

Effects of a *Megasphaera elsdenii* NCIMB 41125 oral capsule on growth performance, health and survival in Holstein calves

M. Guadagnini¹, M.M. Moreira Dinardi², L.M. de Freitas Vidal², M. Martín Martínez², G. Mazón¹

¹ Axiota Animal Health, Fort Collins, CO, USA

² DVM, Durazno, Uruguay

Background

A calf's transformation from a pseudo-monogastric to a fully developed ruminant is a significant challenge.¹ Volatile fatty acids (VFA), especially butyrate, drive ruminal development in terms of size, length and density of ruminal papillae.² Previous controlled studies have shown increased starter intake and improved ADG following *Megasphaera elsdenii* NCIMB 41125 administration to calves.^{3,4}

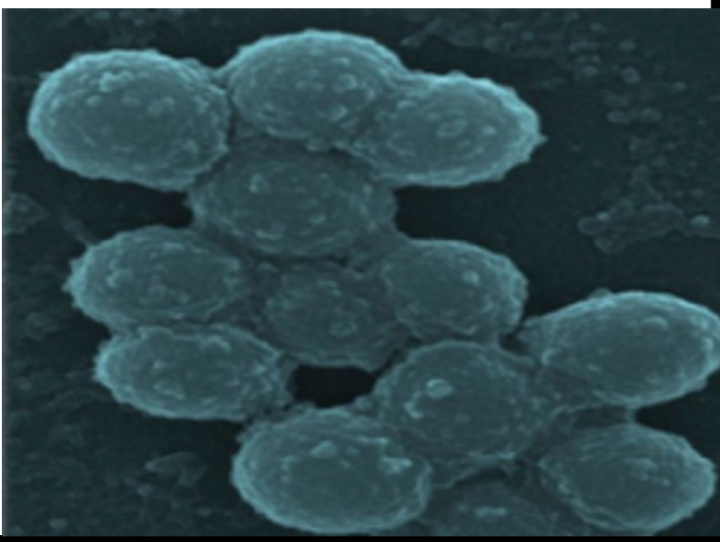
STUDY AIM: address health, growth performance and survival benefits of a *M. elsdenii* capsule in a large scale study under commercial conditions

Megasphaera elsdenii NCIMB 41125

- Isolated from a high-producing dairy cow in South Africa.
- Patented strain, proprietary freeze-drying technology.

Unique traits⁵:

- ✓ High specific growth rate (0.94 / h)
- ✓ Growth range pH ~ 4.5 to 6.5
- ✓ D- and L-lactate preferred substrates
- ✓ Utilizes glucose and other carbohydrates
- ✓ Tolerates ionophores



Materials & Methods

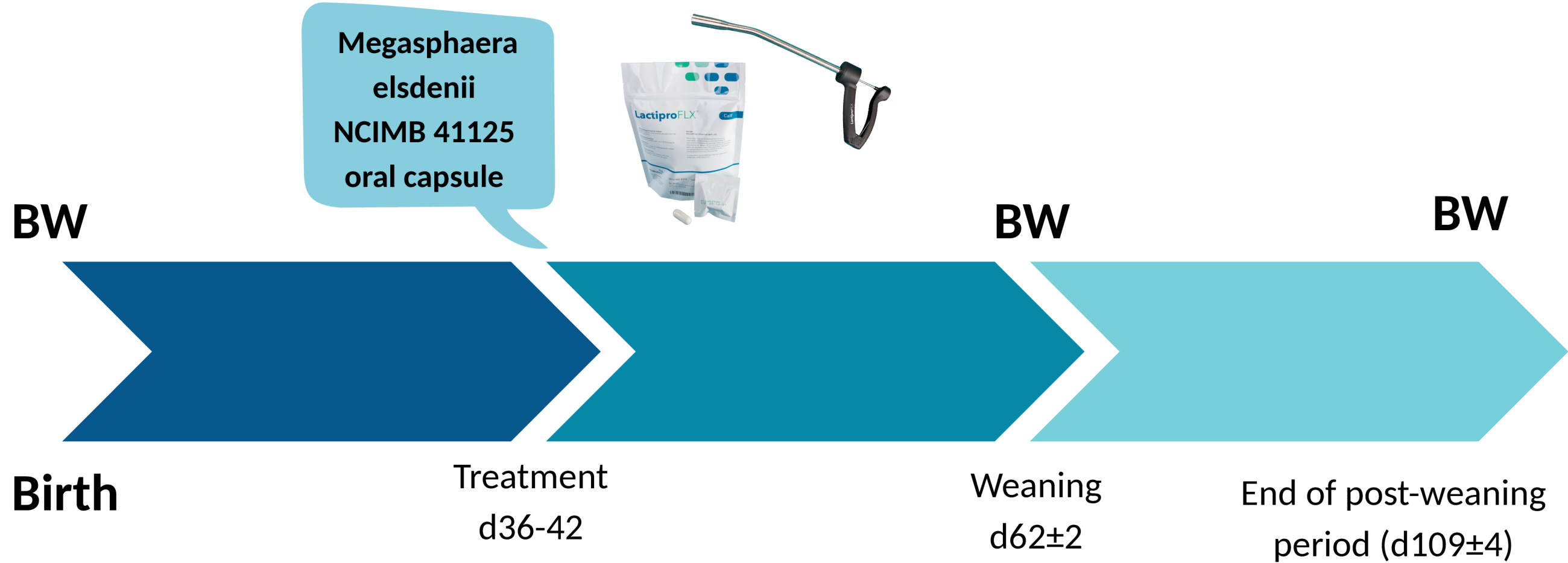
- 748 Holstein female calves; birth weight 30–60 kg (38.8 ± 4.3 kg).
- 1 commercial herd in Uruguay.
- Randomized treatment (CON = 397; LACT = 351).
- LACT: single oral capsule with 5.0 × 10⁹ CFU of *M. elsdenii* NCIMB 41125 (LactiproFLX®, Axiota Animal Health).
- CON remained untreated.

Nutritional plan

Transition milk for the first 5 days, then milk replacer until d63. Stepped up to 8 L/d on d15; from d43 milk allowance gradually reduced until complete weaning on d63. Pelleted starter (21.7% CP, 7.0% fat, 26.1% starch) ad libitum from d15. Post-weaning: TMR (22.4% CP, 26.0% starch).

Statistical analysis

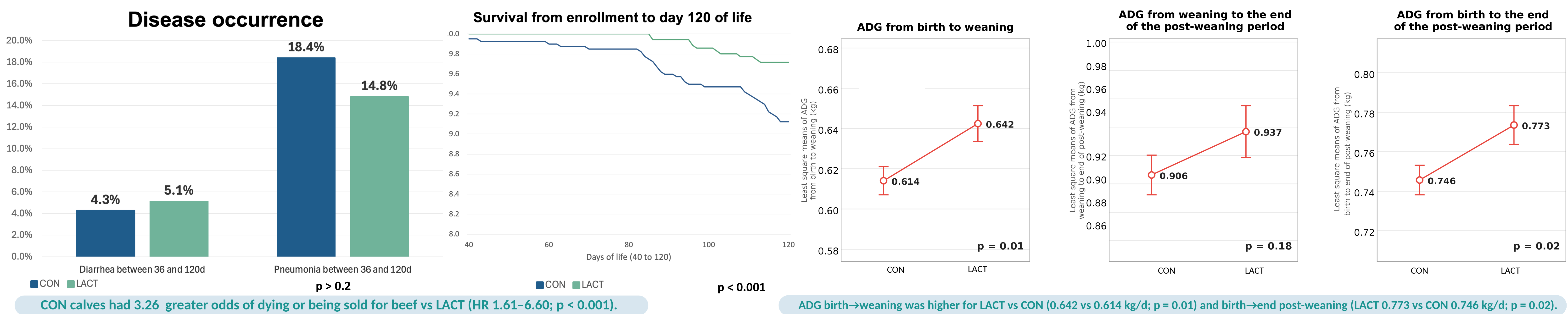
Treatment group association with ADG was calculated using linear regression models, while association with survival (risk of death or being sold for beef) was assessed with a Cox's proportional hazard model. Disease prevalence differences among treatment groups were assessed using chi-square test



Calf body weight

VARIABLE	CONTROL	LACT	SEM	P-VALUE
Birth weight, kg	38.8	39.0	0.22	0.46
Weaning weight, kg	77.2	79.0	0.50	0.01
Final weight, kg	120.6	123.7	0.96	0.02

Results



Conclusions

A single oral capsule of *M. elsdenii* NCIMB 41125 was associated with:

- Higher growth performance pre-weaning
- Higher growth performance post-weaning
- Greater survival

References

- Khan M. et al., 2016 "Invited review: Transitioning from milk to solid feed in dairy heifers" J. Dairy Sci. 99:885–902
- Diao Q. et al., 2019 "Review of Strategies to Promote Rumen Development in Calves" Animals 2019, 9, 490
- Muya M. C. et al., 2017 "Performance of Holstein calves having free access to milk and dosed with *Megasphaera elsdenii*" Sci. Agric. v.74, n.3, p.189-194, May/June 2017
- Mazon G. et al., 2025. "Prewaning *Megasphaera elsdenii* supplementation in dairy-beef calves: Impact on performance, behavior, and rumen development" Journal of Dairy Science, Volume 108, Issue 1, 2025, Pages 448-463,
- Meissner H.H. et al., 2010 "Ruminal acidosis: A review with detailed reference to the controlling agent *Megasphaera elsdenii* NCIMB 41125" South African Journal of Animal Science 2010, 40 (2)2010. S. Afr. J. Anim. Sci. 40(2).