

FEEDING NATIVE RUMEN MICROBIAL SUPPLEMENTS INCREASES ENERGY-CORRECTED MILK PRODUCTION AND FEED EFFICIENCY BY HOLSTEIN COWS

EXPERIMENTAL DESIGN

- Individual tie-stalls; milked 2X/day
- 5g dose mixed with ground corn & top-dressed daily
- 14-day baseline + 140-day treatment
- 24 control, 25 MFS1, and 24 MFS2 animals
- 20% primiparous, 80% multiparous
- Animals started from early- to mid-lactation (43-145, avg. 82 DIM)
- Cows blocked and assigned group by DIM, parity, & ECM
- Cows enrolled between Oct 27, 2020 and Feb 16, 2021; ended Jul 20, 2021

EXPERIMENTAL GROUPS	COLONY-FORMING UNITS / 5G DOSE			
	<i>P. kudriavzevii</i>	<i>C. beijerinckii</i>	<i>R. bovis</i>	<i>B. fibrisolvens</i>
Control	0	0	0	0
MFS1	1 x 10 ⁸	1 x 10 ⁷	0	0
MFS2	1 x 10 ⁸	1 x 10 ⁷	1 x 10 ⁸	1 x 10 ⁸

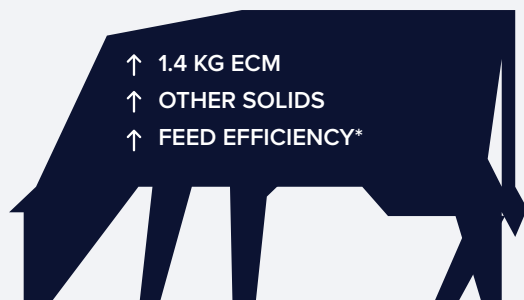
DISCUSSION

Animals fed Galaxis® 1.0 (MFS1) and Galaxis® Frontier (MFS2) both produced more ECM than control animals (with significant treatment by time interactions) and showed trending improved feed efficiency. While the MFS1 group produced more ECM through week 13, the MFS2 group produced more ECM through the end of the trial. The content of other milk solids followed a similar trend. While BW was found to be affected over time due to a decrease among the MFS1 animals in week 13-17, no significant or trending significant differences were observed at any time point.

A cow's stage of lactation at the start of Galaxis® Frontier administration significantly affected ECM production, with cows starting early in lactation (43 DIM) making as much as 7 times more milk than cows started during mid-lactation (145 DIM).

SIGNIFICANT TREATMENT BY TIME AND
*TRENDING SIGNIFICANT TREATMENT EFFECTS

MFS1 (GALAXIS 1.0)



MFS2 (GALAXIS FRONTIER)



ECM gain correlated with starting DIM: Cows started on MFS2 in early lactation make more milk than those started mid-lactation

DIET & NUTRIENT COMPOSITION

Ingredients	% of DM
Corn Silage	36.40
Alfalfa Silage	21.68
Ground Corn	21.68
Canola Meal	6.71
Corn Gluten Feed	6.02
Heat-Treated Soybean Meal	2.19
Vitamin/Mineral/Suppl. Mix ¹	2.20
Nutrient Composition	
Starch	30.12
aNDFom	27.67
ADF	20.00
CP	16.91
Ether Extract	4.19
Lignin	3.78
NEL (Mcal/kg)	1.68



¹Inclusion in complete TMR: 0.91% High RUP supplement, 0.32% Urea, 1.39% Calcium carbonate, Rumen-protected Met, Rumen-protected Lys, 1.2% Sodium sesquicarbonate, Potassium chloride, Potassium carbonate, White salt, Magnesium oxide, Biofix Select Pro, Mineral oil, Complexed trace minerals, Manganese sulfate, Zinc sulfate, Vitamin E, Monensin, Selenium yeast, Biotin, Sodium selenite, Vitamin A (D3), Complexed, copper chloride, Ethylenediamine dihydroiodide

KEY EXPERIMENTAL RESULTS

	CONTROL	MFS1	MFS2	P-VALUE (CONTROL V. MFS)	TRT V. TIME
Milk yield (kg/d)	34.7	34.8	36.7	0.31	0.52
DMI (kg/d)	24.0	23.8	21.7	0.14	0.69
ECM (kg/d)	35.8	37.2	37.5	0.16	0.007
Fat (%)	3.67	3.79	3.77	0.48	0.79
Fat (kg/d)	1.27	1.35	1.31	0.21	0.47
Protein (%)	3.30	3.35	3.32	0.29	0.33
Protein (kg/d)	1.16	1.17	1.21	0.31	0.71
Lactose (%)	4.69	4.69	4.69	0.98	0.39
Lactose (kg/d)	1.66	1.66	1.74	0.49	0.59
Other solids (%)	5.76	5.79	5.81	0.10	0.046
Total Solids (%)	12.7	12.9	12.8	0.42	0.96
Log ₁₀ (SCC)	4.71	4.80	4.72	0.59	0.15
MUN (mg/dL)	11.2	11.4	11.3	0.42	0.46
Feed efficiency (ECM/DMI)	1.49	1.53	1.70	0.08	0.41
BW (kg) [^]	685	682	677	0.48	0.049[^]
BCS	2.8	2.9	2.7	0.92	0.48

[^] Post-hoc analysis shows no significant or trending significant differences at any time point for BW