**Application: The g**rowth rate and feed efficiency of dairy calves were greater when live yeast was added to the calf starter, which can lower the carbon footprint of, but not antimicrobial use in calf rearing.

**Introduction:** Morbidity in young calves is largely attributed to enteric disorders and respiratory disease (Gulliksen et al., 2009) and antimicrobials are an integral part of livestock production. However, human mortality due to antimicrobial-resistant (AMR) bacteria is projected to be 10 million by 2050, eclipsing those due to cancer by 1.8 million annually (WHO, 2017) and the development of natural alternatives to antimicrobials are essential for calves. This study aimed to compare the performance of dairy-bred bull calves offered calf starter feed without and with the addition of live yeast (LY).

**Material and methods:**A total of 62 dairy calves were allocated, at 3 (± 1) d of age, to one of two treatment groups according to birth date and live weight (LW) (n=31 calves/ treatment) and offered starter without (LW: 50.4 ± 1.09 kg) and with the addition of live yeast (LY) at 0.25 g/kg FM (Vista cell, **AB Vista, Ltd.)** (LW: 49.3 ± 1.09 kg) for 84 d. Calves were offered pasteurised colostrum up to 3 d of age, housed in pairs, and offered MR at 4 to 6 L/d (Milk replacer at 150g/l: DM 96; CP 23; Oil 20 %) between 4 and 70 d of age at fully gradual weaning, along with ad-libitum access to water and calf starter (20 % CP and 12.4 MJ ME /kg DM). Daily LW, feed, and water intakes were measured and used to calculate a weekly mean, which along with daily health treatments were normally distributed. These were analysed using the general linear mixed models procedure (GLM ANOVA), applying -LY and +LY use as a fixed effect and animal as a random effect in the model. Differences were assessed by Tukey’s test with a confidence interval of 95% and differences were reported at P<0.05.

**Results:**Calf growth rate and feed efficiency were greater when LY was added to calf starter, but did not affect calf mortality, electrolyte, and antimicrobial use.

**Table 1: Mean (± SE) electrolyte and antimicrobial use, dry matter intake (DMI), live-weight gain, feed efficiency, and related carbon footprint of dairy calves offered starter with and without live yeast (LY)**

|  |  |  |  |
| --- | --- | --- | --- |
|   | -LY (± SE) | +LY (± SE) | P value |
| Mortality, % | 0.03 | 0 | 0.989 |
| Electrolyte use, d in total | 26 | 24 | 0.960 |
| Antimicrobial use, d in total | 29 | 20 | 0.225 |
| Milk replacer intake, kg | 58.8 (1.02) | 58.2 (1.02) | 0.706 |
| Starter intake, kg DM | 62.1 (2.19) | 61.2 (2.19) | 0.785 |
| Cereal straw, kg DM |  5.9 (0.364) |  5.6 (0.36) | 0.515 |
| Total water intake, L/d | 41.5 (0.66) | 41.3 (0.66) | 0.781 |
| Pre-weaning gain (0 to 70 d), kg/d |  0.74 (0.016) |  0.79 (0.016) | 0.033 |
| Post-weaning gain (70 to 84 d), kg/d |  0.96 (0.047) |  1.09 (0.047) | 0.046 |
| Overall daily gain (0 to 84 d), kg/d |  0.78 (0.017) |  0.84 (0.017) | 0.008 |
| Preweaning feed efficiency, DMI/ kg gain |  1.67 (0.036) |  1.51 (0.036) | 0.002 |
| Post-weaning feed efficiency, DMI/ kg gain |  2.90 (0.173) |  2.47 (0.179) | 0.088 |
| Mean feed efficiency, kg DMI/ kg gain |  2.15 (0.055) |  1.93 (0.055) | 0.006 |
| Reduction in feed-related CO2-eq, % |  0.00 (0.001) |  10.13 (0.001) | 0.006 |

**Conclusion:** The calf growth rate and FE were greater when LY was added to the calf starter, which can lower the carbon footprint related to feed use in rearing calves. The inclusion of LY in calf starter did not affect calf mortality, electrolyte, and antimicrobial use, which was however minimal overall.

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**References**

Gulliksen, S.M., Lie, K.I., Østerås, O., 2009. J Dairy Sci. 92, 1660–1669.

World Health Organisation, 2019: <https://www.who.int/news-room/detail/29-04-2019-new-report-calls-for-urgent-action-to-avert-antimicrobial-resistance-crisis> (Accessed 14th July 2020).