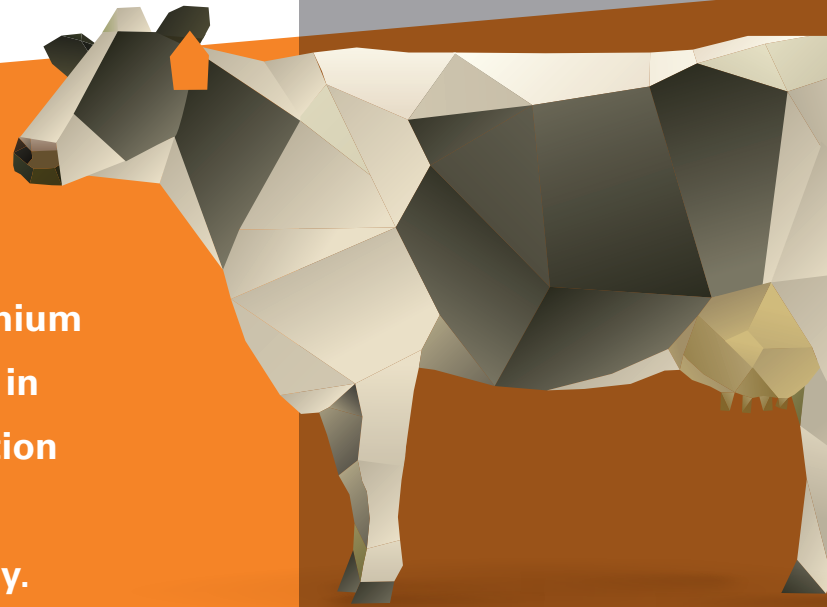




# IMMUNITY

KemTRACE®  
**CHROMIUM**  
Essential to you and your operation.



KemTRACE® Chromium is a highly bioavailable, organic source of chromium that helps stabilize insulin receptors in cattle. This improves glucose utilization for increased energy and proper cell function, resulting in better immunity.

## ANIMALS EXPERIENCING FREQUENT IMMUNE CHALLENGES MAY HAVE:

- Decreased growth
- Poor reproduction
- Inefficient feed utilization
- Increased health costs



## 4 LBS. OF SUGAR

OVER A 24-HOUR PERIOD ARE NEEDED TO TREAT AN IMMUNE CHALLENGE.<sup>1</sup>

In order to combat an immune challenge, an active immune system requires 4 lbs. of sugar over a 24-hour period. The sugar meant for milk production will instead be used to support this immune function, reducing total milk production and profitability.

## WHAT IS 1 KG OF GLUCOSE WORTH IN TERMS OF MILK YIELD PERFORMANCE?

1,000 G Glucose	=	<b>13.9 KG</b>
72 G Glucose/KG of Milk		OF POTENTIAL MILK LOSS



## HOW OFTEN DOES AN IMMUNE CHALLENGE OCCUR?

Dairy cows are constantly at risk of being challenged by *Escherichia coli* mastitis, *Salmonella* infections, mycotoxin insults and more. The impact of even a minor immune challenge could be significant. In fact, 1/10 of the lipopolysaccharide (LPS) could result in 2.78 kg of milk loss per day.<sup>1</sup> At \$15 per hundredweight (cwt), that's 92 cents lost per cow per day.

**KEMIN®**

[Kemin.com/Chromium](http://Kemin.com/Chromium)

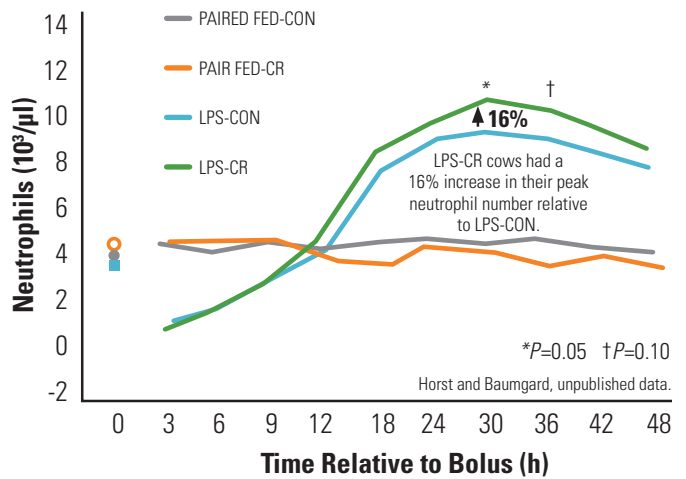
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## IMPACT OF CHROMIUM ON IMMUNITY

Research studies have reported improved immune function of activated leukocytes when animals were supplemented with chromium.<sup>2,3,4</sup>

A RECENT STUDY CONDUCTED WITH LACTATING HOLSTEIN COWS OBSERVED THE FOLLOWING:

**INCREASED CIRCULATING NEUTROPHIL COUNTS IN LIPOPOLYSACCHARIDE (LPS) - ADMINISTERED COWS SUPPLEMENTED WITH CHROMIUM (FIGURE 1).<sup>5</sup>**



**Figure 1:** Effect of chromium supplementation on circulating neutrophils following a LPS challenge or pair-feeding in lactating dairy cows.<sup>5</sup>

## FENDING OFF INFECTION

RESEARCH AT CORNELL UNIVERSITY SUGGESTS THAT:

**SUPPLEMENTAL CHROMIUM ENHANCED IMMUNE RESPONSES IN EARLY LACTATION TO BACTERIAL CHALLENGES IN THE UTERUS BY INCREASING NEUTROPHIL PROLIFERATION (Table 1).<sup>6</sup>**

Increased neutrophil proliferation more effectively cleared infections, which resulted in fewer cows with subclinical endometritis — a leading cause of reduced first service insemination conception rates. Ultimately, improving overall herd reproductive health should contribute to lower veterinary/medical costs, lower improved conception rates and more optimal milk production.

**Table 1:** Effect of chromium supplementation on endometrial cytology.<sup>6</sup>

Item	TREATMENT			
	Control	Cr-Pro	SEM	P-Value
	---- Mean ----			
<b>7 d Postpartum</b>				
<b>% of Neutrophils</b>	32.8	41.1	4.1	0.15
<b>40 to 60 d Postpartum</b>				
<b>Subclinical Endometritis<sup>1</sup> (# Head)</b>	16	8	--	0.02
<b>Head (# Head)</b>	11	20		

<sup>1</sup>Neutrophil > 10%

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