

# Understanding Equine Dietary Supplements

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Technical Services Equine Nutritionist

# What is an Equine Supplement?

- Concentrated source of nutrients and/or nutraceuticals (some are not allowed in feed).
- Most common forms are pellet, liquid and granular (meal or powder).
- Fed to address a problem or provide a benefit.
- Provided in addition to a regular feeding program (concentrate grain or diet balancer and hay/pasture).
- Package size or net weight can be 40 lbs. to 1-5 lbs. and feeding rates can be 1-2 lbs/day to 1-2 ounces/day.
- 30-day supply is the gold standard.
- Bags/Buckets/Pails are common containers.



# Defining an Equine Supplement

- Nutrient - a substance that provides nourishment essential for growth and maintenance of life.
- Nutraceutical - a substance that has physiological benefits or provides protection against disease.
- Food and Drug Administration (FDA) doesn't define nutraceuticals.
- FDA regulates these products as a drug, dietary supplement, food ingredient or food.
- Drugs must be approved by FDA before they can be sold or marketed.
- Dietary supplements aren't approved by FDA for safety before they are sold and marketed.



# Nutrient/Supplement Example

- Vitamin E - required nutrient for the horse.
- Many horses are supplemented with vitamin E above required amount, and there is research showing performance benefit, especially with all-natural forms.
- Veterinarians recommend vitamin E supplementation for 3 forms of vitamin E deficiency, tying up diseases and EPM.

## Vitamin Requirements of the Horse<sup>1,2</sup>

Type of Horse	IU/day
Adult (no work)	500
Adult (light work)	800
Adult (moderate work)	900
Adult (heavy work)	1,000
Adult (very heavy work)	1,000
Pregnant Mare	800
Lactating Mare	1,000
Growing Horse (4 months)	337
Growing Horse (6 months)	432
Growing Horse (12 months)	642
Growing Horse (24 months)	858

<sup>1</sup>Mature body weight of 500 kg or 1,100 lbs.

<sup>2</sup>Nutrient Requirements of Horses. 6<sup>th</sup> Rev. Ed. 2007 NRC.

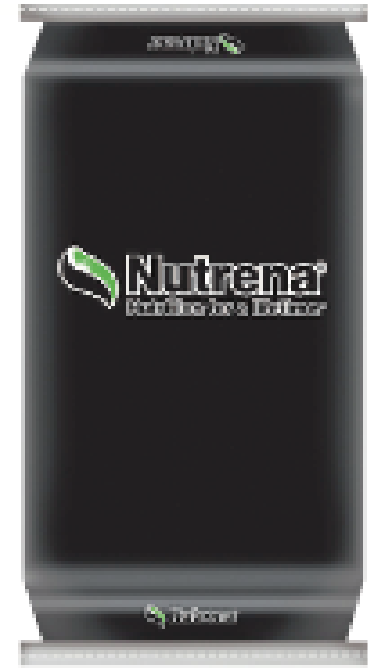
# Fat Supplements



ProElite® Omega Advantage  
Crude Fat (min): 24%



Empower® Boost  
Crude Fat (min): 22%



Nutrena® Fortified Rice Bran  
Crude Fat (min): 18%

# Diet Balancers

- Concentrated source of minerals, vitamins, amino acids and digestive aids.
- Recommended for easy keeper horse breeds, ponies and miniature horses.
- Can be fed alone with forage.
- Can be fed along with regular concentrate,
- Can be fed with unfortified grains, etc.

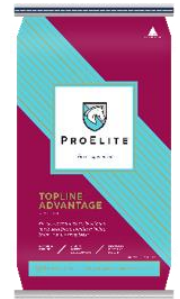
**Hoof Supplement?**

**Topline Supplement?**

**Dietary Supplement?**



ProElite® Grass Advantage  
Diet Balancer



ProElite® TopLine  
Advantage™



Empower®  
Topline Balance®

# Topline Supplements

- Amino acids are classified as essential and nonessential. Lysine is recognized as the most important or most limiting amino acid for the growing horse.
- Lysine, threonine, methionine and tryptophan are important for muscle growth and development in the horse.
- Whey proteins contain high levels of branched chain amino acids (BCAA), leucine, isoleucine and valine. These BCAA are known to increase protein and glycogen synthesis.
- These 7 amino acids are recognized as essential for many species where requirements are known.



ProElite® Top-Line Advanced Support™

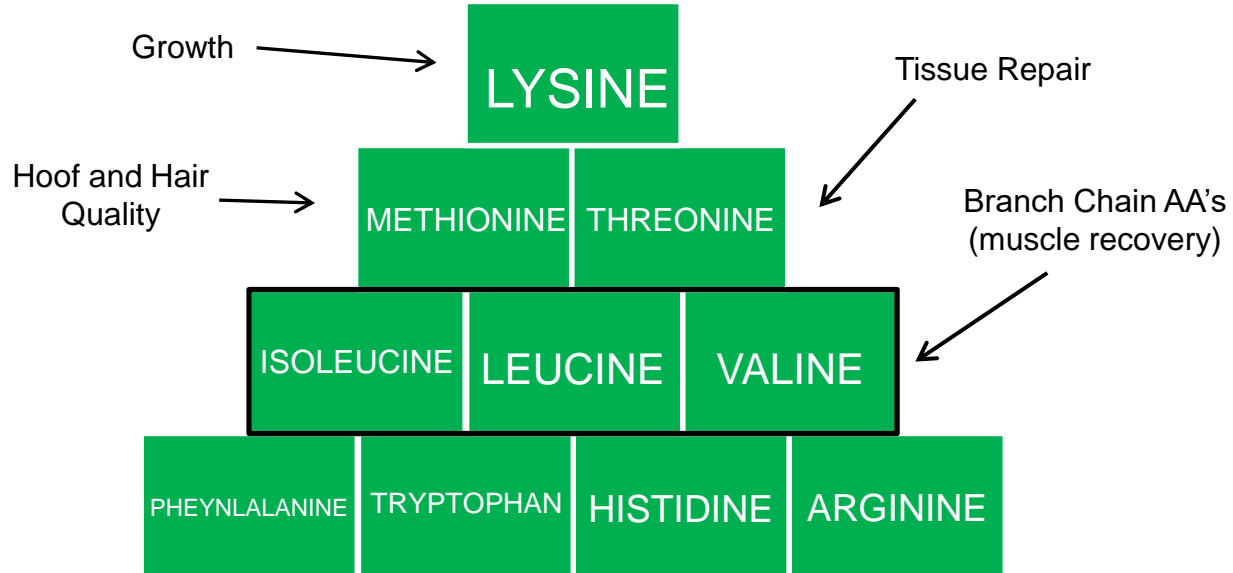


ProElite® Top-Line Xtreme™



ProElite® Top-Line Advanced Support™

# Essential Amino Acids





# ProElite® Top-Line Xtreme™

- Fast-acting amino acid supplement to support healthy topline, muscle development and recovery.

GUARANTEED ANALYSIS		ANALYSIS PER SCOOP		ANALYSIS PER SCOOP	
Crude Protein (min.)	65.00%	10,920 mg/scoop	Valine (min.)	6.70%	1,126 mg/scoop
Lysine (min.)	16.50%	2,772 mg/scoop	Crude Fat (min.)	7.50%	1,260 mg/scoop
Methionine (min.)	12.00%	2,016 mg/scoop	Crude Fiber (max.)	0.50%	
Threonine (min.)	15.00%	2,520 mg/scoop	Acid Detergent Fiber (max.)	2.50%	
Leucine (min.)	7.00%	1,176 mg/scoop	Neutral Detergent Fiber (max.)	4.30%	
IsoLeucine (min.)	5.00%	840 mg/scoop			

## INGREDIENTS

Whey Protein Concentrate, Wheat Gluten, Flaxseed, Vegetable Oil, Yeast Extract, Spray Dried Whey, Spray Dried Egg, Rice Bran Oil, Betaine, DL-Methionine, L-Lysine, L-Tryptophan, L-Threonine and Natural and Artificial Flavors Added.

## FEEDING DIRECTIONS

		HORSE'S BODY WEIGHT	
		Less than 1200 lbs	More than 1200 lbs
For Athletic Performance		2 Scoops	3 Scoops
Recovery from Exercise		Shortly After Exercise	Shortly After Exercise
For Enhanced Muscle and Topline	AM Feeding	2 Scoops	2 Scoops
	PM Feeding	1 Scoop	2 Scoops
Topline and Muscle Maintenance	AM Feeding	1 Scoop	2 Scoops
	PM Feeding	1 Scoop	1 Scoop

\*Each scoop holds 4 ounces.



## Key Features

- Fast topline and muscle response
- Multiple sources of milk-based proteins
- Micro-pelleted for easy mixing with feed
- Vanilla flavored



## How it works

- Biologically available amino acids and proteins support muscle development
- Betaine supports proper fluid balance in cells



## Target Horses & Situations

- Sales prep
- Performance horses
- Horses needing quick performance recovery
- Horses needing the fastest topline improvement



15 lb. bucket approx. 30-day supply at 1000 lb. maintenance dose

# ProElite<sup>®</sup> Top-Line Advanced Support

- Amino acid supplement to support healthy topline, muscle development and maintenance.

## GUARANTEED ANALYSIS

		ANALYSIS PER SCOOP
Crude Protein (min.)	65.00%	73,775 mg/scoop
Lysine (min.)	4.30%	4,881 mg/scoop
Methionine (min.)	2.20%	2,497 mg/scoop
Threonine (min.)	3.40%	3,859 mg/scoop
Leucine (min.)	6.00%	6,583 mg/scoop
IsoLeucine (min.)	2.00%	2,611 mg/scoop
Valine (min.)	2.90%	3,292 mg/scoop
Crude Fat (min.)	8.00%	9,080 mg/scoop
Crude Fiber (max.)	1.00%	
Acid Detergent Fiber (max.)	0.50%	
Neutral Detergent Fiber (max.)	1.00%	

## INGREDIENTS

L-Lysine, Flaxseed, L-Threonine, DL-Methionine, Wheat Gluten, L-Leucine, L-Valine, L-Isoleucine, L-Tryptophan, Betaine, Rice Bran Oil and Artificial Flavoring.

## FEEDINGS DIRECTIONS

	HORSE'S BODY WEIGHT	
	Less than 1,200 lbs	1,200 lbs or more
TOP-LINE™ Advanced Support	2 Scoops*	3 Scoops

\*Each scoop holds 16.8 grams. Container holds 2.2 lbs or a 30 day supply



## Key Features

- Daily support for a healthy topline
- Concentrated feeding rate
- Easy to feed powder
- Vanilla flavored



## How it works

- Specific amino acids and proteins support muscle development
- Betaine helps proper fluid balance in cells



## Target Horses & Situations

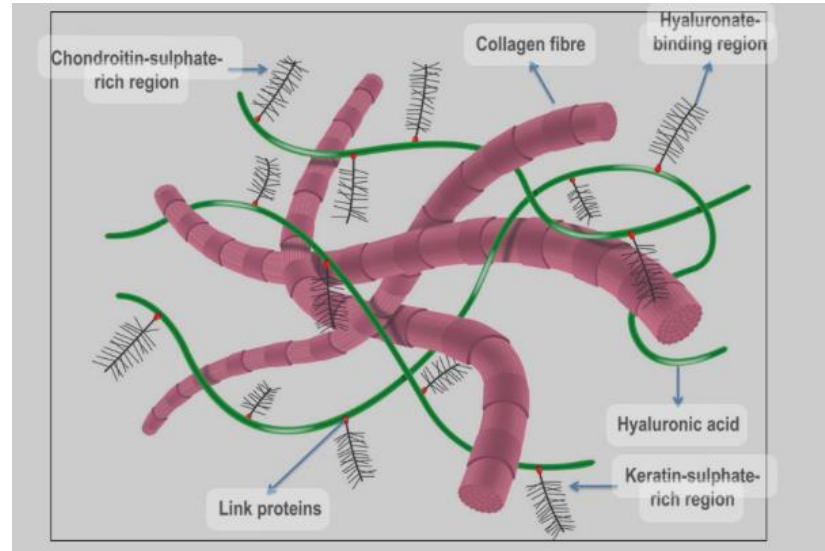
- Horses needing daily topline support



2.2 lb. bucket approx. 30-day supply at 1000 lb. maintenance dose

# Joint Supplements

- Glycosaminoglycans (GAG's) are used as oral joint supplements for horses.
- GAG's are collagen and hyaluronic acid, a structural form of cartilage.
- Hyaluronic acid (HA) is a GAG or polysaccharide molecule that forms a gelatinous matrix surrounding cells in cartilage or joint tissue.
- Glucosamine (sulfate and hydrochloride) and chondroitin (sulfate and hydrochloride) are amino sugars found in cartilage.
- Methylsulfonylmethane or MSM is a bioavailable form of sulfur.
- Research shows benefit in reducing inflammation and improving mobility for horses with osteoarthritis.



# ProElite<sup>®</sup> Joint

- Research-proven health supplement to support healthy joints and cartilage throughout a horse's lifetime.

## PRODUCT FACTS

### ACTIVE INGREDIENTS PER 2 SCOOP (40g):

TruEquine <sup>®</sup> PostBiotic Yeast Fermentate	12,000 mg
Glucosamine HCL (Shellfish)	7,500 mg
MSM	5,200 mg
Chondroitin Sulfate (poultry)	1,250 mg
Vitamin C	1,000 mg

### INACTIVE INGREDIENTS:

Alfalfa Meal, Artificial Flavoring, Ground Flax, Lignin Sulfonate, Soybean Oil

### CAUTIONS:

If animal's condition worsens or does not improve, stop product administration and consult your veterinarian. Safe use in pregnant animals or animals intended for breeding has not been proven.

### FOR USE IN HORSES ONLY:

Recommended to help support healthy joints and cartilage

### DIRECTIONS FOR USE:

Provide 2 enclosed scoops (20 g/scoop) daily for 1000 lb. horses. May provide 4 scoops daily for the first 30 days.



### Key Features

- Easy to feed pellet
- Contains synergistic ingredients to support healthy joints and cartilage



### How it works

- TruEquine<sup>®</sup> Postbiotic has been shown to reduce joint inflammation biomarkers<sup>1</sup>
- Glucosamine and Chondroitin support healthy joint structures<sup>2</sup>
- MSM aids in managing inflammation and oxidation stress



### Target Horses & Situations

- Horses showing signs of joint immobility
- Horses in training that need joint health support



3 lb. bucket approx. 30-day supply at 1000 lb. maintenance dose

<sup>1</sup>Martinez et al., 2021 Responses to an intra-articular lipopolysaccharide challenge following dietary supplementation of Saccharomyces cerevisiae fermentation product in young horses JAS, Vol 99 No 10, 1-8

<sup>2</sup>Leatherwood et al., 2016 Influence of oral glucosamine supplementation in young horses challenged with intra-articular lipopolysaccharide. JAS, Vol 94 No 8 3294-3302

# Hoof Supplements



- Biotin is a water-soluble B-complex vitamin that is synthesized in hindgut of horse. Long-term studies have shown improved hoof condition with continued biotin supplementation.
- Protein deficient diets lead to reduced hoof growth and splitting/cracking of the hoof: 95% of hoof and hair consists of amino acids.
- Methionine is an amino acid that contains sulfur. Methionine is converted to another sulfur-containing amino acid, cystine. A study found a positive correlation between cystine and hoof hardness.
- Zinc is a trace mineral found in over 100 enzymes involved in metabolic functions in the horse. Zinc methionine supplement study found horses with less hoof strength had lower hoof zinc concentrations than horses with undamaged hoof tissue.



# ProElite® Hoof

- Nutrition for healthy hoof condition plus skin and coat support.

## GUARANTEED ANALYSIS PER 1 SCOOP (20g)

Protein (min.)	25.00%	5,000.0 mg/scoop
Lysine (min.)	7.00%	1,400.0 mg/scoop
Methionine (min.)	12.50%	2,500.0 mg/scoop
Crude Fat (min.)	2.00%	400.0 mg/scoop
Crude Fiber (max.)	13.00%	2,600.0 mg/scoop
Acid Detergent Fiber (max.)	18.00%	3,600.0 mg/scoop
Neutral Detergent Fiber (max.)	20.00%	4,000.0 mg/scoop
Calcium (Ca) (min.)	1.80%	360.0 mg/scoop
Calcium (Ca) (max.)	2.30%	460.0 mg/scoop
Phosphorus (P) (min.)	0.80%	150.0 mg/scoop
Copper (Cu) (min.)	3,500 ppm	70.0 mg/scoop
Zinc (Zn) (min.)	10,000 ppm	200.0 mg/scoop
Biotin (min.)	350 mg/lb	15.0 mg/scoop

## INGREDIENTS

Dehydrated Alfalfa Meal, Yeast Culture, DL-Methionine, L-Lysine, Biotin, Monocalcium Phosphate, Ground Flaxseed, Zinc Sulfate, Zinc Amino Acid Complex, Lignin Sulfonate, Copper Amino Acid Complex, Soybean Oil, Basic Copper Chloride, Natural and Artificial Flavors

## DAILY FEEDING DIRECTIONS

	Horses Body Weight	
	Less than 1200 lbs	More than 1200 lbs
AM Feeding	1 scoop	2 scoops
PM Feeding	1 scoop	1 scoop



## Key Features

- Easy to feed pellet



## How it works

- Methionine and additional protein work as the building blocks of hoof wall and structure
- Biotin and Zinc support processes that enable a strong hoof wall and structure



## Target Horses & Situations

- Horses with weak or shelly hoof wall
- Horses with slow hoof growth rates



3 lb. bucket approx. 30-day supply at 1000 lb. maintenance dose

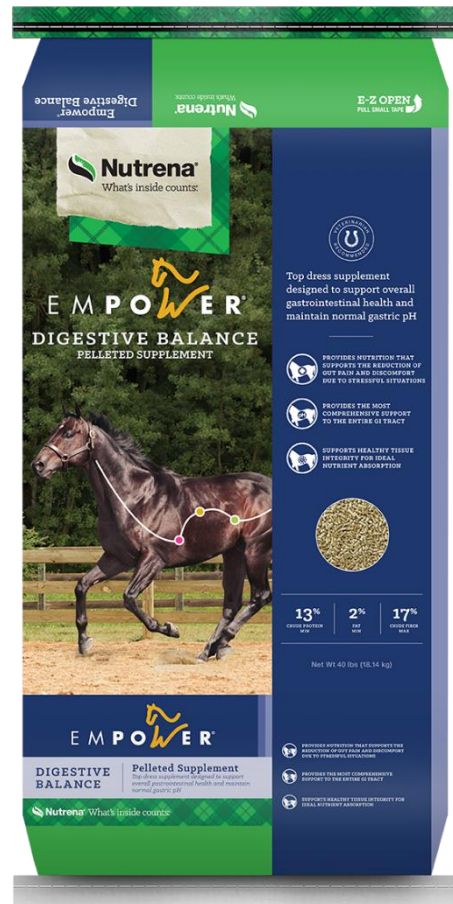
# Gastric Protectants/Buffers/Healing Agents

- Plant/herbal extracts may contain mucilaginous compounds to protect stomach lining from ulceration from acidic conditions, ingredients to increase healing rate of ulcerations and calcium and magnesium to buffer gastric pH.
- Gastric ulcer supplements for horses include sodium bicarbonate, calcium and magnesium compounds, live yeast, yeast culture, probiotics, FOS, MOS, pectin, glutamine, glycine, fatty acids, collagen and lecithin.
- Marine calcites have reduced gastric juice pH, reduced gastric ulcer scores and decreased colic symptoms in horses fed these products.
- Sea buckthorn berry supplement prevented gastric ulcers from increasing in horses after omeprazole.
- Dried bovine colostrum has been used in gastric ulcer supplements and found to be effective.

# Empower<sup>®</sup> Digestive Balance

Focus on more than just ulcers

Nutritional Component	Empower <sup>®</sup> Digestive Balance	Competitive Product
Marine Calcium = Gastric Support Buffering	✓	✓
ButiPEARL Z = Intestinal Health	✓	
Diamond V XPC = Intestinal Health	✓	
ProBiotics = Microbiome Support	✓	
Controlled Starch = Digestive Balance	✓	
Peppermint Flavor = Palatability	✓	





# ProElite<sup>®</sup> Soothing Pink<sup>™</sup> Xtra Strength

- Helps promote a healthy stomach utilizing a targeted blend of nutrients

## PRODUCT FACTS

### ACTIVE INGREDIENTS PER 2 SCOOPS (40g):

Dried Bovine Colostrum \_\_\_\_\_ 7,900 mg  
Saccharomyces Cerevisiae 1-1079 \_\_\_\_\_ 11 Billion CFU  
Chicory Root \_\_\_\_\_ 100 mg  
Vitamin E \_\_\_\_\_ 7 IU

### INACTIVE INGREDIENTS:

Alfalfa Meal, Artificial Flavoring, Calcium Carbonate, Dried Whey, Ground Flax, Lysine, Magnesium Oxide, Methionine, Niacin, Soybean Oil, Thiamine, Wheat Midds, Whey Protein Concentrate

### CAUTIONS:

If animal's condition worsens or does not improve, stop product administration and consult your veterinarian. Safe use in pregnant animals and animals intended for breeding has not been proven.

### FOR USE IN HORSES ONLY:

Recommended to help support a healthy stomach and digestive tract.

### DIRECTIONS FOR USE:

Provide 2 enclosed scoops (20 g/scoop) daily for 1000 lb horses.



### Key Features

- Easy to feed pellet
- Focused support for the stomach



### How it works

- Dried Colostrum provides bio-active proteins to support a healthy stomach lining <sup>1</sup>
- Live Yeast and Chicory Root support a healthy digestive tract



### Target Horses & Situations

- Horses in stressful situations showing signs of gastric upset
- Horses in training
- Horses being trailered

3 lb. bucket approx. 30-day supply at 1000 lb. maintenance dose



<sup>1</sup>Mueller et al 2008. Effects of NGT on the Gastric Ulcer Score of 2-year-old and older horses in a controlled environment. Internal study

# Prebiotics, Probiotics & Postbiotics for Hindgut Health

- Prebiotics are non-digestible, non-living feed additives.
  - FOS – fructo-oligosaccharides or oligofructose, major source is inulin from chicory root.
  - MOS – mannan-oligosaccharides, major source is yeast cell walls.
  - Yeast culture - dried yeast (yeast cells, metabolites and grain media), source of nutrients for microbial growth, immune support and anti-inflammatory function.
- Probiotics are live microbial feed additives (live yeast and probiotic bacteria) that provide health benefits by improving or restoring gut microflora.
  - Live Yeast.
  - Probiotic Bacteria.
- Postbiotics
  - TruEquine™ C is a postbiotic feed additive from Diamond V® that has been shown to promote joint support, gut health and stress management (Diamond V® XPC).

# Supplements for Hindgut Health

- Butyric acid is preferred food source for the intestinal cell lining of the horse.
- Zinc-encapsulated butyric acid improves intestinal barrier function by maintaining tight junction integrity during stressful conditions in the horse's intestine.
- Psyllium Husk is fermented to butyrate in hindgut to reduce inflammation and promote mucosal healing.
- Threonine is an essential amino acid essential to gut health, deficiency of threonine slows regeneration of the intestinal lining and reduce mucus secretion.
- Glutamine - L-glutamine prescribed for IBS in humans to reduce symptoms, fed to many animal species with benefit, may be limiting in horses.
- Zeolites can reduce diarrhea, e.g. Bio-Sponge<sup>®</sup> (aluminosilicate) and Pepto-Bismol<sup>®</sup> (bismuth subsalicylate).

# Supplements for Hindgut Health

- Omega-3 fatty acid sources (fish oil, marine algae and flaxseed) provide anti-inflammatory benefits.
- Encapsulated sodium bicarbonate increases cecal pH.
- Prebiotics are non-digestible, non-living feed additives (yeast culture, FOS, MOS) that can stimulate growth or activity of other microorganisms and benefit hindgut health.
- Probiotics are live microbial feed additives (live yeast and probiotic bacteria) that provide health benefits by improving and restoring gut microflora.
- TruEquine™ is a postbiotic feed additive from Diamond V® that has been shown to promote gut health.

# Hindgut Dysbiosis and Dietary Goals

- **Right Dorsal Colitis** - severe to chronic ulceration and inflammation of the right dorsal colon.
- **Leaky Gut Syndrome** - lining of the GI tract is compromised (tight junctions enlarged), allowing harmful substances to cross the intestinal barrier and be absorbed into the bloodstream.
- **Free Fecal Water Loss Syndrome** - solid and liquid phases during defecation and liquid phase can occur before, during or after defecation.
- **Dietary Goals for Hindgut Dysbiosis**
  - Decrease mechanical load on hindgut by decreasing dietary bulk (less hay or no hay, more feed).
  - Maximize digestive and absorptive capacity – low bulk/digestible feeds (pelleted diet only).
  - Minimize mucosal irritation or possible antigens with dietary changes or shorter fiber size/softer diet (higher quality hay, hay cubes or pellets).

# ProElite® GutBiome

- Supports a horse's gut microbiome with research proven ingredients for optimized foregut and hindgut health

## PRODUCT FACTS

### ACTIVE INGREDIENTS PER 2 SCOOP (40g):

TruEquine® Postbiotic Yeast Fermentate	12,000 mg
ButiPEARL Z EQ®	5,200 mg
Chicory Root	1,250 mg
Threonine	1,000 mg
Total Microbial Count	78 Billion CFU (B. Lichniformis, B. Subtilis, L. Acidophilus, L. casei, Bifido. thermophilum, Enter. Faecium)

### INACTIVE INGREDIENTS:

Alfalfa Meal, Artificial Flavoring, Ground Flax, Lignin Sulfonate, Soybean Oil

### CAUTIONS:

If animal's condition worsens or does not improve, stop product administration and consult your veterinarian. Safe use in pregnant animals or animals intended for breeding has not been proven.

### FOR USE IN HORSES ONLY:

Recommended to help support a healthy digestive tract.

### DIRECTIONS FOR USE:

Provide 2 enclosed scoops (20 g/scoop) daily for 1000 lb horses.



### Key Features

- Easy to feed pellet
- Focused support for small and large intestinal integrity



### How it works

- TruEquine® Postbiotic supports a health microbial balance and VFA production <sup>1</sup>
- ButiPEARL Z EQ® strengthens lining of gastrointestinal tract <sup>2,3</sup>
- Broad spectrum probiotics provides additional microbial population benefits
- Chicory root prebiotic fiber provides fuel for beneficial microbes



### Target Horses & Situations

- Horses in stressful situations such as sales prep, training or trailering

3 lb. bucket approx. 30-day supply at 1000 lb. maintenance dose



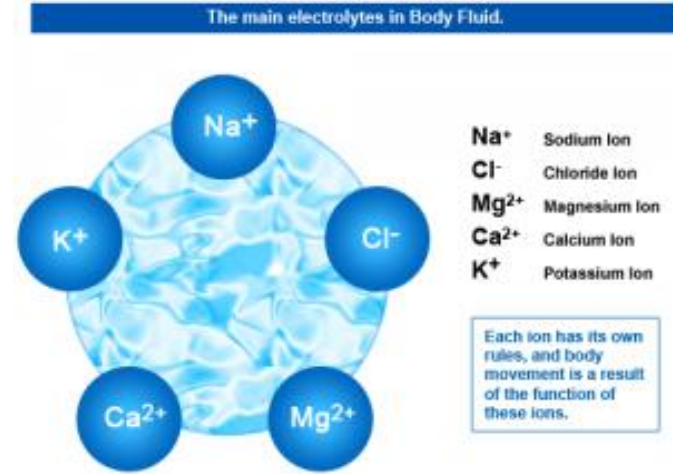
<sup>1</sup>Diamond V 2017. Equine *in vitro* IAMM Research

<sup>2</sup>Protective Effects of Butyric Acid and Zinc on Equine Intestinal Cell Function Under Hypoxic Condition. Kemm Technical Literature

<sup>3</sup>Alterations in Intestinal Permeability: The Role of the "Leaky Gut" in Health and Disease. JEVS 52 (2017) 10-22.

# Electrolytes

- The horse gets the stimulus to drink due to higher blood sodium concentration and blood loss (both lost in sweat).
- The horse sweats out water and sodium so they aren't very efficient at getting the "thirst" signal.
- Electrolytes are minerals that function in ionic form in body fluids - muscle contraction, blood pH, fluid balance, nerve function.
- Electrolytes are lost in sweat and reserves are in digestive tract (sodium, chloride, potassium, calcium and magnesium).
- Loss of electrolytes causes fatigue, muscle weakness and decreased thirst response to dehydration.
- Best to give electrolytes before, during and after work.
- Electrolytes can be salt-based or dextrose-based.



# ProElite® Aqua Aide®

- Helps replenish electrolyte loss for performance horses

## GUARANTEED ANALYSIS

Salt (NaCl) (min.) _____	9.30%	Sodium (Na) (max.) _____	4.50%
Salt (NaCl) (max.) _____	11.00%	Chloride (Cl) (min.) _____	8.00%
Sodium (Na) (min.) _____	3.80%	Potassium (K) (min.) _____	3.60%

## INGREDIENTS

Dextrose, Sodium Chloride, Potassium Chloride, Lecithin, Magnesium Sulfate, Calcium Citrate, Potassium Citrate, Hydrated Sodium Silico Aluminate, Fumaric Acid, Natural Flavors Added and Preserved with Citric Acid.

## FEEDING DIRECTIONS

### Two Ways to Feed (based on 1000 lb horse)

For optimum results: Mix 4 scoops of Aqua Aide® powder into 1 gallon of water and provide Aqua Aide® mixed into water free-choice to horses shortly after exercise.

### Top-dress on feed

The recommended feeding levels of Aqua Aide® powder can be top-dressed on the horse's feed.

Hours of Exercise	Scoops Per Day
Up to 1 hour/day	1 Scoop
1 to 3 hours/day	2 Scoops
Over 3 hours/day	3 Scoops

\*Each scoop holds 1 ounce of Aqua Aide® powder.

Provide free access to clean fresh water at all times. For more information regarding Aqua Aide® powder, visit [ProEliteHorseFeed.com](http://ProEliteHorseFeed.com).



## Key Features

- Easy to mix in water or add to feed
- Matches nutrients found in equine sweat



## How it works

- Quickly replaces lost Sodium, Chloride and Potassium nutrients lost in sweat
- Sugar aids quick transport into bloodstream



## Target Horses & Situations

- Horses in sweating work
- High temperature and humidity conditions



15 lb. bucket approx. 60 supply at 1000 lb. maintenance dose



## Feeding the Orphan & Nursing Foal

- Foals can become orphaned due to death or rejection of mare.
- Adequate colostrum must be provided and/or blood IgG test can be done and antibodies can be provided by IV if deficient.
- Supplementation of milk may be needed due to inadequate milk production.
- Foals are usually weaned at 4-6 months of age.



# ProElite® Foals First Milk Replacer

- Milk replacer powder for orphan foals with a free-choice feeding option. Nutritionally balanced to meet nutrient demands of growing foal.
- Contains all milk ingredients to support easy digestion.
- Acidified to control free-choice consumption and provide 12-hour shelf life.



# ProElite® Foals First Starter & Creep

- Milk-based transition foal feed.
- Added prebiotics and probiotics.
- Formulated with 100% organic trace minerals.
- Organic source of calcium.
- Added flaxseed oil for increased omega-3 fatty acids.
- Can be fed to orphan foals at 3 weeks of age that won't drink milk replacer.
- Can be fed to nursing foals as starter or creep feed at 3 weeks of age.
- Recommended for foals and growing horses with contracted tendons or physitis.



# Causes of DOD in Growing Horses

- Genetic predisposition.
- Poor broodmare nutrition in last trimester.
- Excessive milk production by mare.
- Lack of trace minerals in diet of pregnant mare and foal (forage and milk deficient in zinc, copper and manganese).
- Excessive calories in the diet.
- Lack of exercise for young foals.
- Forced exercise for older foals.
- Improper calcium to phosphorus level.
- High NSC feeds (insulin negative to osteoblastic activity).



# Forms of DOD

- Phytitis (bumps, swelling in knees or fetlocks).
- Osteochondrosis – OCD (chips, cysts, cracks in hock, fetlock or stifle).
- Flexural limb deformities of coffin, carpus or fetlock joints (contracted tendons).
- Angular limb deformities (open knees, enlarged fetlocks).
- Cervical Vertebral Malformation or Wobblers.



# ProElite Rejuvenaide Max Liquid and Pellet

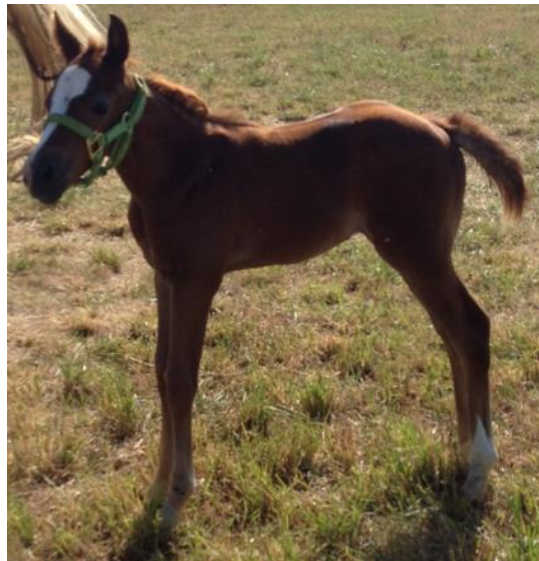
- Pelleted top-dress and liquid supplements for nursing foals and growing horses eating feed.
- Nutritional supplement for foals and growing horses.
- Promotes healthy joint and leg development.
- Balanced blend of vitamins, trace minerals and major minerals essential for growing horses.
- Recommended for foals and growing horses with contracted tendons or physitis.
- 100% organic trace minerals.
- Organic source of calcium.
- Added flax oil for more omega-3 fatty acids.



# Case Study

- Filly born with contracted tendons.
- Mare's milk analysis was completed showing major and trace mineral shortages.
- Started on ProElite® Rejuvenaide™ Max Liquid.

**Before  
Treatment**



**10 Days  
After  
Treatment**

# Feeding horses can be scary!

Questions? We can help!

**Nutrena Helpline: 1-800-367-4894**

**ProElite Helpline: 1-800-247-8066**

Come to our websites at:

**[proelitehorsefeed.com](http://proelitehorsefeed.com)**

**[toplinebalance.com](http://toplinebalance.com)**

**[nutrenaworld.com](http://nutrenaworld.com)**



Contact me at [marty\\_adams@cargill.com](mailto:marty_adams@cargill.com).

Thanks for your attention!