A 77-day feedlot study was conducted using 42 double mated Belgian Blue steers:

- The animals were adjusted to their fattening diet using an adaptation diet for 7 weeks (from 16 to 23 weeks of age: the growing period) in the Spanish feedlot system.
- Three experimental groups: (1) control group (no supplementation, n=10), (2) monensin (n=16, 400 mg/kg BW daily), Rumenasen, Ebroa Animal Health, Madrid, Spain), at a concentration of 80 mg/kg concentrate (OMS basis), and (3) a yeast supplementation (n=16, Saccharomyces cerevisiae NCYC 3047; [200 mg/kg BW daily], yeast concentrate containing 15 x 10^9 CFU/g per g/kg diet), Eurotech Nutrition, Madrid, Spain, at a dose of 500 mg/kg concentrate (OMS basis).
- Dietary composition was typical of diets given commercially to feedlot cattle in Spain (Table 1), with barley straw ad libitum.

All grains were ground through a hammer mill with the rolls of the mill adjusted to crack the grain coarsely (6-mm diameter). Concentrate ingredients, including the yeast culture, were mixed together, but not pelleted, and offered as a single mixed concentrate feedstuff.

- Blood samples were collected by jugular puncture on days 0 (just after the adaptation period prior to supplementation), 3, 7, 13, 61, and 77 (the last day of the finishing period, prior to slaughter). Measured parameters were venous blood pH, bicarbonate, base excess (BE), pCO2 and serum L-lactate.
- Production parameters were measured at the end of the finishing period, and can be considered as useful complementary information associated with supplementation (see Table 2).
- Data were subjected to analysis of variance (ANOVA): the model also included the effects of time (T) and treatment (TR), and the T x TR interaction.

No significant differences were observed among groups. Nevertheless, note that the animals that received the highest concentrate intake and were fed a diet (ADI) and reached the highest weight were the non-supplemented animals. Food-gain ratio was lowest (i.e. most efficient) in the mono group.

The time-course of this parameter at the start of the study (until day 13) was the opposite of blood pH less course, suggesting that pH fluctuations were probably not only attributable to the high-fat diet consumption, but also to pCO2 variations.

The time-course observed in pH is indicative of a reduction in blood buffers as a compensatory mechanism attributable to ruminal acidosis (Borja et al., 1994)

- Marked differences appeared between the two supplements.
- The effect of the yeast supplementation was not significant at any time in the rumen, reducing the pH down to 5.6 (P<0.05).

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**Materials and Methods**

**Table 1**

<table>
<thead>
<tr>
<th>Variable</th>
<th>C (n=10)</th>
<th>MON (n=16)</th>
<th>SACC (n=16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>7.39±0.08</td>
<td>7.31±0.06</td>
<td>7.29±0.08</td>
</tr>
<tr>
<td>BE</td>
<td>8.56±0.07</td>
<td>8.54±0.07</td>
<td>8.54±0.07</td>
</tr>
<tr>
<td>pCO2</td>
<td>34.1±2.2</td>
<td>34.7±2.1</td>
<td>34.7±2.1</td>
</tr>
<tr>
<td>L-lactate</td>
<td>1.96±0.1</td>
<td>2.08±0.1</td>
<td>2.05±0.1</td>
</tr>
</tbody>
</table>

**Results and Discussion**

Mean serum L-lactate levels remained stable over time and within physiological ranges (Ruzafa et al., 2000), without statistically significant differences among groups at any time, suggesting that supplementation did not influence in lactate production.

**Conclusion**

Supplementation, especially with monensin, protects the steers against the additive trend associated to a high-fat consumption. Given that this supplementation is provided to the EU, more research related to industry conditions is needed on possible alternative supplements, such as yeast, with a view to maximizing the economic performance of feedlot systems.