How Quickly Does Milk Fat Change After Abruptly Feeding Potassium Carbonate Sesquihydrate

Dr. Joseph Harrison
Professor
Department of Animal Sciences
Washington State University

The Fatty Acid Forum sponsored by VIRTUS NUTRITION™
SMART SOLUTIONS FOR INNOVATIVE DAIRIES

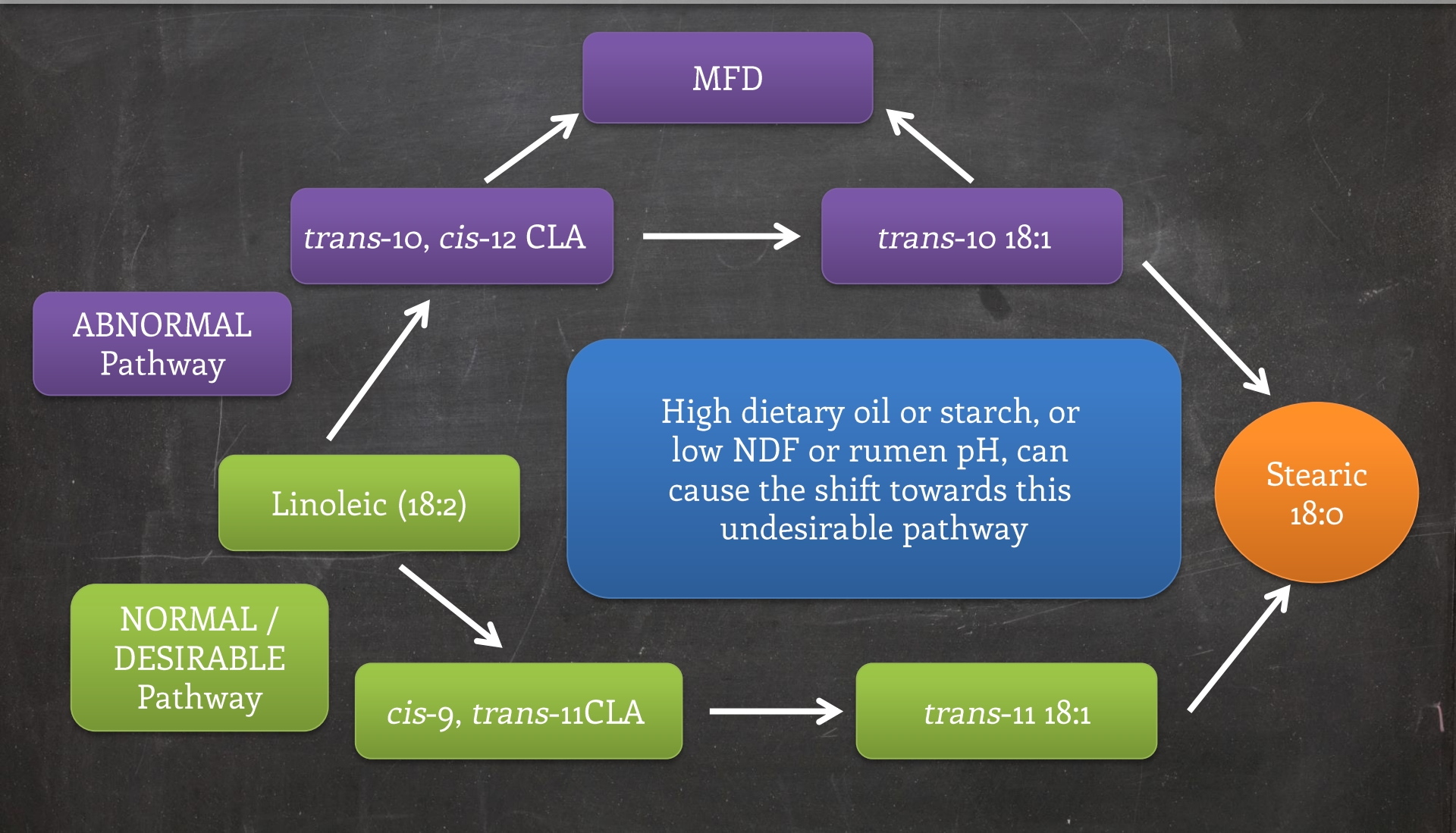
How Quickly Does Milk Fat Change After Abruptly Feeding Potassium Carbonate Sesquihydrate

Outline

- Quick Review of effect of potassium carbonate sesquihydrate on milk fat and milk fatty acids
- Temporal response in milk fat after abruptly feeding potassium carbonate sesquihydrate
- Temporal response in milk fatty acids after abruptly feeding potassium carbonate sesquihydrate

How Quickly Does Milk Fat Change After Abruptly Feeding Potassium Carbonate Sesquihydrate

Biohydrogenation Pathways in the Rumen related to Milk Fat Depression (MFD)



How Quickly Does Milk Fat Change After Abruptly Feeding Potassium Carbonate Sesquihydrate

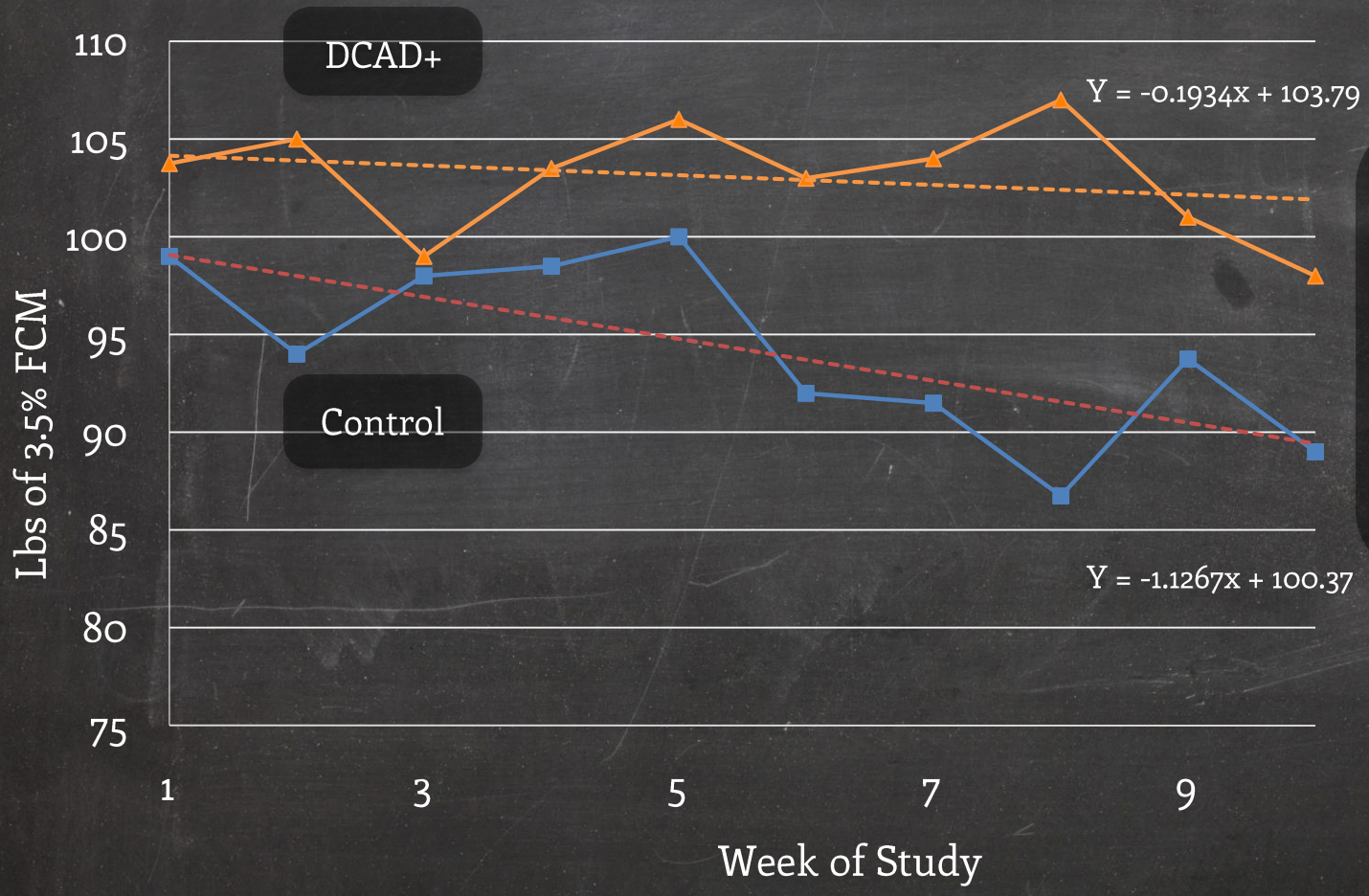
Results: Milk Composition

	Control		DCAD+		P<F	
Item	%	lb/d	%	lb/d	%	lb/d
Fat	4.01	3.48	4.38	3.89	<0.01	<.07*

*Effect – Trt*Week-linear

How Quickly Does Milk Fat Change After Abruptly Feeding Potassium Carbonate Sesquihydrate

Milk Yield



Persistency

DCAD
-0.2 lb FCM/wk

Control
-1.1 lb FCM/wk

How Quickly Does Milk Fat Change After Abruptly Feeding Potassium Carbonate Sesquihydrate

Objectives

- How quickly the addition of dietary K will affect milk fat concentration
- Demonstrate differences in concentration of milk fatty acid trans - 11 C18:1 in relation to addition of K carbonate sesquicarbonate.

How Quickly Does Milk Fat Change After Abruptly Feeding Potassium Carbonate Sesquihydrate

Journal of Dairy Science

SHORT COMMUNICATION: POTASSIUM AFFECTS MILK FAT

***Short communication*: Temporal effect of feeding potassium carbonate sesquihydrate on milk fat in lactating dairy cows fed a fat-depressing diet**

Guiling Ma, * J H Harrison, † [1] E Block, ‡ T C Jenkins, § Lynn VanWieringen †

* Washington State University, Pullman, WA, 99164;

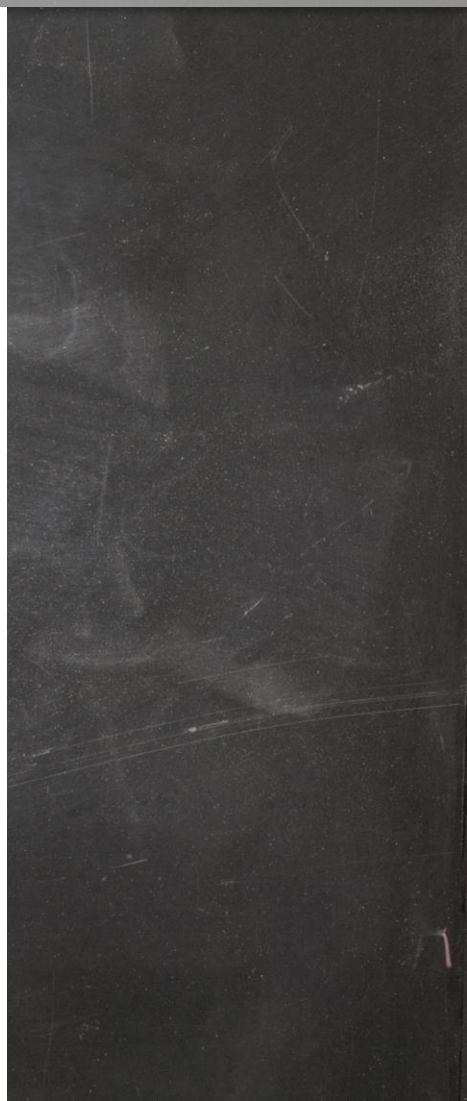
†Washington State University, Puyallup, WA, 98731;

‡ Church and Dwight Animal Nutrition, Princeton, NJ, 08543;

§ Clemson University, Clemson, SC, 29634

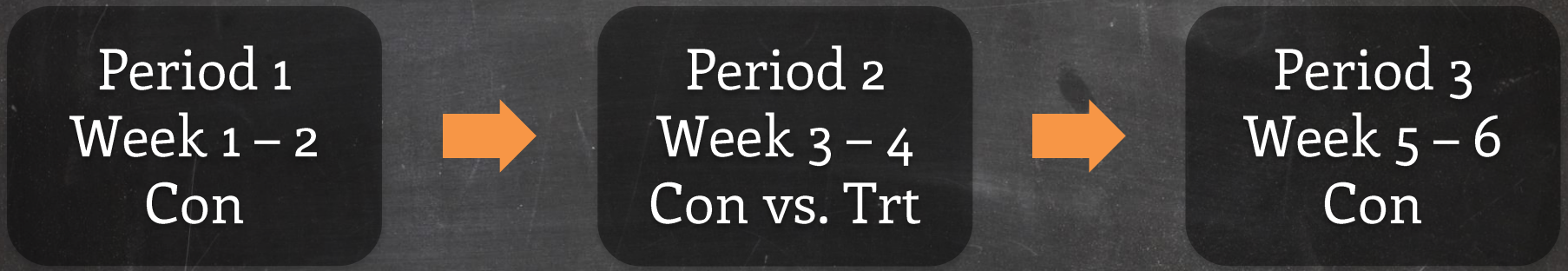
[1]Corresponding author: jhharrison@wsu.edu

Interpretive Summary



How Quickly Does Milk Fat Change After Abruptly Feeding Potassium Carbonate Sesquihydrate

Duration of the Trial



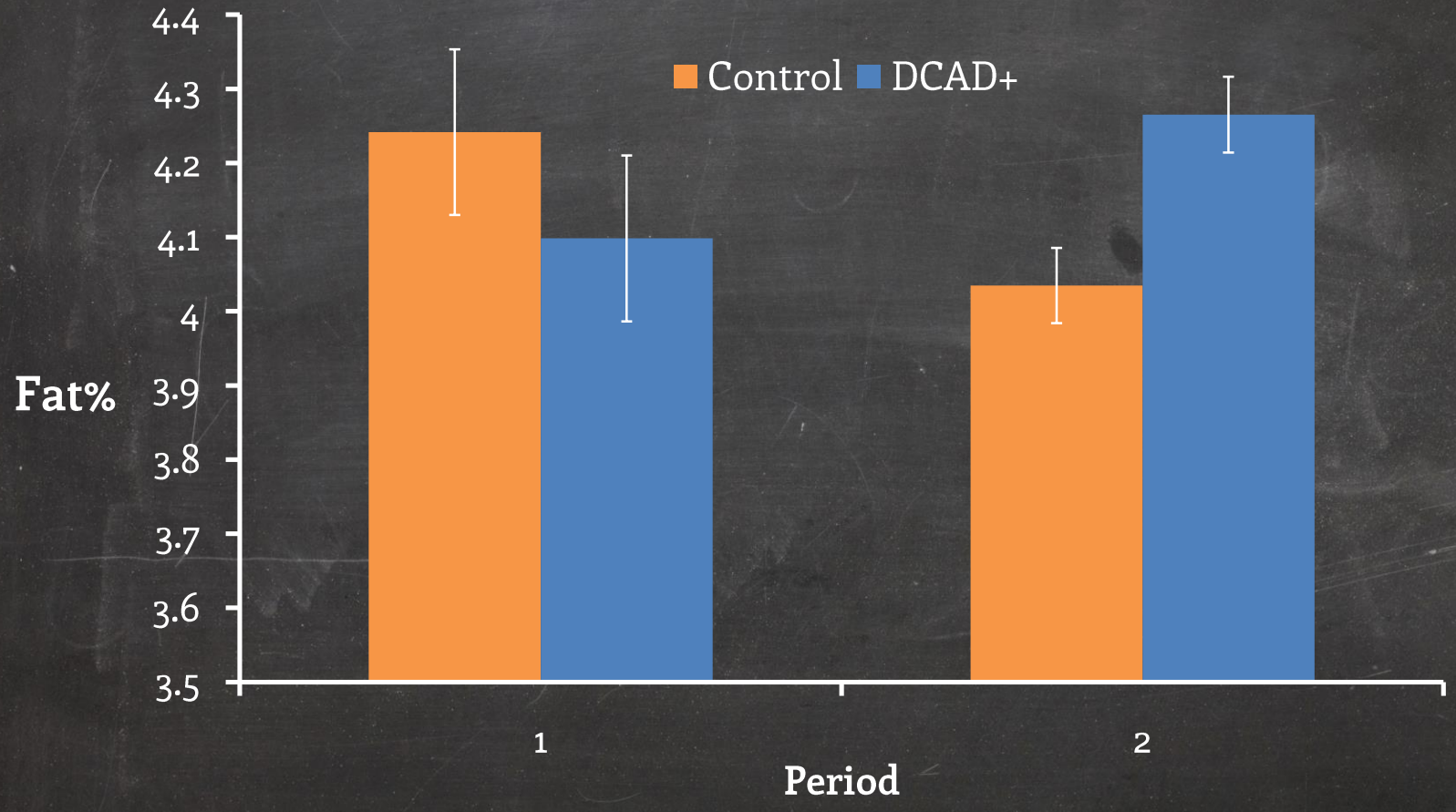
How Quickly Does Milk Fat Change After Abruptly Feeding Potassium Carbonate Sesquihydrate

Diet Composition

Item, % of DM	Control	DCAD+
DM	54.4	55.1
CP	16.8	16.6
NDF	32.0	31.0
ADF	22.2	21.4
K	1.74	2.33
Na	0.48	0.50
Cl	0.41	0.41
S	0.26	0.25
Fatty acid	5.7	5.1
DCAD, mEq/100g of DM	37.7	54.3

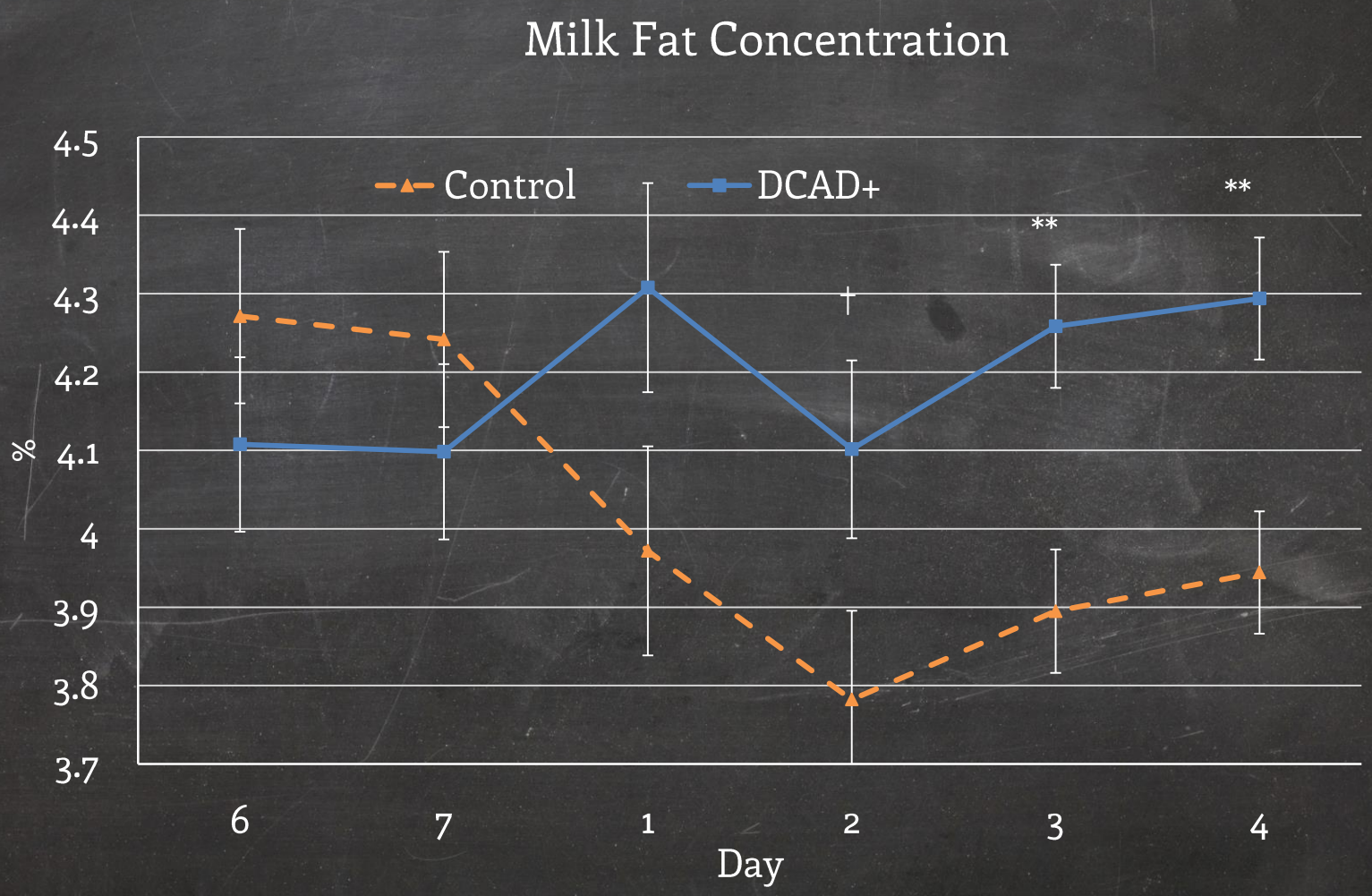
How Quickly Does Milk Fat Change After Abruptly Feeding Potassium Carbonate Sesquihydrate

Milk Fat%



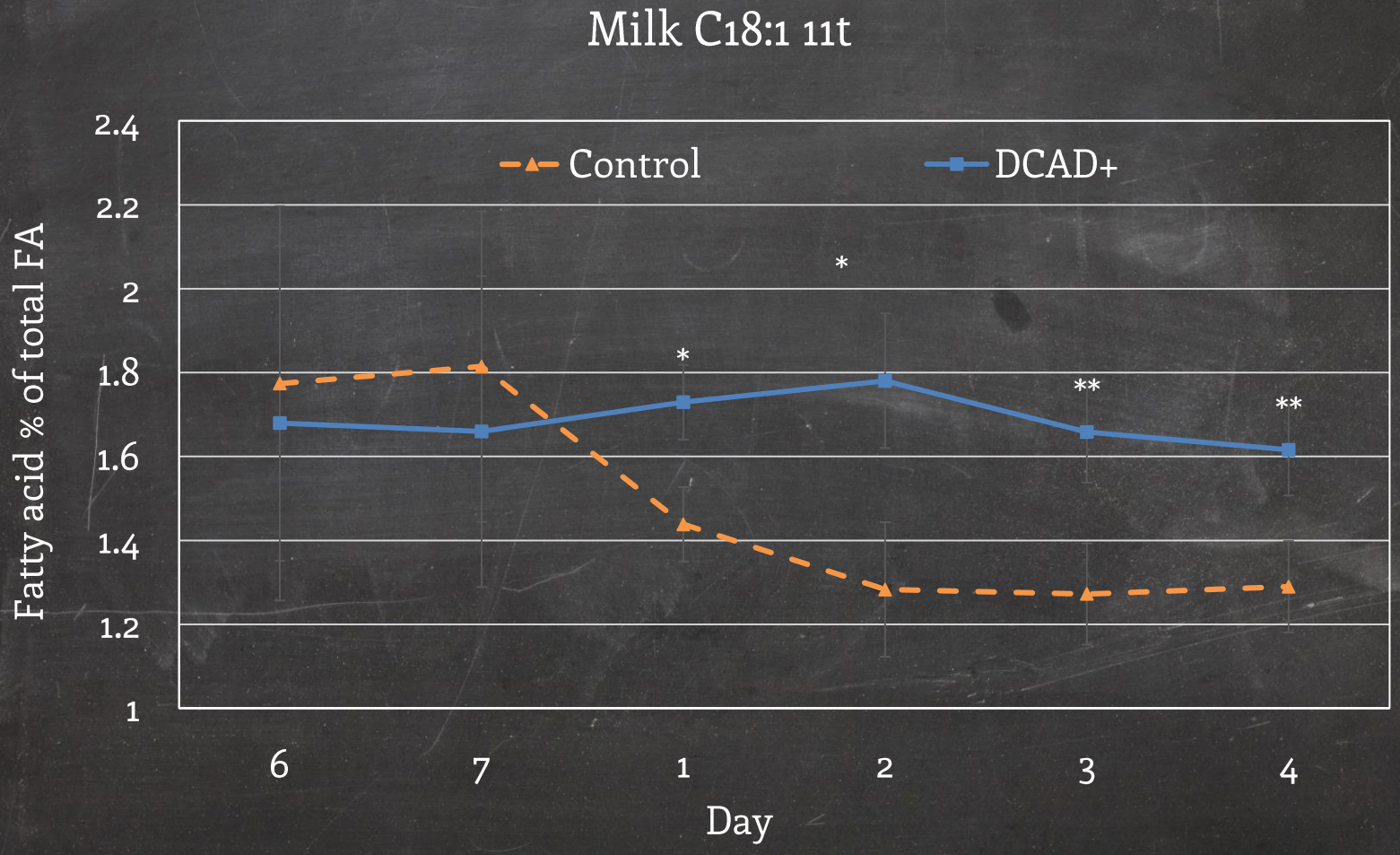
How Quickly Does Milk Fat Change After Abruptly Feeding Potassium Carbonate Sesquihydrate

Results



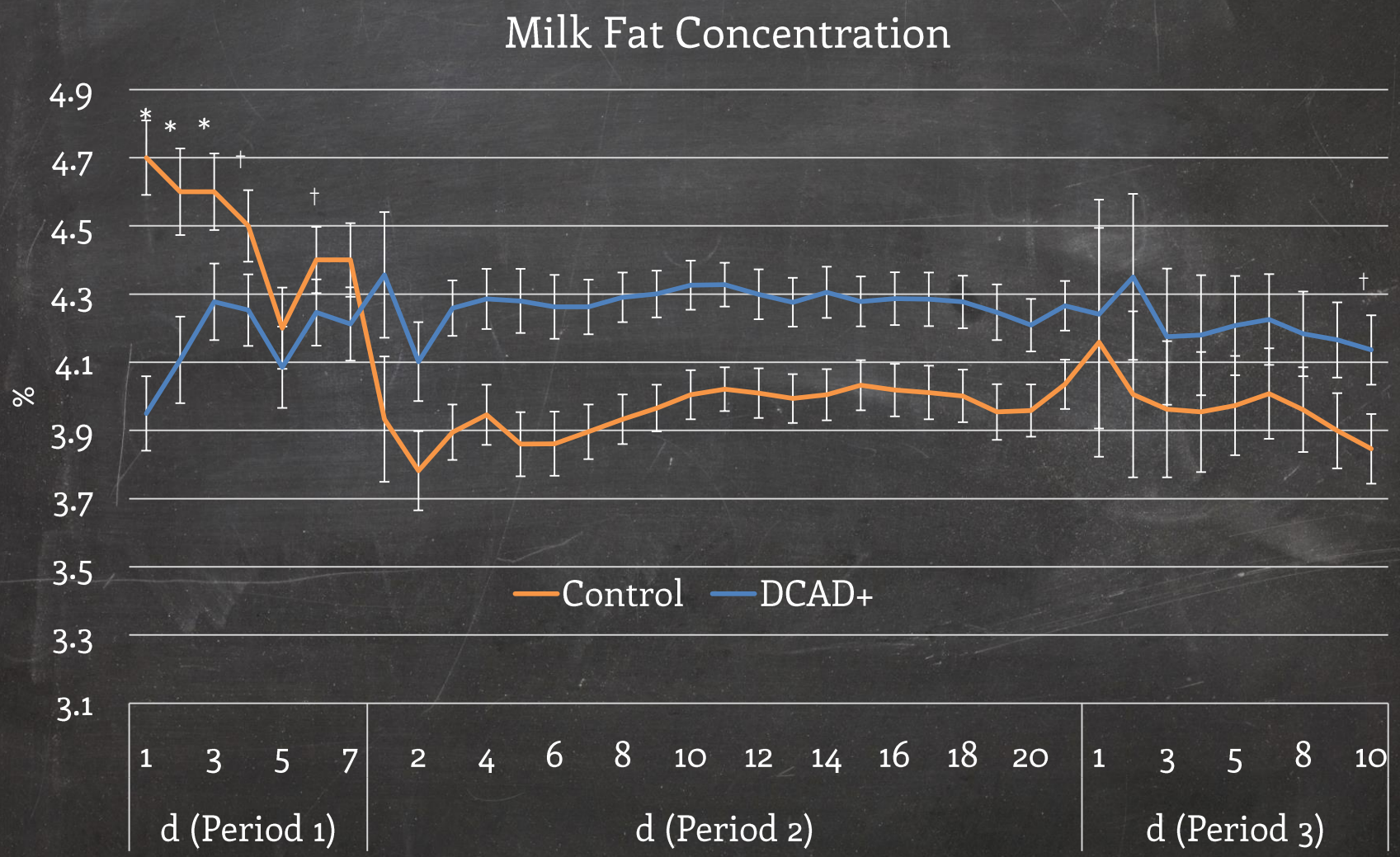
How Quickly Does Milk Fat Change After Abruptly Feeding Potassium Carbonate Sesquihydrate

Results



How Quickly Does Milk Fat Change After Abruptly Feeding Potassium Carbonate Sesquihydrate

Results



Feeding Potassium Carbonate Sesquihydrate And Effect on Milk Fatty Acids

Conculsion

- Overall, supplementation of a diet with K carbonate sesquihydrate resulted in a greater milk fat concentration within 72 hours of supplementation
- Milk fat concentration remained greater when K carbonate sesquihydrate supplementation was ceased
- The difference in milk fat concentration was associated with a greater concentration of C18:1 trans -11 during the same time period, suggesting that the K carbonate sesquihydrate effect on milk fat concentration was mediated via a shift in biohydrogenation of C 18:2 in the rumen.

The Fatty Acid Forum sponsored by VIRTUS NUTRITION™

SMART
SOLUTIONS
FOR INNOVATIVE
DAIRIES