**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 that enhance calf health and performance are essential. This study aimed to compare the performance of dairy calves offered a calf starter 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, **ABvista, 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 the amount of electrolyte or antimicrobial use.

**Table 1 Mean (± SE) feed intake (DMI), live-weight gain, feed efficiency, and electrolyte and antimicrobial use of dairy calves offered starter with (+) and without (-) additional live yeast (LY)**

|  |  |  |  |
| --- | --- | --- | --- |
|   | -LY (± SE) | +LY (± SE) | P value |
| 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 |
| Mean 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 |

**Conclusion:** The calf growth rate and feed efficiency (DMI/ kg gain) were greater when LY was added to the calf starter, which can lower the carbon footprint of calf rearing. However, the inclusion of LY in calf starters did not affect electrolyte and antimicrobial use, which was required in small amounts.

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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).