

functionalsolutions

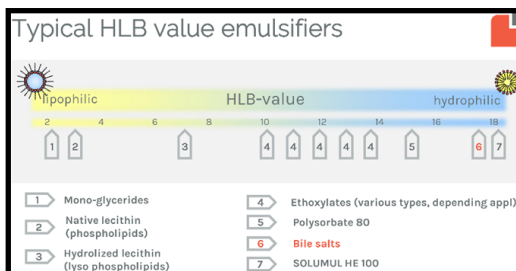
Mapleview Agri

ANIMIX

Evaluation of Solumul HE 100™ hydrophilic emulsifier on health and growth of dairy calves.

D. Wood¹, R. Blome¹, A. Keunen², B. Keunen², Bert Wijnholds⁴, Jeroen van Roon⁴, and D. Renaud³. Animix¹, Juneau, WI, Mapleview Agri Ltd.², Palmerston, ON, Canada, Population Medicine, University of Guelph³, Guelph, ON, Canada. Functional Solutions, Wageningen, NL⁴

Introduction



Hydrophilic emulsifiers have been widely used in special milk fed veal feeds for decades both to stabilize free fat applications and to improve G:F.

Objective

The objective of this study was to investigate the effects of administering Solumul HE 100 hydrophilic emulsifier in calf milk replacer and starter grain.

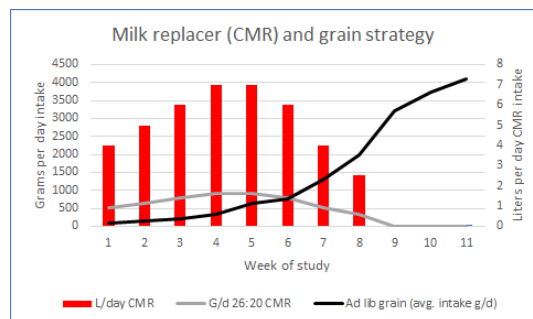
Material and Methods

Male calves (n=160) sourced from farms and auctions (BW=47.4 ±5.27 kg) were randomly assigned to receive one of 3 treatments, either:

- 1.) Solumul HE 100 administered at 500 ppm in calf milk replacer (CMR) (SMR n=54), or
- 2.) Solumul HE100 administered at 500 ppm in both CMR and grain (SMG n=53) or
- 3.) no Solumul HE100 (CON n=49).

Three calves died at arrival, and another died from improper tubing and were excluded. Calves were fed 2x/d 26:20 WPC-based, non-medicated, no additives

CMR (39 kg over 56 d) and ad lib texturized starter (20% CP, 4% straw) to week 8 then transitioned to corn and pellet ration (18.1% CP, 4% straw). Grain intake was measured weekly with measures taken on weigh-back and newly added grain. Calves were housed individually until weaned and then combined in groups of 5 in a mechanically ventilated grain-fed veal facility in Ontario.



Measures:

- ⇒ Serum total protein at arrival (refractometer)
- ⇒ Medical treatments, mortality, milk refusals
- ⇒ Individual body weight weekly
- ⇒ Individual fecal score 2x/d (Renaud, 2020)
- ⇒ Individual respiratory score 2x/d (Love, 2014)

Statistical analysis:

- ⇒ Conducted in Stata 17 (StataCorp, TX)
- ⇒ Cox proportion hazard model used to measure mortality and morbidity
- ⇒ Linear regression model to evaluate ADG
- ⇒ Generalized linear model to evaluate health scores

	SMR	SMG	CON
Number (n) of calves	54	53	49
Mortality (n)	7	9	5
Arrival Serum Total Protein (g/dL)	5.32	5.5	5.46
Days fecal score ≥2	2.5	3.5	3
Days fecal score 3	2.0	2.5	2.5
Days with respiratory score ≥5	1.0	1.0	0.5
% treated for respiratory disease	72.2%	67.9%	55.1%
Initial body weight (BW) (kg)	47.4	47.4	47.4
Weaning BW (kg)	87.7	89.7	86.7
D 77 BW (kg)	122.7^x	123.3^x	119.7^y
Prewean (d 1 - 56) ADG (kg)	0.72 ±0.19	0.76 ±0.23	0.71 ±0.19
Postwean (d 56 - 77) ADG (kg)	1.67 ±0.56	1.61 ±0.48	1.56 ±0.42
ADG d 1 - 77 (kg)	0.98 ±0.24	0.98 ±0.24	0.94 ±0.18
Grain intake prewean (kg)	36.4^b	42.2^a	36.6^b
Grain intake postwean (kg)	78.7^b	71.2^b	81.8^a
Grain intake d 1 - 77 (kg)	115.1	113.4	118.5
Prewean (d 1 - 56) Feed:Gain ratio	1.86	1.94	1.79
Postwean (d 56 - 77) Feed:Gain	2.16^a	2.04^a	2.57^b
Day 1 - 77 Feed:Gain ratio	2.05	1.99	2.13

^{a,b} Means within a row different superscripts differ ($P \leq 0.05$)
^{x,y} Means within a row different superscripts differ ($P \leq 0.10$)

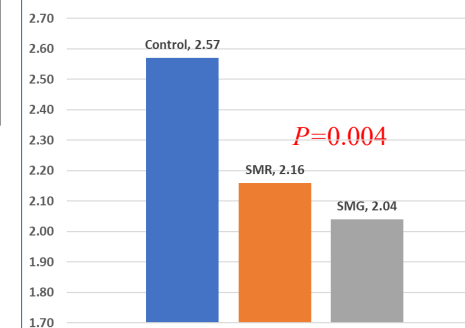
SMR: Solumul HE100 used at 500 ppm in CMR
SMG: Solumul HE100 used at 500 ppm in both CMR and grain
CON: No Solumul used in either

Results & Conclusion

- No differences noted in health between groups
- Calves in SMR & SMG tended heavier d 77
- SMR & SMG noted differences in grain intake
- SMR and SMG noted ↑ G/F during post wean



Post-wean Feed Conversion (Feed:Gain Day 56 - 77)



References:

Love WJ, Lehenbauer TW, Kass PH, Van Eenennaam AL, and Aly SS. 2014. Development of a novel clinical scoring system for on-farm diagnosis of bovine respiratory disease in pre-weaned dairy calves. PeerJ 2:e238. <https://doi.org/10.7717/peerj.238>.

Reis ME, Toledo AF, da Silva AP, Poczynek M, Fioruci EA, Cantor MC, Greco L, and CMM Bittar. 2021. Supplementation of lysolecithin in milk replacer for Holstein dairy calves: effects on growth performance, health, and metabolites. J. Dairy Sci. 104. <https://doi.org/10.3168/jds.2020-19406>. (the only public domain research study in calves examining mildly hydrophilic lysolecithin in milk replacers fed at 4 g/d and nothing improved calf performance).

Renaud DL., Buss L, Wilms JN, and Steele MA. 2020. Technical note: Is fecal consistency scoring an accurate measure of fecal dry matter in dairy calves. J. Dairy Sci. 103:10709–10714. <https://doi.org/10.3168/jds.2020-18907>.

Smink W. Efficacy of supplemental Solumul HE 100 on performance and digestibility in piglets. Unpublished research. Feed Innovation Services, Wageningen, The Netherlands. (unpublished wean pig data showing improved feed conversion ($P=0.029$) and improved diet digestibility ($P=0.032$)).

Figure 7. Predicted means of grain intake as determined using a mixed repeated measures linear regression model

