1.56 ± 1.12</td>
<td>0.19 ± 0.09</td>
</tr>
<tr>
<td>7</td>
<td>4.94 ± 4.64</td>
<td>0.92 ± 0.41</td>
</tr>
<tr>
<td>8</td>
<td>0.47 ± 0.47</td>
<td>1.48 ± 1.14</td>
</tr>
<tr>
<td>10</td>
<td>9.95 ± 7.70</td>
<td>1.63 ± 0.70</td>
</tr>
<tr>
<td>16</td>
<td>9.14 ± 3.86</td>
<td>2.46 ± 1.82</td>
</tr>
</tbody>
</table>

\^{a} No significant difference between groups.
Table II. Effect of the sulfur level on the rumen thiamine concentration of lambs receiving a thiamine-free semi-synthetic diet (mean ± SEM) a.

<table>
<thead>
<tr>
<th>Time (weeks)</th>
<th>2</th>
<th>4</th>
<th>6</th>
<th>9</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Control group</strong> <em>(0.2% sulfur)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B1 (μg/g total rumen content)</td>
<td>0.60 ± 0.16</td>
<td>0.71 ± 0.24</td>
<td>0.69 ± 0.02</td>
<td>0.73 ± 0.06</td>
<td>0.86 ± 0.18</td>
</tr>
<tr>
<td>B1 (μg/g DM)</td>
<td>6.62 ± 2.42</td>
<td>6.86 ± 3.04</td>
<td>6.22 ± 0.11</td>
<td>7.13 ± 0.62</td>
<td>9.65 ± 2.16</td>
</tr>
</tbody>
</table>
| **Experimental group** **  
| B1 (μg/g total rumen content) |        |        |        |        |        |
| 0.4% sulfur | 0.76 ± 0.05 | 0.63 ± 0.07 |        | 0.62 ± 0.08 | 0.55 ± 0.02 | 0.84 ± 0.25 |
| 0.6% sulfur |        |        |        |        |        |
| B1 (μg/g DM) |        |        |        |        |        |
| 0.4% sulfur | 7.90 ± 0.59 | 5.35 ± 0.46 |        | 6.38 ± 1.16 | 5.80 ± 0.76 | 7.19 ± 1.48 |
| 0.6% sulfur |        |        |        |        |        |

* Three animals x 4 days; ** four animals x 4 days; a no significant differences between weeks and groups.
Concentration en sulfures en mmoles/L dans le rumen
Concentration en sulfates en mmoles/L dans le rumen

Fig. 1b

Temps en heures