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biologics®**
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PROLAEIS® FACTS

- Monoglycerides significantly reduce infective loads of lipid-membraned viruses.
- Reduces challenges from gram-positive pathogens like *Staph.*, *Strep.*, *Clostridium*, and *Listeria*.
- Reduces inflammation, allowing energy to be used for more productive processes.

Table 1. Pathogen Susceptibility–Bacterial

Pathogen Species	Negative Pathogen Effects	Prolaeis Efficacy
<i>Staphylococcus S. aureus</i>	Navel infections, skin infections, septicemia	Very high
<i>Streptococcus S. bovis</i> group	Colonize the oral and gastrointestinal tract to cause inflammation or septicemia	Very high
<i>Clostridium C. perfringens</i>	Enteritis, hemorrhagic diarrhea, sudden death	High
<i>Listeria L. monocytogenes</i>	Septicemia, encephalitis	High

Table 2. Pathogen Susceptibility–Viral

Lipid-Enveloped Viral Disease	Negative Viral Effects	Prolaeis Efficacy
Bovine Coronavirus (BCoV)	Diarrhea, respiratory disease	High
Bovine Respiratory Syncytial Virus (BRSV)	Viral pneumonia, respiratory distress, morbidity	High
Bovine Viral Diarrhea Virus (BVDV)	Diarrhea, respiratory disease, immuno-suppression, persistent infection	Moderate to High
Bovine Herpesvirus (BHV-1)	Infectious bovine rhinotracheitis, conjunctivitis, bacterial pneumonia predisposition, encephalitis	High

► Product Description:

Prolaeis® is a highly refined form of medium-chain monoglycerides (MCMG) that are known to be effective at disrupting the membranes of various microbial and viral pathogens. As a broad-spectrum mitigant, Prolaeis is 20X more potent than medium-chain fatty acids at reducing the load of infective pathogens. Even in a viral challenge model, the monoglycerides in Prolaeis were effective at eliminating clinical disease and maintaining growth performance compared to infected control animals. In addition, Prolaeis has anti-inflammatory activity that can prevent the diversion of nutrients to fuel inflammation, maintaining their availability for more productive uses such as growth.

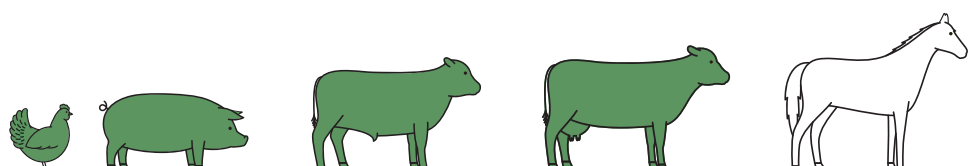
► Modes of Action:

The monoglycerides in Prolaeis are well-documented throughout the scientific literature to have high levels of antimicrobial, antiviral and anti-inflammatory activity.

Antimicrobial – As an antimicrobial, MCMG can be bacteriostatic by destabilizing membrane-bound enzyme systems involved in energy metabolism, replication, and receptor functions; or bactericidal by completely lysing the membrane, resulting in bacterial death. While MCMG are primarily active against gram-positive bacteria, including key calf pathogens such as *Staphylococcus aureus*, *Streptococcus bovis* group, *Clostridium perfringens*, and *Listeria monocytogenes* (Table 1), we have also demonstrated a dose-responsiveness to MCMG by *Salmonella* in feed, resulting in a 90% reduction in *Salmonella* recovery from feed.

Antiviral – Prolaeis has demonstrated significant antiviral activity against key bovine viral pathogens, including Bovine Coronavirus (BCoV), Bovine Respiratory Syncytial Virus (BRSV), Bovine Viral Diarrhea Virus (BVDV), and Bovine Herpesvirus-1 (BHV-1) (Table 2). In simple, single lipid-membraned viruses, Prolaeis produced 5 to 6 log reductions in viable virus. In more complex, double lipid-membraned viruses, even with a tough protein capsid, Prolaeis resulted in an over 3 log reduction in infective wild-type virus. These results are due to disruptions of the lipid membrane, which either directly inactivates the virus or prevents fusion and entry of the virus into the target host cells.

Anti-inflammatory – Lastly, as an anti-inflammatory agent, MCMG downregulates NF- κ B, a key gene transcription factor involved in stimulating inflammation, even after an LPS challenge. This activity will serve to protect gut integrity during a pathogen infection or a stressor such as weaning or transport.



To learn more, visit naturalbiologics.com or 844.NAT.BIOL (628.2465)



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PROLAEIS®

Product Description: Prolaeis is a 100% natural supply of medium-chain monoglycerides that have been demonstrated to have significant antiviral, antimicrobial and anti-inflammatory activity. It is safe for use in all phases of calf and cattle production.

► **Ingredients:**

Vegetable oil

► **Purpose:**

Prolaeis is to be used as a supplement to complete diets for all phases of cattle.

► **Suggested Feeding Directions:**

Follow the directions provided by your nutritional consultant, or:

► **Cattle**

Calves	4 g/hd/d
Growing Heifers	4 g/100# of body weight/d
Cows	5 g/100# of body weight/d

Appearance: Fine white powder

Packaging: 55.1 lb. (25 kg) bags and cases of 10 x 1.5 kg pouches

Shelf Life: Two years from date of manufacture when stored in a cool, dry place in the original package.

Precautions: Use only as directed. Avoid inhalation of dust.

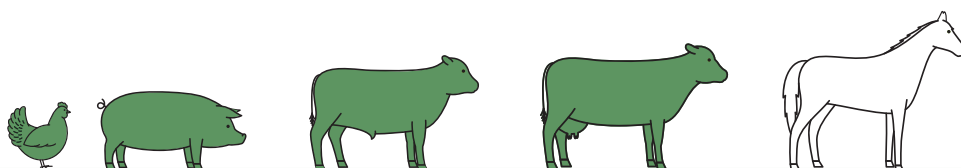


Guaranteed Analysis:

Total Fatty Acids (Minimum)	98.0%
Free Fatty Acids (Maximum)	1.0%
Unsaponifiable Matter (Maximum)	1.0%
Insoluble Impurities (Maximum)	1.0%
Moisture (Maximum)	1.0%

Prolaeis can help control viral and pathogen loads and keep your calves healthy.

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