FEED CELMANAX TO REDUCE STRESS AND BUILD RESILIENCE

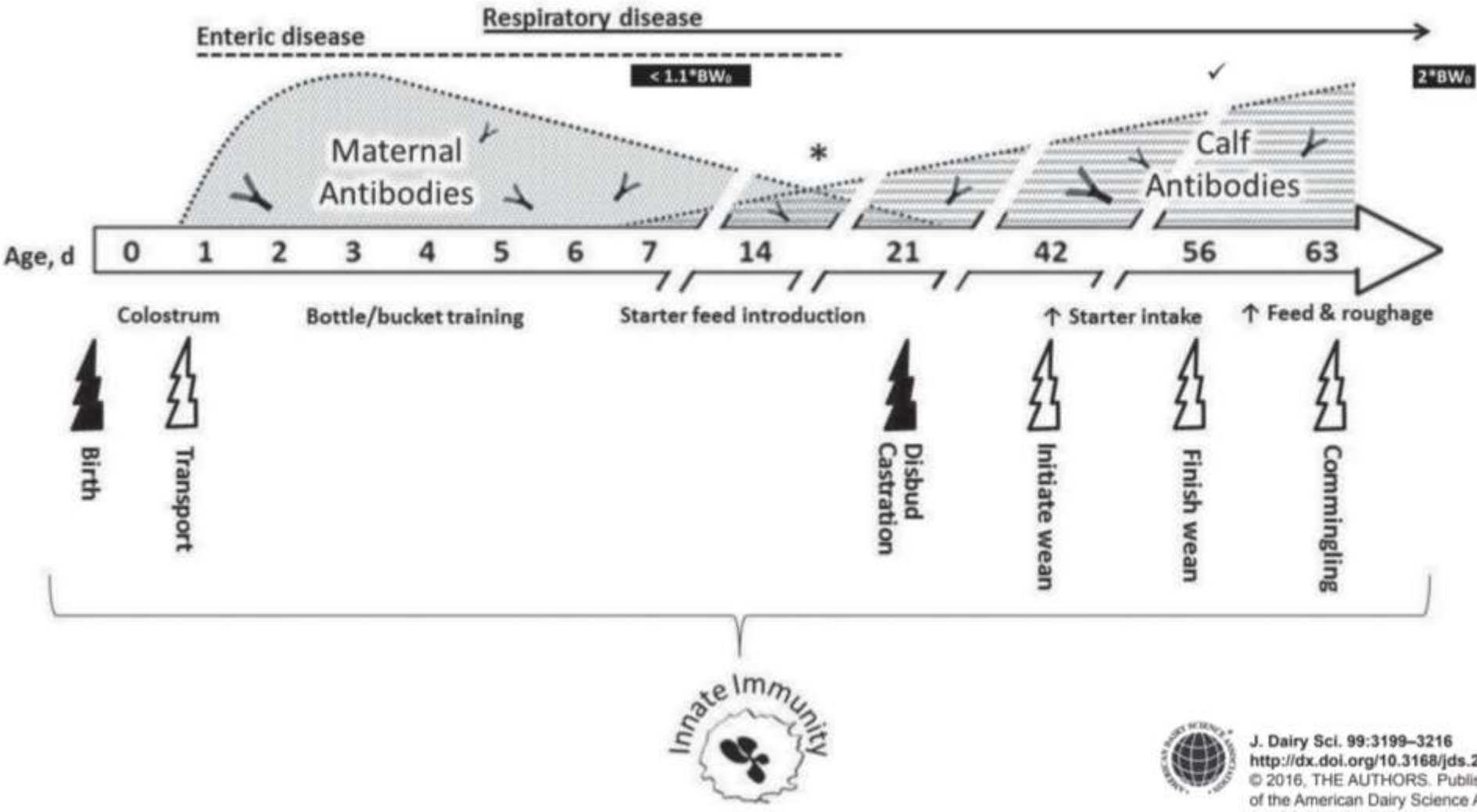
Vicky Ham

Ruminant Technical Service Manager - Europe

ARE CALVES BORN WITH IMMUNITY?

CALVES ARE IMMUNOCOMPROMISED.

"Ability to defend oneself against potentially damaging microbes and parasites"



J. Dairy Sci. 99:3199–3216
http://dx.doi.org/10.3168/jds.2015-10198

Stress, immunity, and the management of calves[1]

Lindsey E. Hulbert[2] and Sonia J. Moisá
Department of Animal Sciences and Industry, Kansas State University, Manhattan 66506

WHAT'S CAUSING SCOUR IN CALVES?

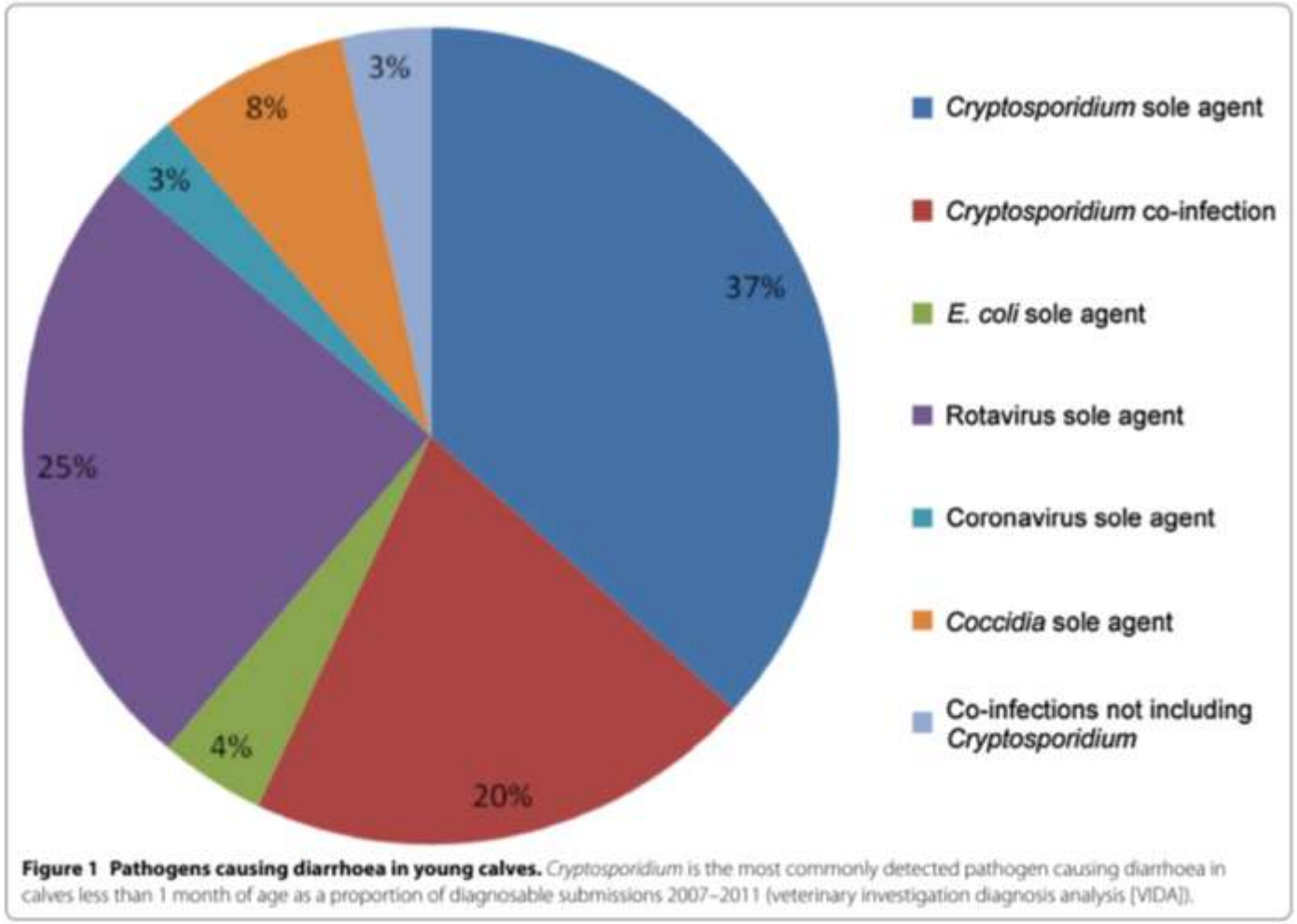


Figure 1 Pathogens causing diarrhoea in young calves. *Cryptosporidium* is the most commonly detected pathogen causing diarrhoea in calves less than 1 month of age as a proportion of diagnosable submissions 2007–2011 (veterinary investigation diagnosis analysis [VIDA]).

Thomson et al. Vet Res (2017) 48:42 DOI 10.1186/s13567-017-0447-0

ECONOMIC IMPACT OF DAIRY CALF DIARRHEA IN EUROPE

	Belgium, n=11	France, n=10	Netherlands, n=7
Cows/farm, mean	118	106	212
Calves born/farm, mean	104	105	200
Diarrhoeic/Born calves (%)	25	21	19.7
Dead/Diarrhoeic calves (%)	20.4	27.3	23.3
Dead/Born calves (%)	5.1	5.7	4.6
Total economic impact* (€)	3141.22	2129.43	2833.60
Total economic impact per diarrhoeic calf (€)	148.07	113.63	156.81
Total economic impact per calf born (€)	**906 Kč**	**/ 643 Kč**	**/ 485 Kč**

n= number of farms included in the study
*Mortality + Treatment + Labor

Roblin et. al. Current Research in Parasitology & Vector-Borne Diseases, Volume 4, 2023

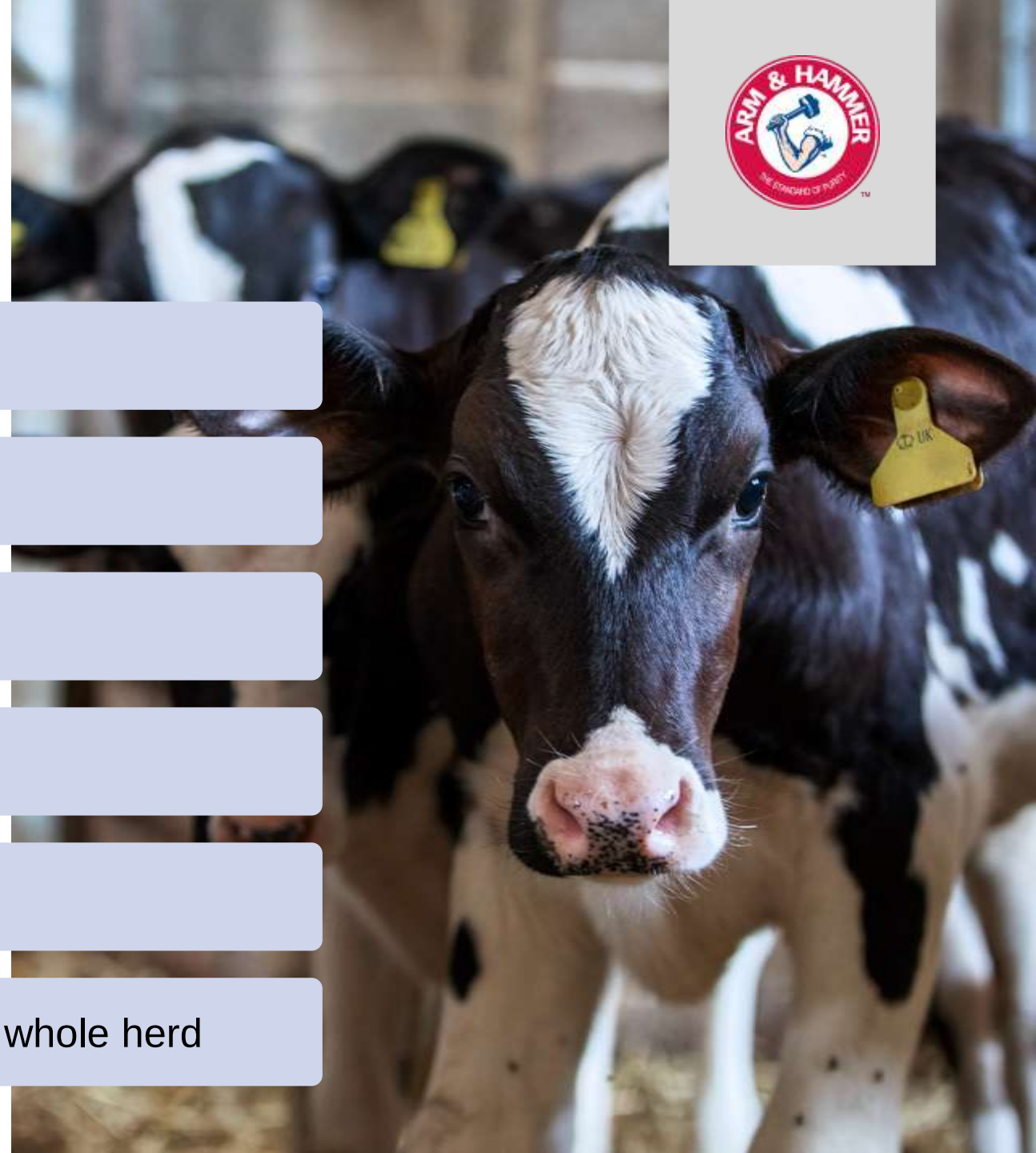
KNOCK ON IMPACTS

The difference between bad and good heifer rearing is choice: more heifers means more choice on which heifers enter the herd and which cows leave the herd.

Replacement Rate Calculator	Poor calf health & fertility	High achieving herd
Herd Size	150	150
Age @ First Calving	28	24
Cull rate	30%	25%
Calving Index	410	395
% Heifers born	51%	51%
Calf Mortality	7%	3%
Failure to enter Herd	10%	2%
Heifers Required p.a.	58	38
Heifers Produced p.a.	50	54
Difference	-8	16

QUICK RECAP

- Calves are immunocompromised
- Poor nutrition, FPT and stress all contribute
- First 3 weeks = scour risk
- 3 weeks onwards = respiratory risk
- Stressors are unavoidable
- Missing calf targets has knock on impact for whole herd



REARING RESILIENCE

Prebiotic and Postbiotic Blend of Refined Functional Carbohydrates

CELMANAX™

KNOW YOUR YEASTS

Processing Intensity Increases Product Functionality

BREWERS YEAST	LIVE YEAST	YEAST CULTURE	YEAST EXTRACT AND INTRACELLULAR COMPONENTS	MECHANICALLY/ CHEMICALLY HYDROLYZED YEAST CELL WALL MOS ONLY GLUCAN ONLY	ENZYMATICALLY HYDROLYZED YEAST CELL WALL PLUS INTRACELLULAR COMPONENTS
					

WHAT ARE RFCS AND WHAT DO THEY DO?

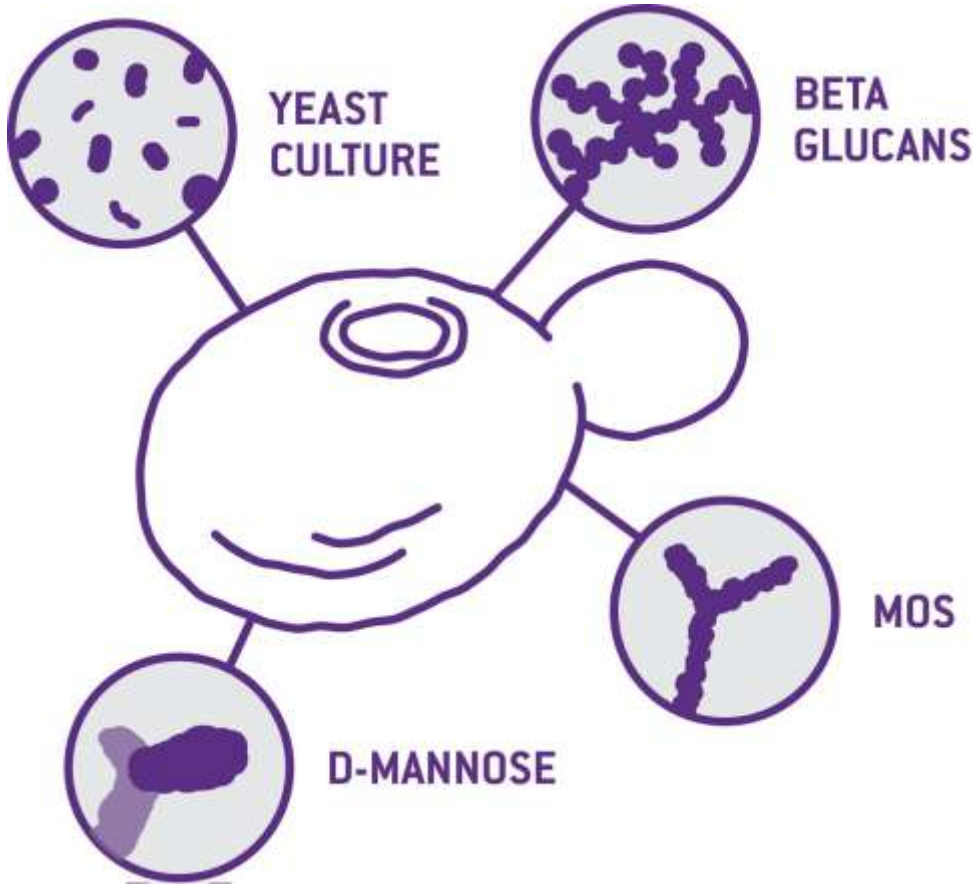
- Refined Functional Carbohydrates (RFCs) are derived by **unique enzymatic hydrolysis** of yeast and offer prebiotic and postbiotic benefit.

- Help **improve gut health**, **reduce colonization** by certain pathogens and **improve immunity** for a healthier, more productive animal.

- **Supported by** 19 scientific publications in dairy, 9 in beef and 2 in sheep.

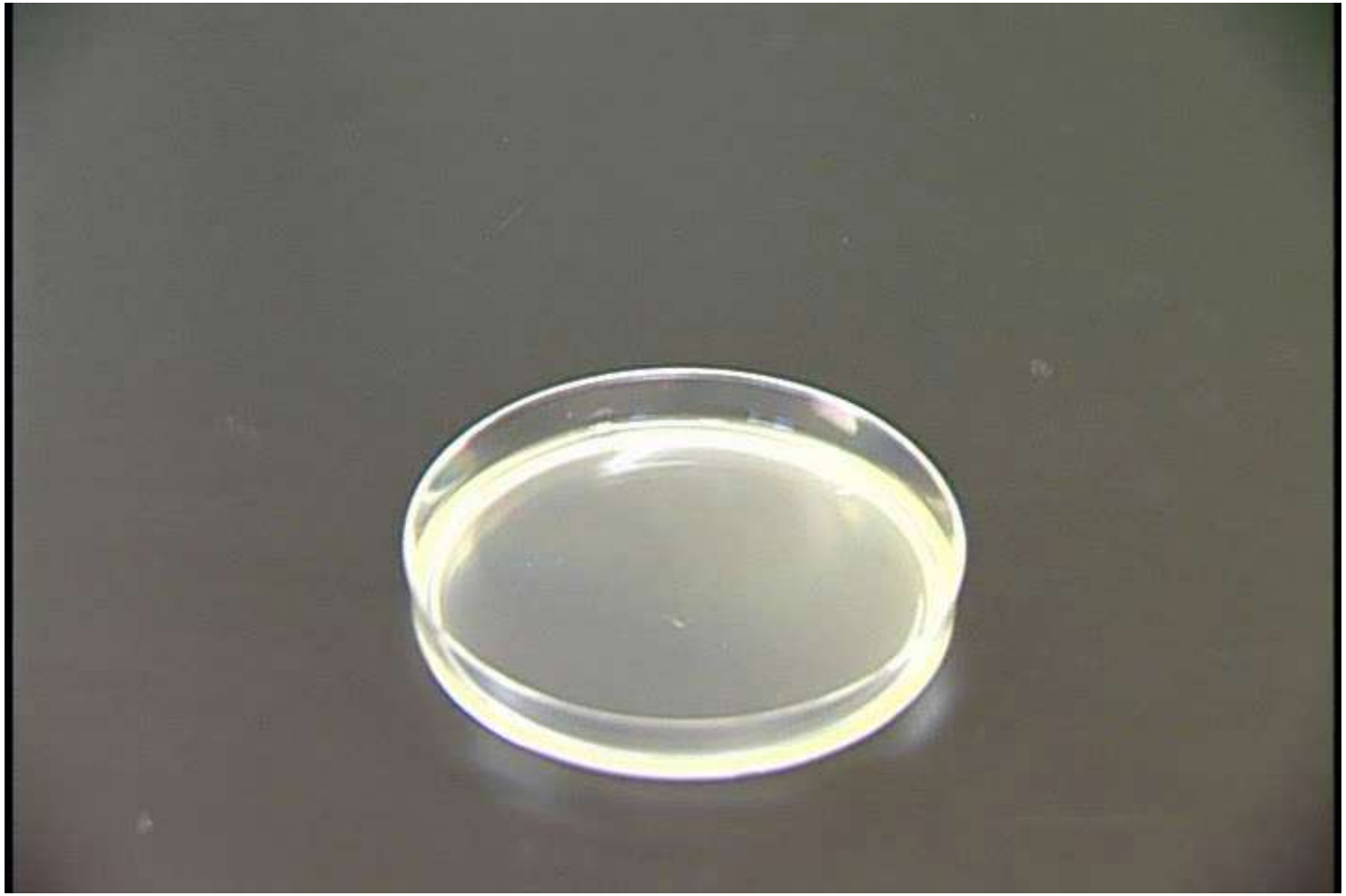
REFINED FUNCTIONAL CARBOHYDRATES (RFCS)

- **MOS** supports growth of beneficial bacteria like *Lactobacillus* and *Bifidobacterium*
- **MOS and Mannose** binds pathogenic bacteria like *E. coli* and *Salmonella* and reduces pathogen burden
- **Beta glucans** support the immune system
- **Other RFCs** prevent certain protozoa like *Eimeria* and *Cryptosporidium* from attaching to the intestinal wall and causing disease



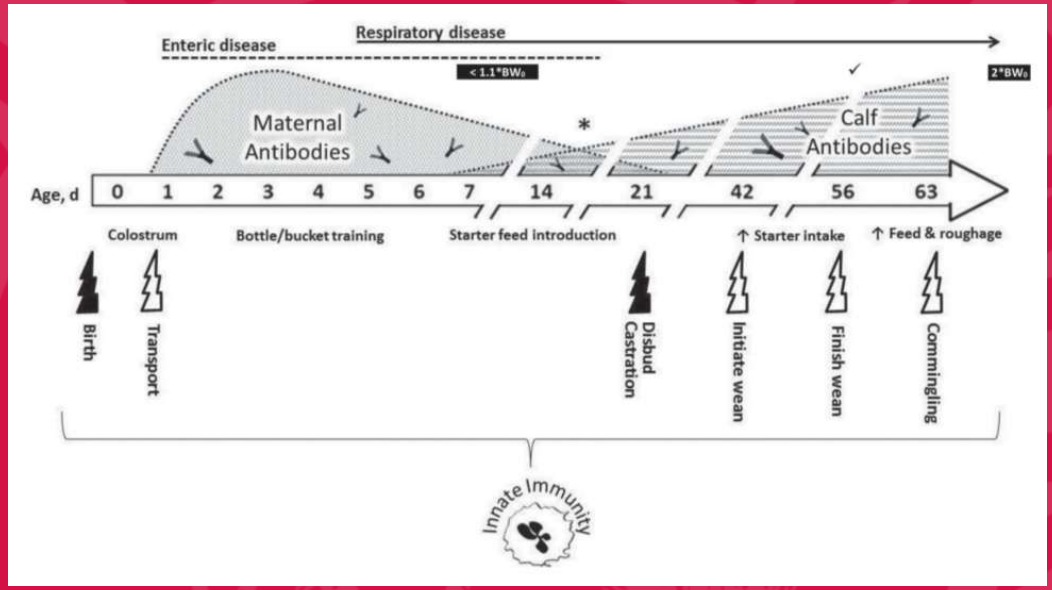
MODE OF ACTION: AGGLUTINATION

This video demonstrates how *E. coli* is agglutinated to the MOS component of CELMANAX. Total agglutination time 00:40 seconds.



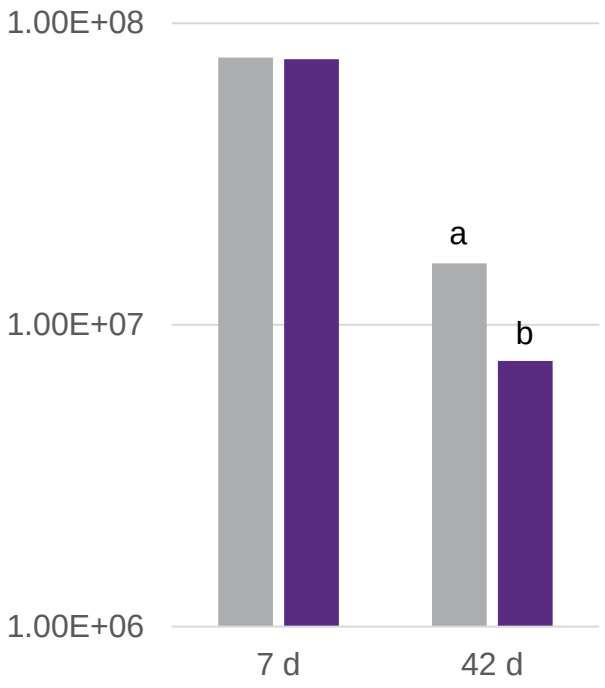
RESEARCH STUDIES

- SCOUR PATHOGENS
- RESPIRATORY HEALTH
- STRESS RESPONSE

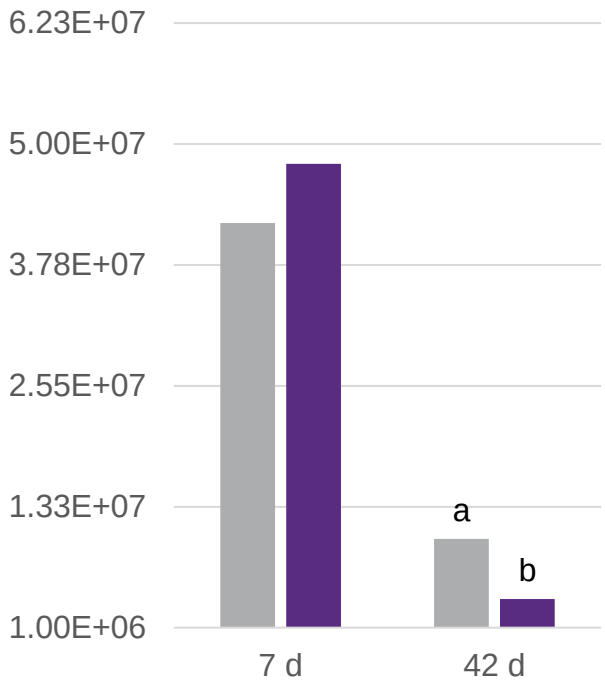


FECAL PATHOGEN LOAD

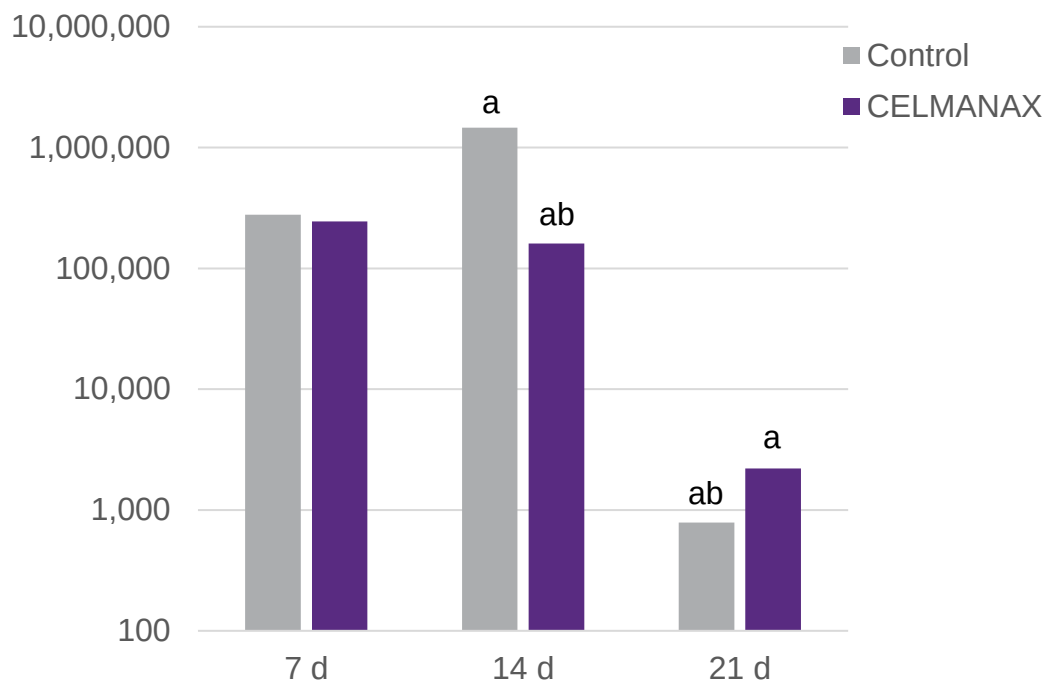
E. Coli cfu/g



Pathogenic E. coli cfu/g



Cryptosporidium shedding oocyst/g

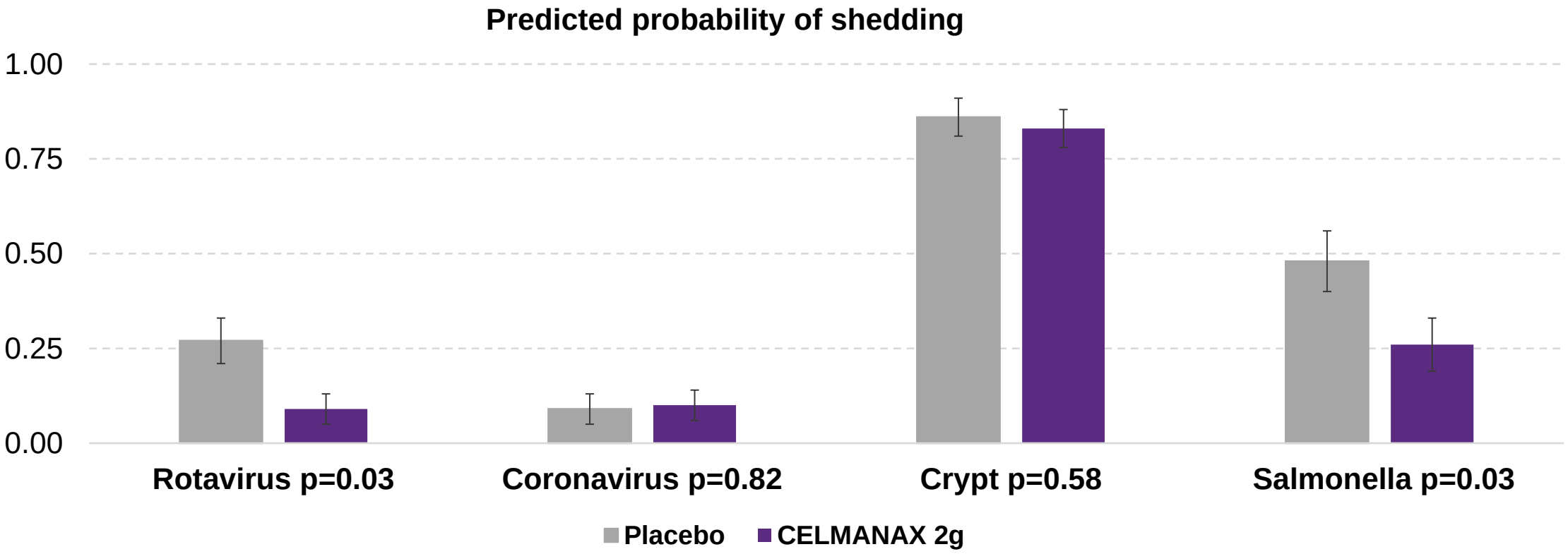


[a,b] $P < 0.05$

Lucey et. al. JDS Vol. 104 No. 4, 2021

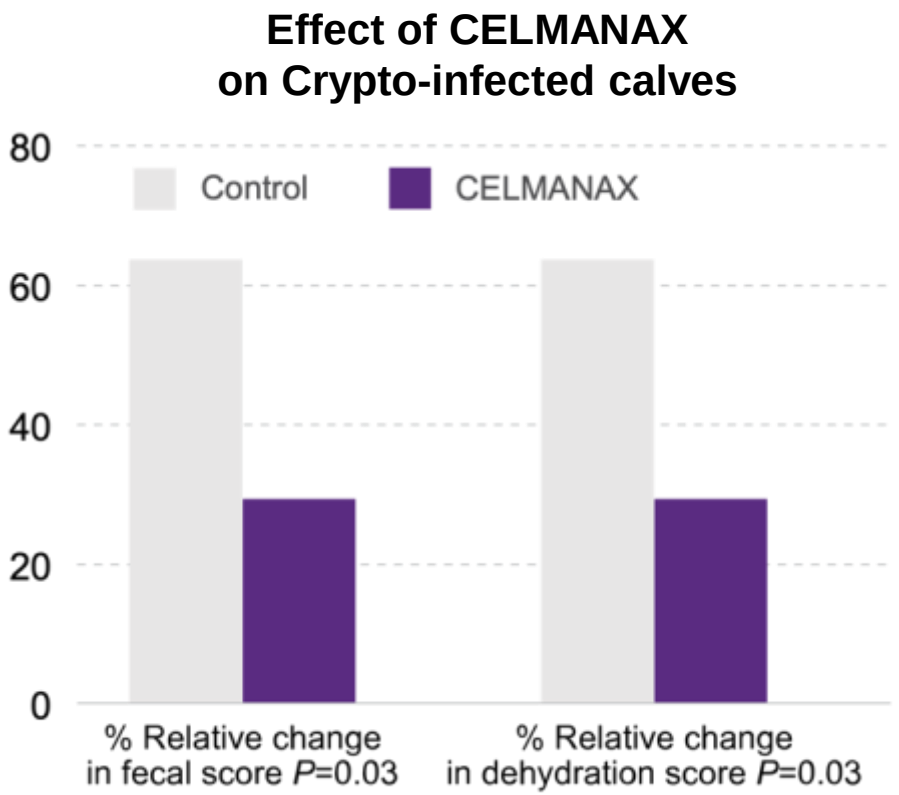
REDUCED INCIDENCE OF DISEASE IN CALVES

On a commercial farm, 80 calves/treatment were fed control or CELMANAX from day 1-56 days. CELMANAX reduced prevalence of *Salmonella* and Rotavirus.



Abstract presented at AABP, 2017

CRYPTOSPORIDIOSIS



Trial 1. Crypto infected calves were fed control or CELMANAX containing milk replacer for 5 days

	Control	CELMANAX	P value
% of calves Crypto positive before challenge	50	22.7	0.06
Duration of Crypto shedding post challenge, days	19.05	15.32	0.02

Trial 2. Calves were fed control or CELMANAX containing milk replacer from day 1-56. On day 6, all calves were challenge with *C. parvum*.

COMMERCIAL STUDY IN RECEIVING PERIOD

- ~3,000 head of receiver cattle assigned to 20 pens with 10 pens Control and 10 pens treated (CELMANAX @ 2g/head/day)
  - About 150 cattle/pen and 1,500 head per treatment group
- Cattle are sourced as weaned calves from multiple sources (auction)
- Usual BRD incidence at this facility is 25 to 30%
- Control group was compared to Celmanax group for morbidity and mortality as well as growth performance efficiency.

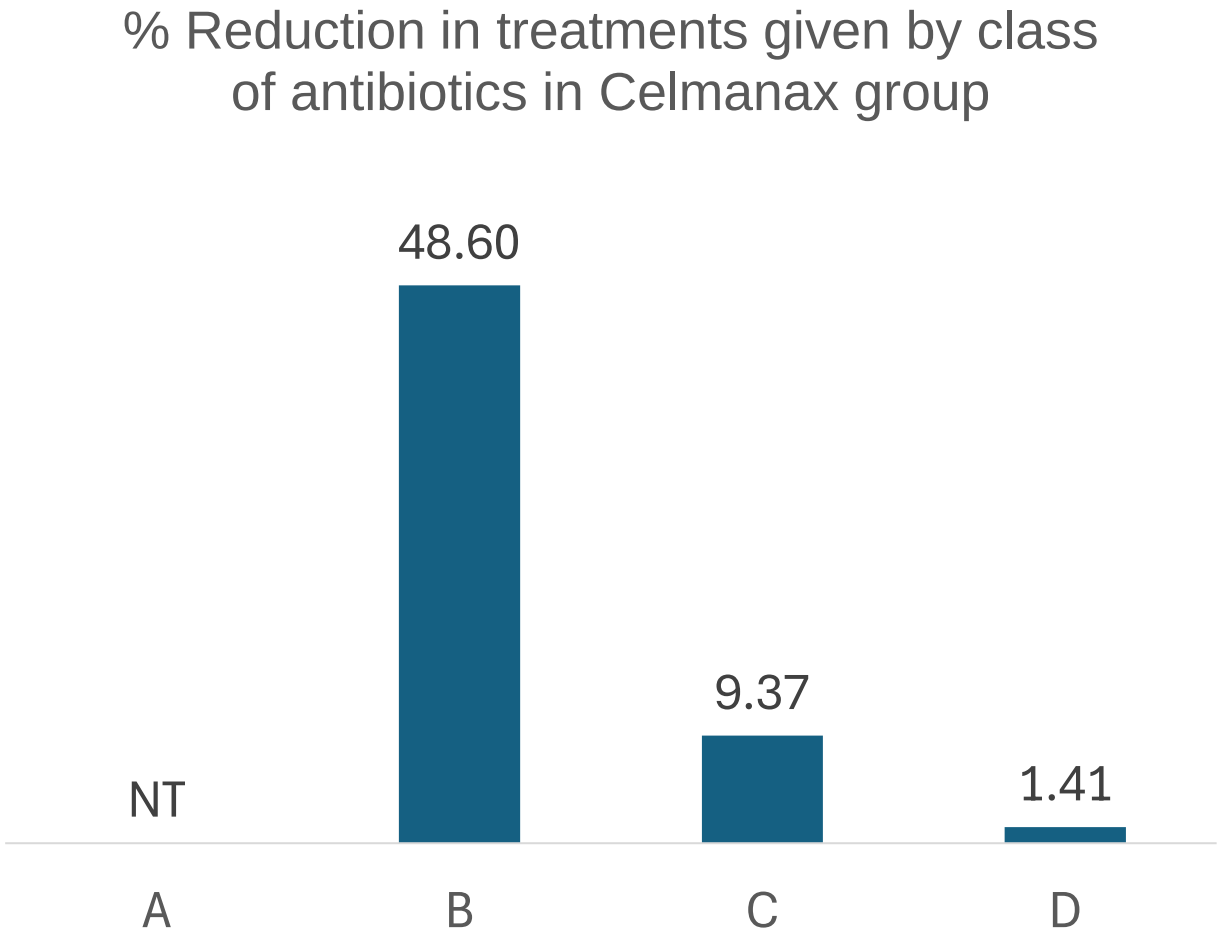
COMMERCIAL STUDY IN RECEIVING PERIOD

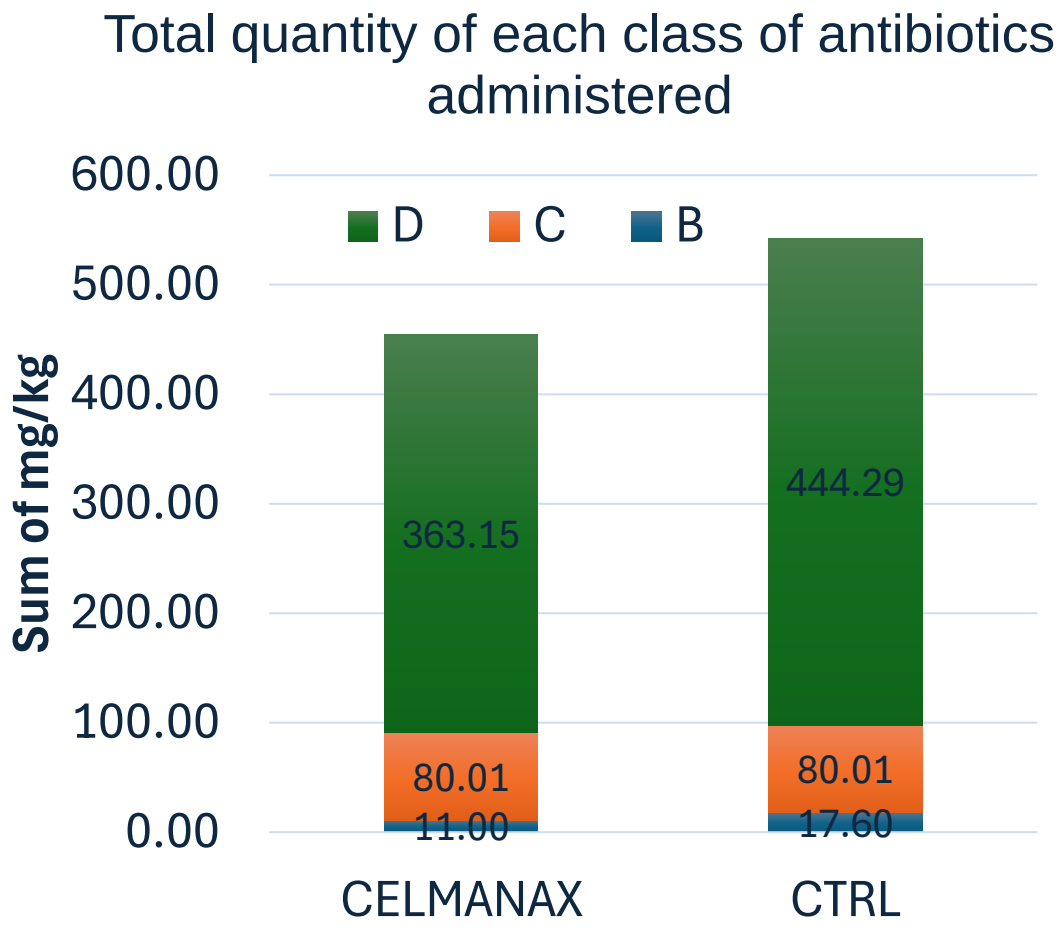
ANIMAL HEALTH SUMMARY

Animal Health Variable	CELMANAX	CONTROL	P – value
Total cattle in 10 pens per group	1534	1535	
Initial UF treatment	**28.79**	**41.97**	**0.002**
First UF relapse	**21.66**	**28.25**	**0.089**
Second UF relapse	46.16	31.27	0.25
BRD Mortality	0.92	0.68	0.447
Head treated	**32.28**	**42.43**	**0.002**
All treatments	**48.34**	**69.22**	**0.005**

UF = Undifferentiated fever treatment

% REDUCTION IN ANTIBIOTIC TREATMENTS
(AS PER ANTIBIOTIC CLASSIFICATION BY EMA EUROPA)

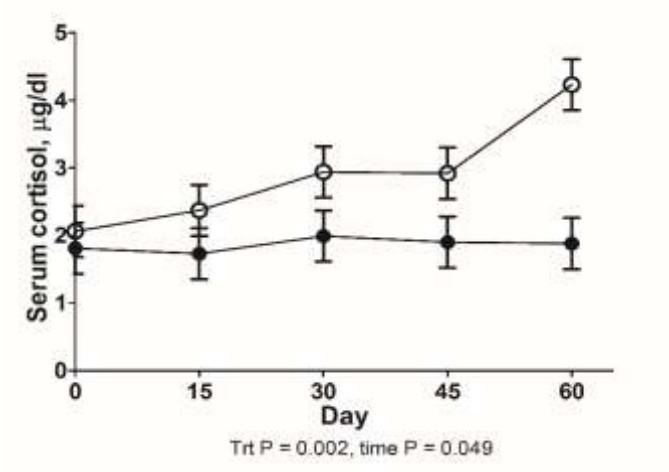




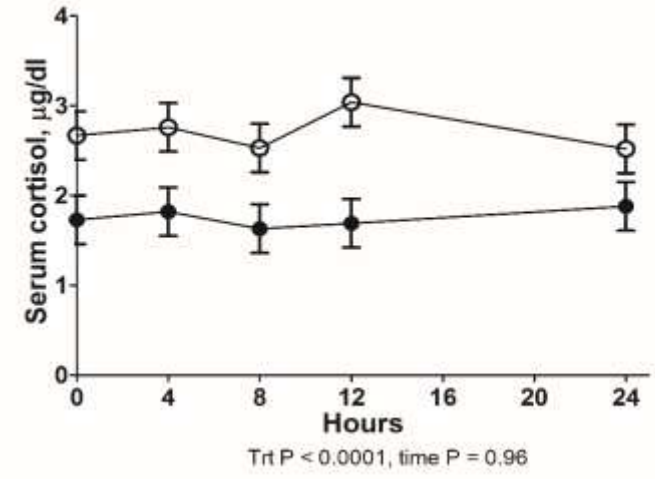
CELMANAX RECEIVING TRIAL

- 3.0 kg higher BW gain and significant improvement in feed conversion rate (p=0.04) during trial
- Total clostridia, *C. perfringens*, total *E. coli,* and *Salmonella* levels increase with a transport challenge in beef heifers
- CELAMANAX reduced *C. perfringens*, *Salmonella*, and total *E. coli* one day following the transport challenge compared to the controls
- **CONCLUSION:** CELMANAX supplementation to receiving heifers may lead to animals which are heavier and shedding fewer pathogens upon arriving at feedlot

Serum cortisol during feeding period

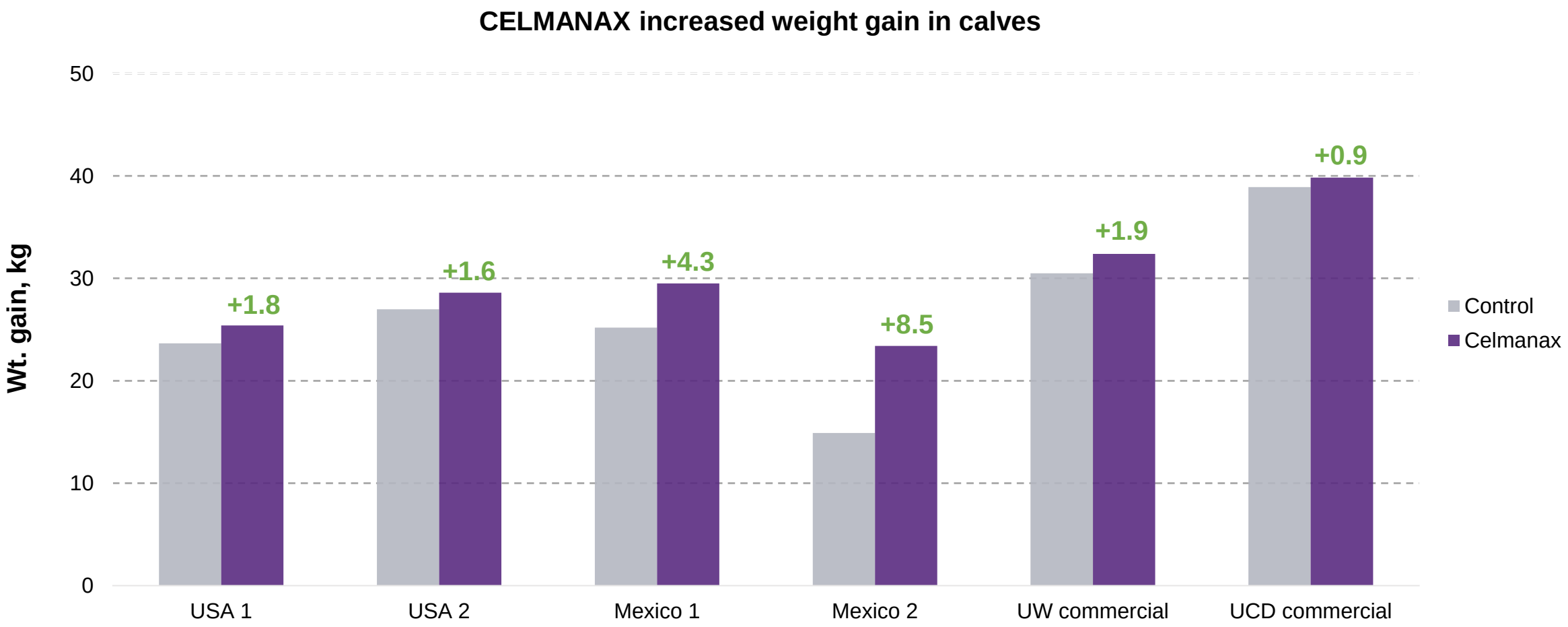


Serum cortisol during transport stress

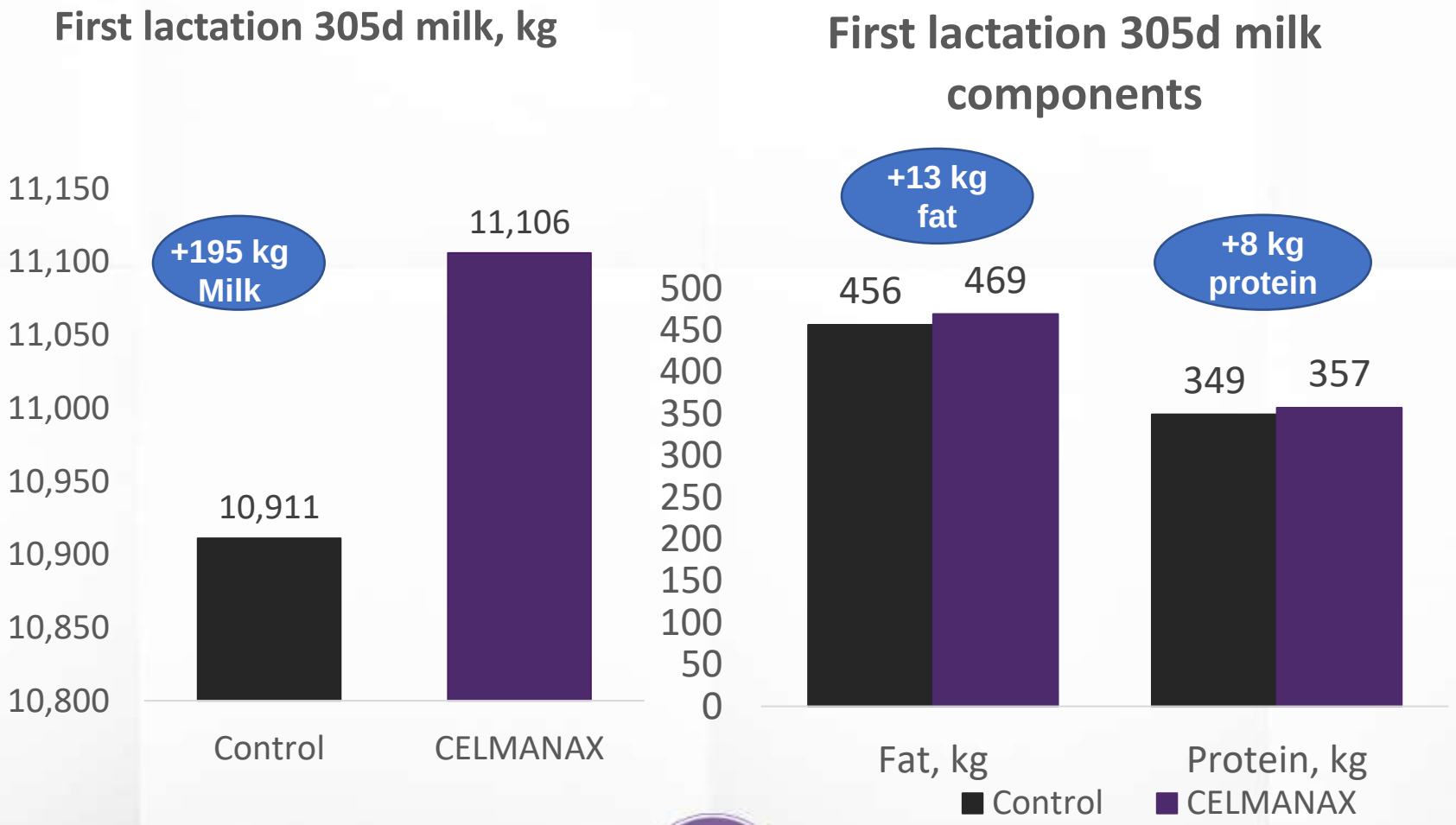


J. Danielo et al. / Domestic Animal Endocrinology 72 (2020) 106427

CONSISTENCY IN BW GAIN IN CALVES ON CELMANAX



Pre-wean CELMANAX supplementation benefit on first lactation performance



Lucey et. al. Abstract presented at ADSA 2021

CELMANAX™

SUMMARY FOR DAIRY CALVES

Benefits to calves

- When supplemented in milk feeding phase and calf starter, it can make calves resilient to pathogenic challenges
- Helps improve feed intake
- Improves body weight gain

What it means to the customer

- Profitability due to reduction in treatments and dead calves
- Better transition post-weaning
- Lasting performance benefit in mature animals

ON FARM IMPLEMENTATION - CALVES

- Milk feeding
  - Use of Celmanax Liquid into milk powder or whole milk
    - Farms can get started quickly
    - No need to change milk powder or current feeding regime
    - Have the option to use as a ‘drench’ for treatment and recovery of scours
    - Most automatic calf feeders have the ability to feed liquid and/or powder feeds in addition to milk replacer
  - Feed milk replacer containing Celmanax such as Immunogard
    - No additional work to measure out & mix
- Dry feed
  - Can be pelletised or top-dressed in starter and grower feeds

ARM & HAMMER
ANIMAL NUTRITION

Questions?

Thank you for listening!