LONG-DISTANCE TRANSPORT OF BEEF CATTLE TO THE FATTENING UNIT: IMPACT OF LIVE YEAST AND SELENISED-YEAST ON BLOOD METABOLITES AND RETICULO-RUMEN PH IN NEWLY RECEIVED CHAROLAIS BULLS

Matteo Santinello a, Isabella Lora b, Clothilde Villot c, Giulio Cozzi b, Mauro Penasa a, David Terán c, Marine Gauthier c, Paula Soler c, Alberto Guerra a, Massimo De Marchi a

a Department of Agronomy, Food, Natural resources, Animals and Environment (DAFNAE), University of Padova, Viale dell’Università 16, 35020 Legnaro (PD), Italy b Department of Animal Medicine, Production and Health (MAPS), University of Padova, Viale dell’Università 16, 35020 Legnaro (PD), Italy c Lallemand Animal Nutrition

INTRODUCTION

Long-distance transport, comingling and receiving phase at the fattening unit are sources of stress for young beef cattle. This randomised controlled study aimed at testing whether the animals have some benefits from the supplementation of live yeast and organic selenium through slow-release nutritional boluses prior to transportation.

MATERIALS & METHODS

LOCATION: From French collection centers (Auvergne) to beef fattening farm in Italy (Veneto region), 950km distance

ANIMALS: 80 Charolais young bulls (initial BW= 444 kg) transported from France to Italy (12 hours= long-haul)

TREATMENTS GROUPS :

1/ Control : no supplementation before transport
2/ Yeast: slow-release ruminal boluses supplemented 1 day before leaving France, including LEVUCCELL SC (live yeast Saccharomyces cerevisiae CNCM I-1077) and Alkosel (selenium-enriched yeast Saccharomyces cerevisiae NCYC R397)

RESULTS & DISCUSSIONS

A. EFFECT ON METABOLISM

Supplementation with Yeast improves metabolism on beef cattle:

- Blood glucose was higher: 5.06 vs 4.92 mmol/L for Yeast versus Control group (p=0.07)
- Blood selenium content was higher : 73.4 vs 57.5 µg/L; p<0.01 Figure 1
- ADG from d0 to d7 was numerically higher: 2.35 vs 2.30 kg/d. In both groups, cattle lost 27 kg during transport.

Figure 1. Plasma selenium content of Charolais bulls (means d-1 to d7)

DIETS

- Hay and water ad libitum at the collection centres in France before transport (d-1)
- At receiving: meadow hay (only d1) + TMR: corn silage (25%), wet sugar beet pulps (13%), corn meal (12%), wheat bran (11%), dehydrated alfalfa (10%), soybean meal (9%), and mineral premix (2%).

MEASUREMENTS : Individual BW and blood metabolic profile at d-1 (France), at the arrival d0 and at d7. Reticulo-rumen sensors (SmaXtec) measured pH, temperature and rumination in 60 bulls equally distributed in both groups.

B. EFFECT ON RETICULO-RUMEN traits

Supplementation with Yeast had a positive effect on rumen environment (Table 1):

- Lower daily pH amplitude (p<0.05)
- Lower inter-animal variability of pH (p<0.05) – Figure 2
- Increased rumination time (+8%; p<0.10)

Table 1. Effect of yeast supplementation on reticulo-rumen traits at d7 of Charolais young bulls

<table>
<thead>
<tr>
<th>Reticulo-rumen traits from d4 to d7</th>
<th>Supplementation</th>
<th>SEM</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>Yeast</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily pH mean</td>
<td>6.94</td>
<td>0.06</td>
<td>0.69</td>
</tr>
<tr>
<td>Daily pH amplitude</td>
<td>0.68</td>
<td>0.03</td>
<td>0.04</td>
</tr>
<tr>
<td>Ruminations, min/d</td>
<td>396</td>
<td>13.1</td>
<td>0.09</td>
</tr>
</tbody>
</table>

Figure 2. Evolution of the inter-animal variability of daily reticulo-rumen pH

CONCLUSIONS

The supplementation with specific live yeast additive LEVUCCELL SC and selenium-enriched yeast ALKOSEL improved the metabolism and the rumen environment of Charolais bulls at receiving with potential benefits at mid-term on animal stress recovery and growth performance.

More stable ruminal conditions represent an important support for beef cattle health during the receiving period when animals face the delicate transition to the fattening unit.

LALLEMAND ANIMAL NUTRITION SPECIFIC FOR YOUR SUCCESS

www.lallemandanimalnutrition.com