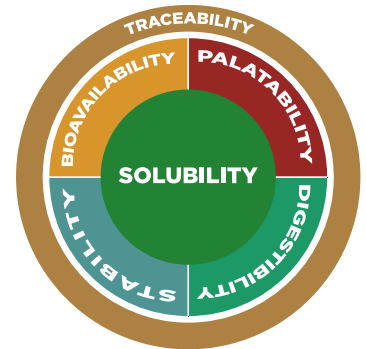


## THE ABILITIES OF INTELLIBOND TRACE MINERALS

### BIOAVAILABILITY

#### Trace Minerals and Bioavailability

- Mineral absorption is dynamic and depends on many factors – both animal related (mineral status and homeostatic control) and dietary related (source and antagonists).
- Bioavailability is a measure of how efficiently the animal utilizes dietary elements for biochemical or physiological functions. Bioavailability is not an absorption coefficient.
- IntelliBond does not necessarily increase mineral absorption – IntelliBond remains available to be absorbed if the animal needs the mineral.

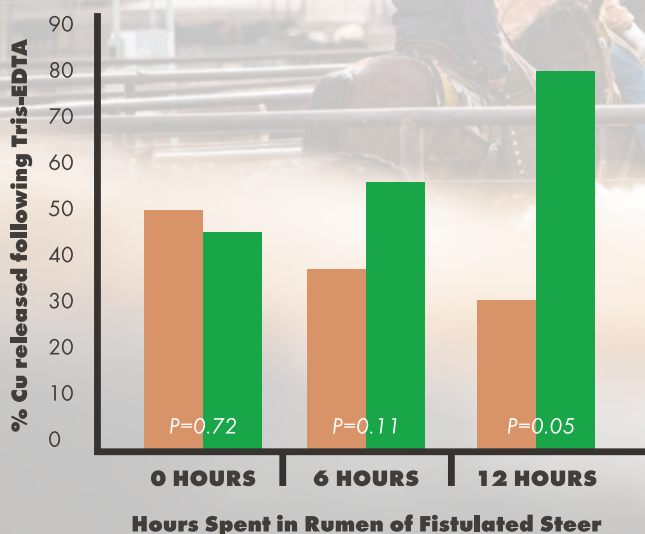


## INTELLIBOND MORE AVAILABLE THAN SULFATES

After incubating in the rumen of fistulated steers, the solid digesta was exposed to a strong chelator to mimic the absorption sites in the small intestine. IntelliBond sources of copper and zinc were more available than the sulfate sources, indicating that the copper and zinc from the sulfate sources were bound to an antagonist (Caldera et al., 2019).

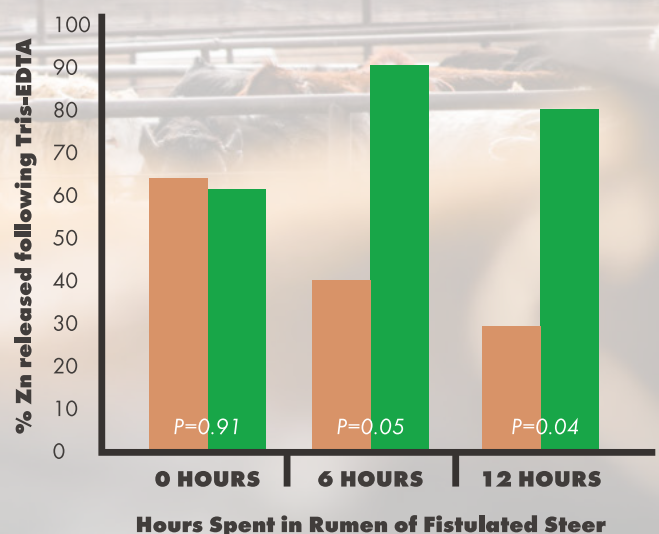
#### COPPER RELEASE

■ COPPER SULFATE ■ INTELLIBOND C



#### ZINC RELEASE

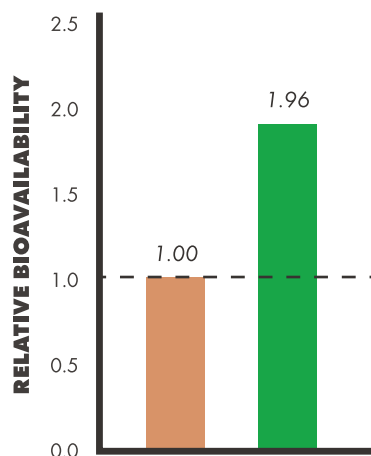
■ ZINC SULFATE ■ INTELLIBOND Z



# INTELLIBOND MORE AVAILABLE THAN SULFATES

IntelliBond C and IntelliBond Z are more predictable sources of copper and zinc than copper sulfate and zinc sulfate. Liver copper levels were higher in steers fed IntelliBond C compared to copper sulfate when fed a diet with added antagonists (Spears et al., 2004; Van Valin et al., 2019). When steers were zinc depleted, they were able to retain more zinc from IntelliBond Z than from zinc sulfate (Shaeffer et al., 2017).

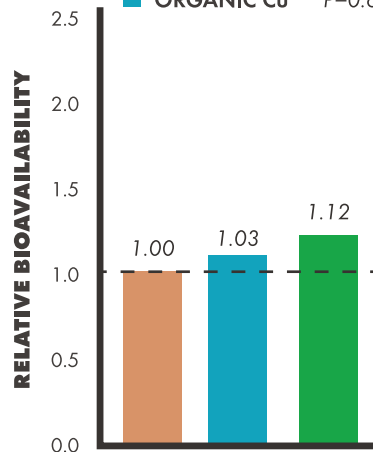
■ CuSO<sub>4</sub> ■ INTELLIBOND C P=0.03



**Spears et al., 2004**

98 day depletion period  
60 steers  
10 steers/treatment  
0, 5, & 10 ppm Cu  
5 ppm Mo & 0.15% S

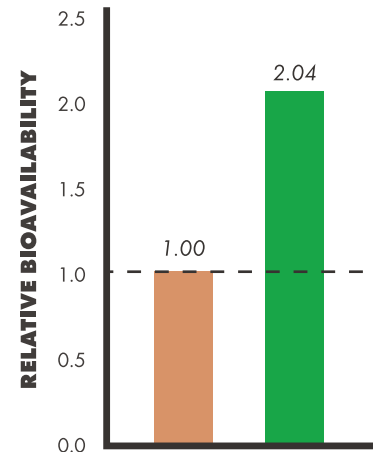
■ CuSO<sub>4</sub> ■ INTELLIBOND C P=0.07  
■ ORGANIC Cu P=0.65



**Van Valin et al., 2019**

84 steers  
12 steers/treatment  
0, 5, & 10 ppm Cu  
5 ppm Mo & 0.16% S

■ ZnSO<sub>4</sub> ■ INTELLIBOND Z P=0.01



**Shaeffer et al., 2017**

14 day depletion period  
16 Steers  
8 steers/treatment  
25 ppm Zn

## REACTIVE VS. NON-REACTIVE

### SULFATE

- Subject to antagonistic interactions in the rumen.
- High metal load in the proximal small intestine with rapid mineral release.
- Metal bound to antagonists remains bound throughout the rest of the tract.

### INTELLIBOND

- Low solubility in the rumen so rumen antagonists are avoided.
- More soluble in abomasum (low pH).
- Slow, stable release throughout the entire gastrointestinal tract.