Equine Health

How Nutrition helps in preventing Colic/Laminitis/ IR

Digestive aids

Studies provided by:
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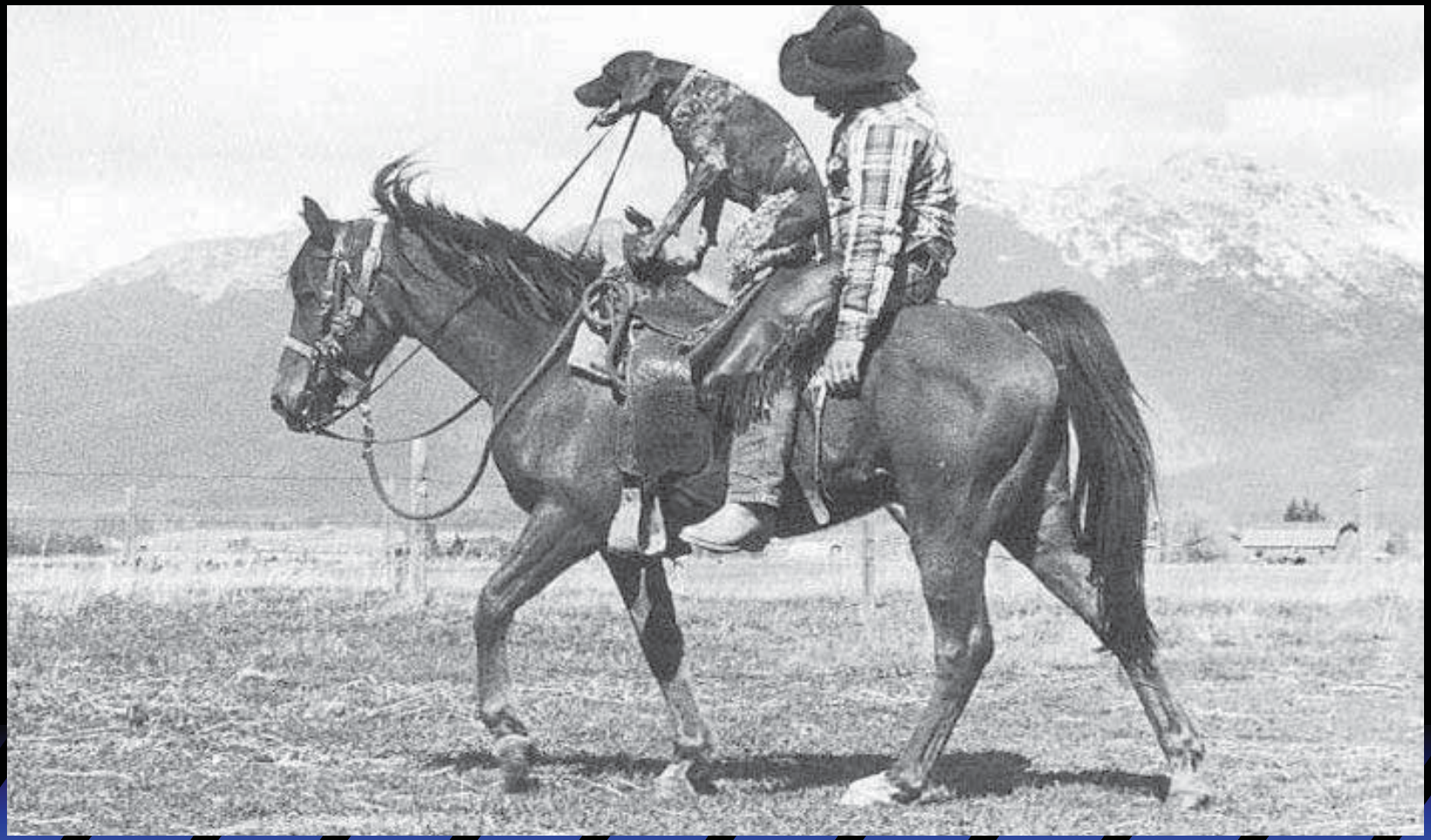
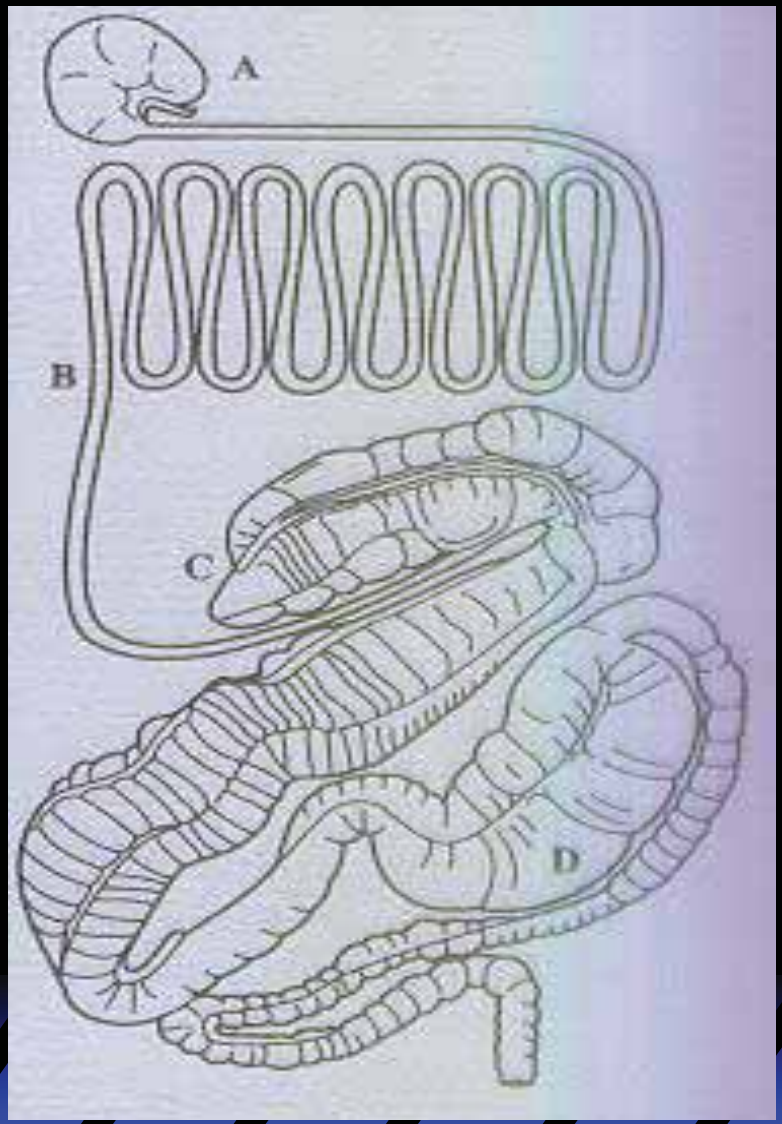
Lets Start at the beginning



The Equine Digestive System

- **Small Stomach** – continual grazers
- **Long Small Intestine with fast passage** – protein, starch, sugar, fat
- **large intestine is a fermentation vat**
  - Bacteria, keeps bugs happy, Forage digestion via fermentation



Basic Point Is:

- Optimal function of horse's digestive system is dependent on "proper site" digestion and absorption
  - starch and sugar: small intestine
  - fat: small intestine
  - protein: small intestine
  - fiber: large intestine

“Carb” Definition

- Structural Carbs (Fiber)
  - cellulose, hemicellulose, lignin
  - found primarily in forages
- Non-Structural Carbs (NSC)
  - sugars and starches
  - found primarily in grain products and excessive levels of molasses

The Trouble With Too Much NSC

- Produces lactic acid in hindgut
  - Lowers gut pH
  - Lower pH reduces fermentation = colic
- Spikes metabolic hormone levels
  - Alters normal cartilage and bone development
  - Interferes with mineral metabolism during exercise
  - Increases sensitivity to insulin
    - Interferes with glucose metabolism during exercise

Metabolic Anomalies Related to High NSC Levels

- PSSM (type 1 and 2)
- RER – Tying up
- EMS – Most common – Equine Metabolic Syndrome
- Chronic Laminitis or chronic colic

Metabolic Anomalies Related to NSC Levels

- PSSM (Polysaccharide Storage Myopathy)
  - QH's & QH type, Warmbloods and Morgans
  - Increased insulin sensitivity
  - Triggered by change in exercise regime

Metabolic Anomalies Related to NSC Levels

- RER: (Recurrent Exertional Rhabdomyolysis)
  - Autosomal dominant trait
  - TB's, SB's, Arabians (esp. nervous 2yo fillies)
  - Caused by abnormal intracellular calcium concentrations
    - Independent from dietary calcium intake

RER: (Recurrent Exertional Rhabdomyolysis)

- Best managed by:
  - Ensuring adequate protein, energy, mineral and vitamin intake
  - Reducing NSC intake
  - Increasing dietary fat intake for DE
  - Slow warm up, long cool down

TRIPLE CROWN

Equine Metabolic Syndrome (EMS)

Genetic Predisposition
"Easy Keeper"

↓

Obesity*

↓

Chronic Insulin Resistance*

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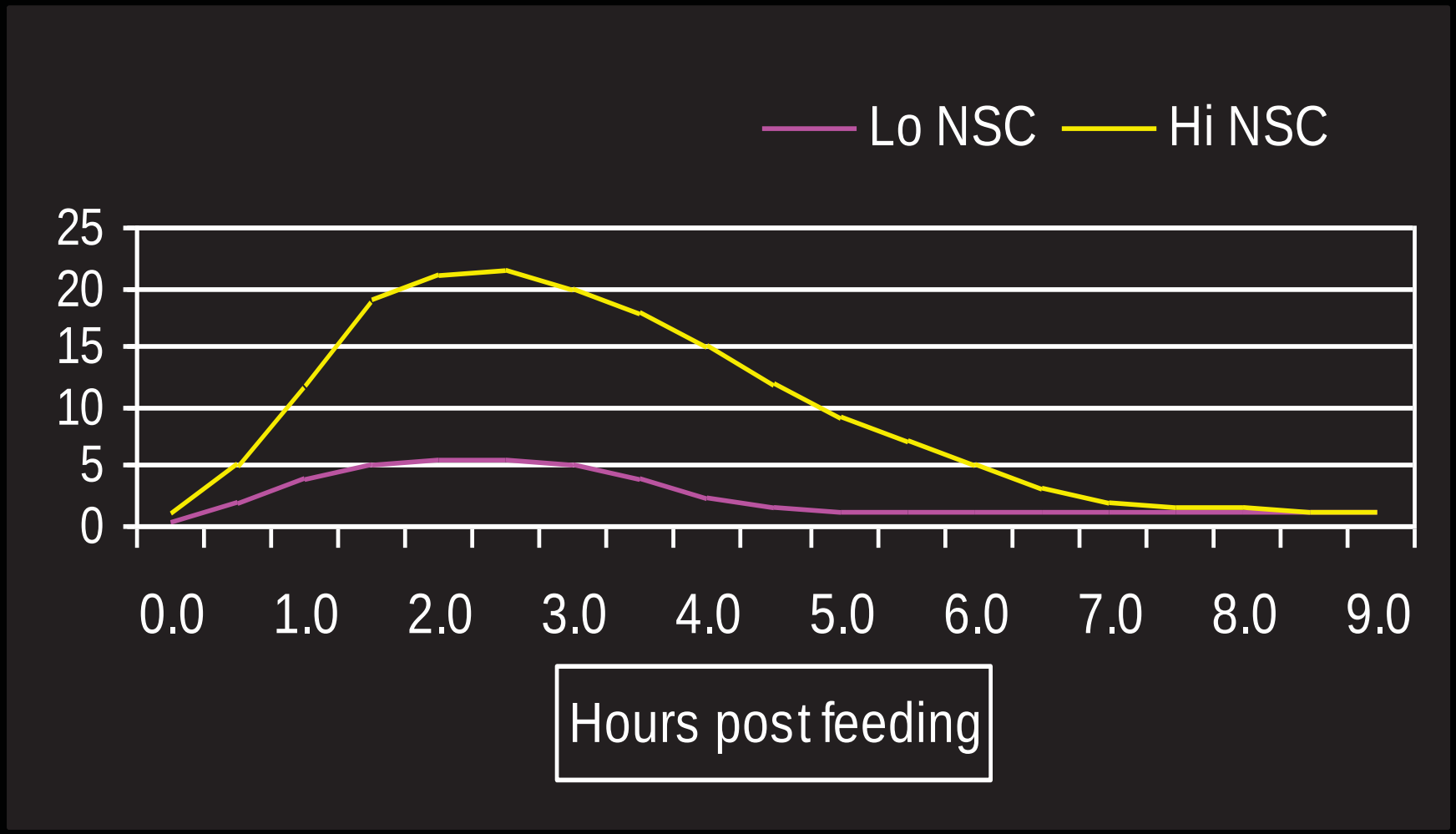
Triggering Event → LAMINITIS*

* Three components of **equine metabolic syndrome** (EMS)

Insulin / Glycemic Response to NSC Levels



–Same Caloric intake

Effect of High Fiber, High Fat, Low Starch

- Moderates metabolic hormone secretion patterns, especially insulin
  - Promotes skeletal growth
  - Reduces DOD
  - Reduces EMS and related disorders

Basic Point Is:

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  - protein: small intestine
  - fiber: large intestine

How does Laminitis occur?

Sugar, starch (NSC) or fructans enter hindgut

Fermentation rapidly occurs

Lactic acid lowers pH (illustrated in next slide)

Destroys bacteria

Bacteria break apart - release toxins that are absorbed into the bloodstream

Toxins cause laminitis

NSC Content of Feeds

- Nutrient guarantee for a low NSC product should have:
  - High fiber (> 10 – 12%)
  - Moderate to High Fat (> 6%)
- Ingredient listing for a low NSC product should contain:
  - No Grain (Corn, Wheat, Barley, Oats)
  - Ingredients with low NSC values

NSC Content of Feed / Dietary Ingredients
[low NSC (< 20)]

Ingredient	NSC	DE/lb
Veg. Oil (Fat)	0.0	3900
Soybean Hulls	7.2	1400
Distiller's Grains	10.7	1620
Alfalfa Meal / Hay	11.4	1125
Beet Pulp	12.2	1395
Grass Hay	13.3	950
Linseed Meal	15.0	1410
Soybean Meal	16.3	1535

NSC Content of Feed Ingredients

[medium NSC (20 - 45)]

[high NSC (> 45)]

Ingredient	NSC	DE/lb
Wheat Bran	30.2	1245
Wheat Midds	33.7	1425
Oats	50.7	1375
Molasses	58.4	1235
Barley	63.1	1500
Wheat	67.5	1570
Corn	75.6	1575

NSC[1] Content of Triple Crown Feeds

Ingredient	NSC	Kcal/lb
TC Lite (2#/day)	9.3	1150
TC 30% Supplement (1#/day)	9.8	1266
TC Safe Starch Forage (7#/day)	8.7	1100
TC Senior (5#/day)	11.7	1546
TC Low Starch (5#/day)	13.5	1428
TC Complete (5#/day)	20.6	1700
TC Growth (5#/day)	17.3	1620
<10=very low		
<15=low 15-25=moderate		

[1]Values determined by Equi-Analytical Laboratories.

Common Colic Causes (epidemiological studies)

- Stall Confinement for more than 15 hours per day
- Feeding Large Amounts of Grain
  - (> 12 lbs per day)
- Participation in intensive exercise
- Feeding grain before hay after a “fast”

Common Colic Causes (experience from a nutritionist)

- Dehydration
  - water
  - salt
  - minerals (especially electrolytes)
- Inadequate Forage Quality
- Inadequate Forage Quantity

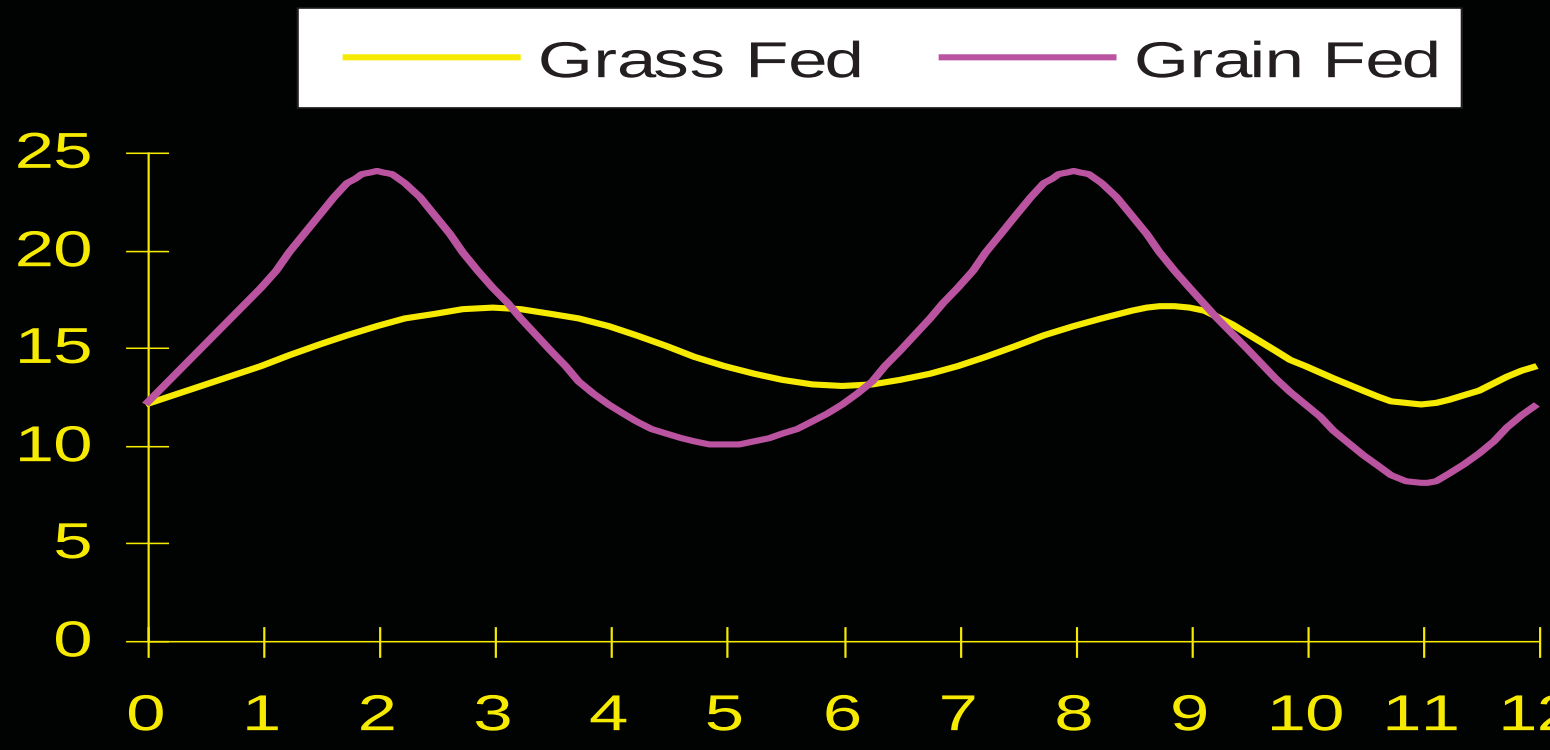
Keeping the Bugs Happy

- Match Feeding Program To Natural Function Of Horse's Gut
- Use Fermentation Aids for performance, breeding or problem horses:
  - high quality forage
  - yeast cultures
  - digestive enzymes
  - probiotic cultures
  - Toxin Binders

The Best Forage Source

- Pasture Grass is very fermentable
- Grazing promotes moderate hormone secretion patterns

Insulin Secretion Pattern In Horses



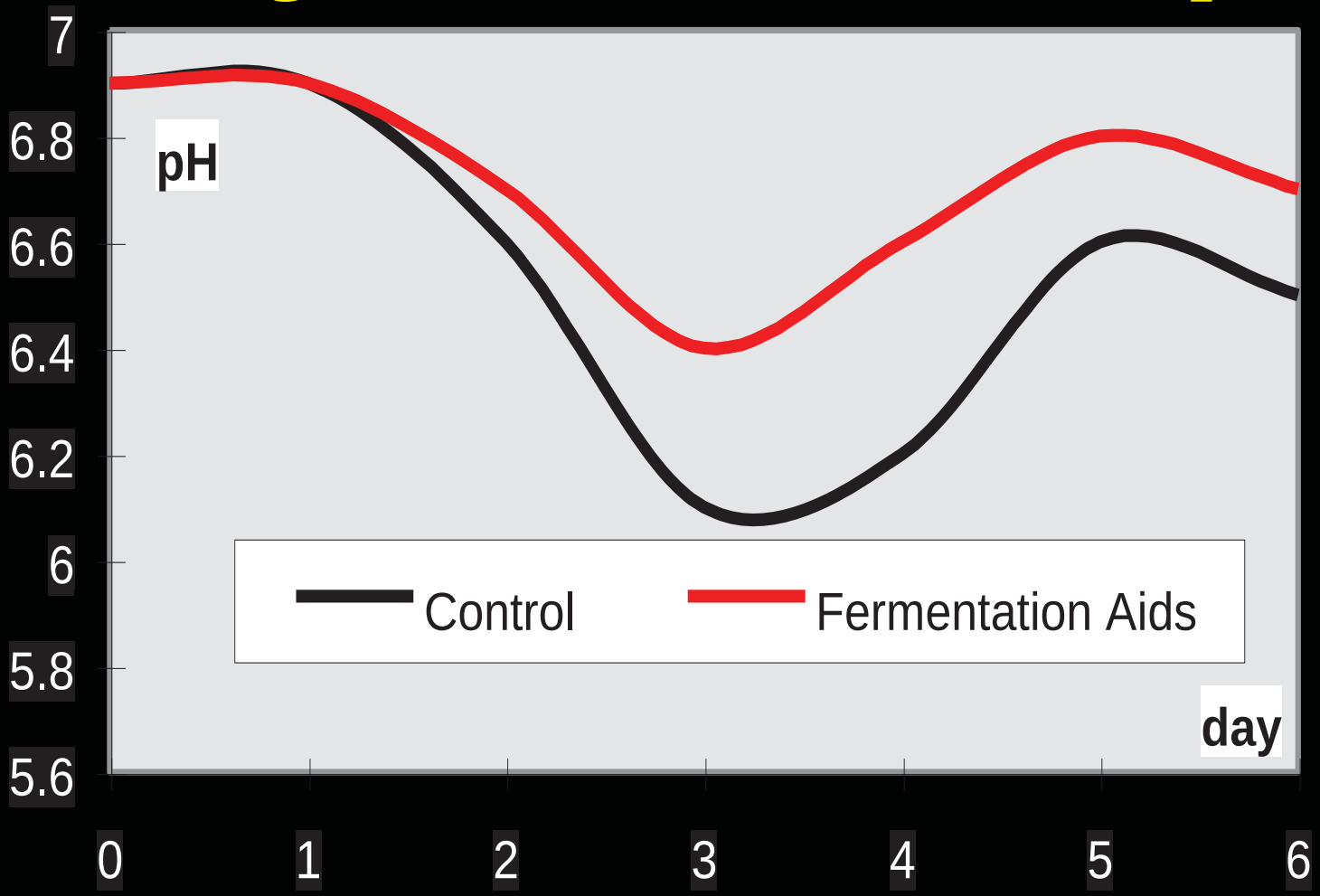
Grass is Similar to Fat

- WHAT?
- Fat provides for moderate insulin secretion pattern as does grass, but
- Fat provides a whole lot more energy than grass
- SO ----- fat can be used to provide horses with more calories and stamina without making them hyper.

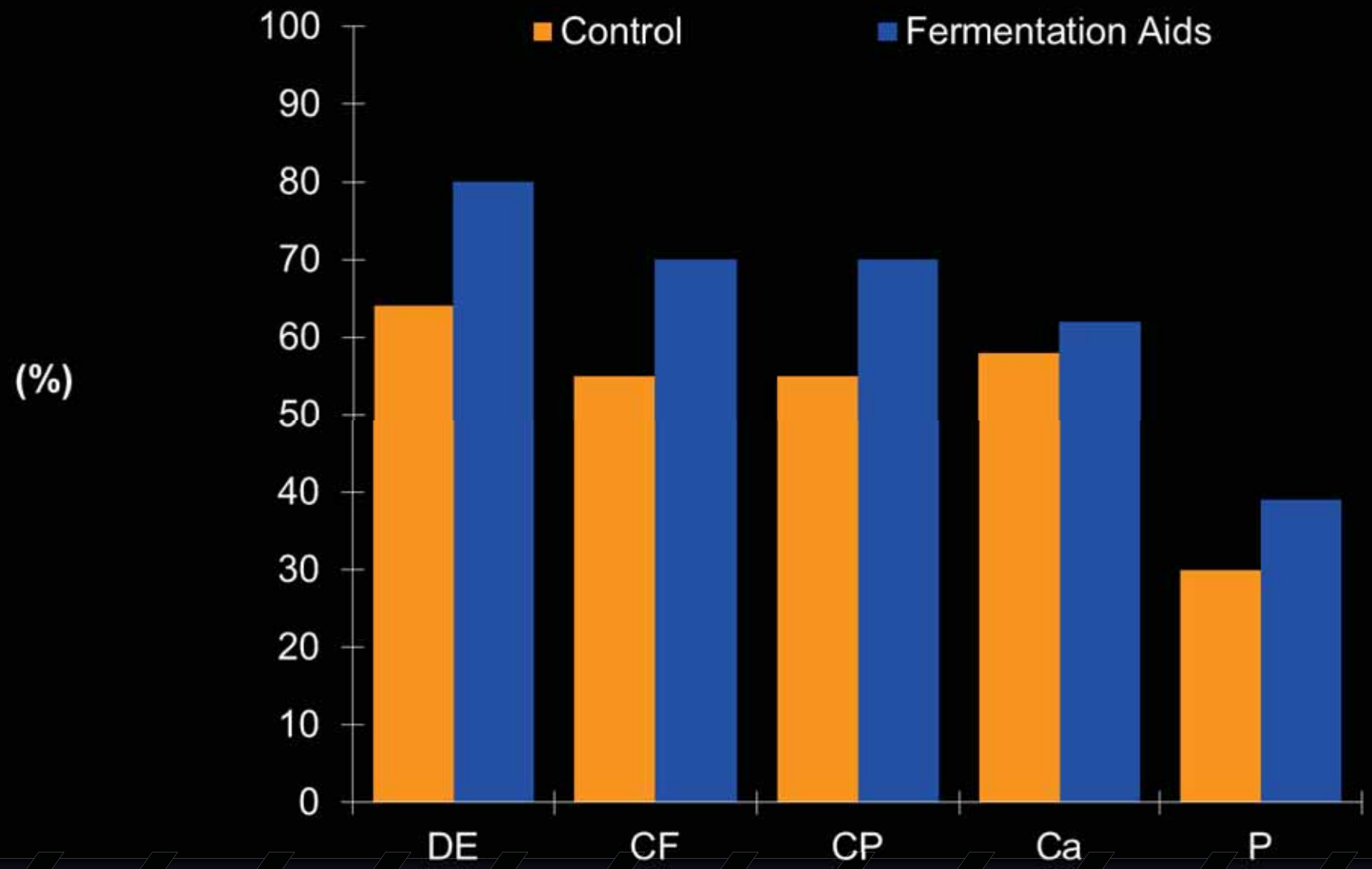
Yeast Cultures & Probiotics

- Enhance health and activity of bacteria in horse's large intestine
  - improves digestion of hay and pasture
  - reduces gas buildup
  - buffers pH (as illustrated in next slide)
  - reduces colic severity and occurrence
  - Guaranteed levels necessary and effective

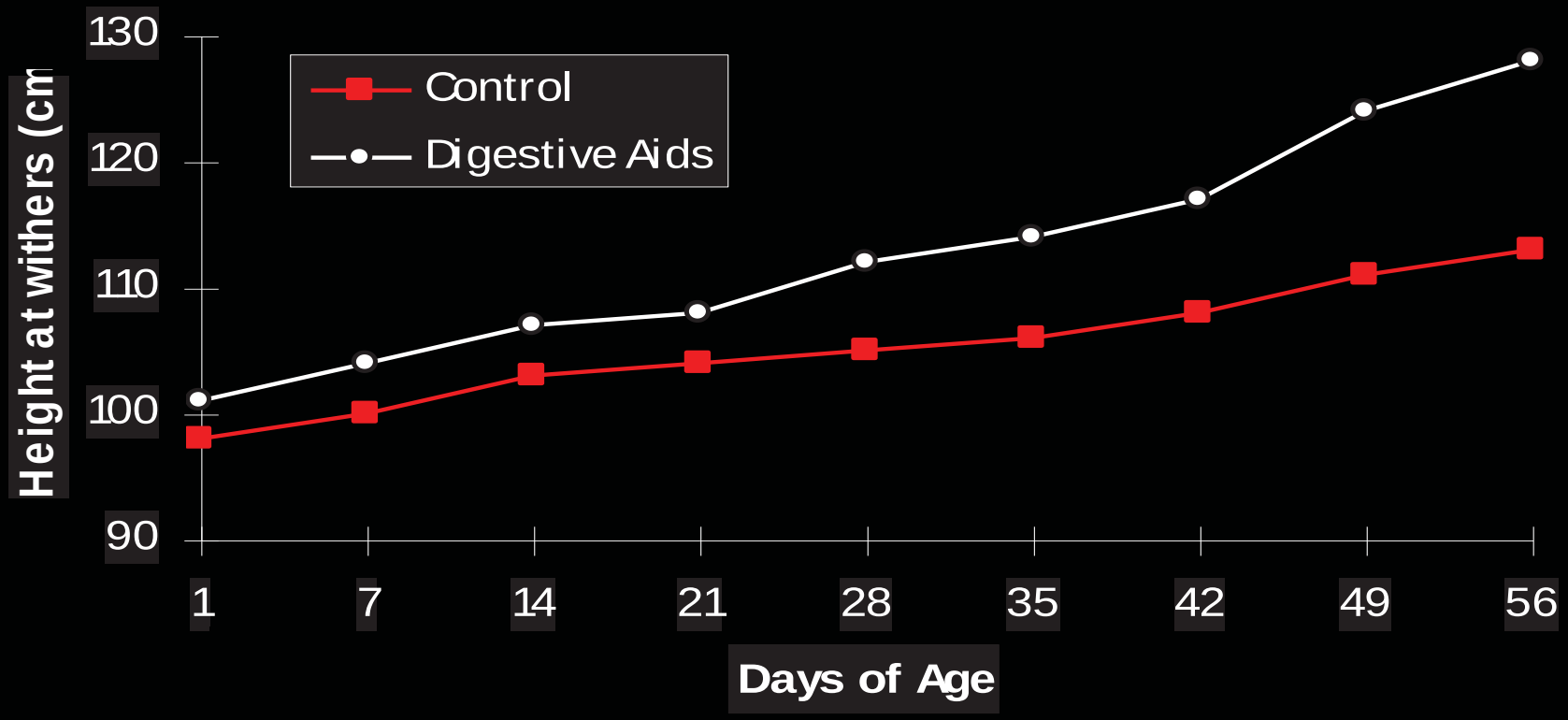
Effect of grain overload on cecal pH horses



Study- use of Live Yeast, pre & pro-biotics, dig enz high Levels necessary to assist (2,500 mil cfu/day)


Control
Fermentation Aids
(%)
100
90
80
70
60
50
40
30
20
10
0
DE
CF
CP
Ca
P

Effect of Digestive Aids on Bone Growth in Horses



Digestion aids

- Now we know how great they are –
- What are they?
- Are they guaranteed at effective levels?

Digestive Aids

- Live Yeast
- Digestive Bacteria (Probiotics)
- Digestive Enzymes
- Appetite stimulators
- Toxin binders

LIVE YEAST CULTURES

- Live strains of yeast, in equine specific cultures are shown to be beneficial to fiber digestion -2,500 million CFU's /day
- Increases protein utilization
- Stabilizes cecal and colon pH
- Improve efficiency of mare diets, better conversion from feed to foal tissues

Probiotic Cultures

- Introduce highly beneficial bacteria to small intestine and fermentation vat (hind gut)
  - improves ecology of fermentation process
  - increases overall digestibility
  - reduces susceptibility to pathogenic bacteria
  - Less chance of colic
  - Without 2,000 – 3,000 million CFU/day – little to no benefit (guaranteed on tag??)

Enzymes and lecithin

- Objective of adding enzymes is to increase the percentage of starch and protein that is absorbed from the small intestine.
- Reducing the starch and protein load on the large intestine improves fermentation
- Less starch entering the hindgut decreases chance for colic and laminitis

- Lecithin aids in digestion and absorption of fats from small intestine (emulsifier)

Appetite Stimulators

- horses under stress often have inconsistent appetites
  - this reduces fermentation efficiency
  - this reduces stamina and performance
- appetite stimulators help to “level off” appetite
  - improves feed utilization and performance

  Anise and Fenugreek Seed

MOS

- Mannanoligosaccharides - bind certain pathogenic bacteria such as E. Coli and Salmonella thereby preventing them from infecting intestine
- Increases immune function
- Used to:
  - successfully prevent or reduce foal scours!
  - help re-establish appetite in stressed horses

Mycotoxin Binders

- Aids in eliminating unseen variations in feed from toxins
- Mycotoxins are found in 80% of hays as well as grain and can trigger colic or lack of condition and performance
- Low level mycotoxins reduce growth and increase chances of horse becoming sick
- Cheap insurance

When should Fermentation Aids be used?

- Broodmares and Growing Horses
  - improved Ca and P availability for bones
- Under-Conditioned Horses
- Performance Horses
- Senior Horses with special needs
- Horses with sensitive stomachs that tend to colic often or tend toward laminitis

Growth & Development

- The same principle (feeding low NSC diet with added fat) can be used to improve growth in young horses
  - Reduces DOD
  - Increases skeletal growth
  - Reduces problems with obesity

What About Minerals and Metabolism?

Organic Minerals Improve:

- Skin, Hair and Hoof quality
- Bone Growth
  - reduce the incidence and/or severity of DOD
- Stress Resistance
- Reproduction

How Do Organic Minerals Work?

- Body tissues that have a high requirement for both minerals and amino acids tend to take up more organic minerals
  - skin, hair, hoof, ovaries, uterus, bone
- As a result these tissues are better nourished and therefore healthier!
- 30% minimum required to have much benefit – TC uses 40% Organic, highest in the industry that we are aware of

Pasture minerals are not always what they should be

- Calcium & Phosphorus are often inadequate
- Trace minerals are often low and/or erratic
- Magnesium is commonly deficient
- Sodium is usually very low

These things can create behavior, bone and production problems

TC Lite or TC 30%

Selenium

- Organic form of selenium yeast that enhances tissue retention for dramatically improved immune response
- Better uterine health, breed back
- A significant reduction in placenta retention time, 50% in problem mares
- Levels not documented to be toxic

Kelp Meal

- Kelp Meal - Ground, dried seaweed
  - Natural source of micro-organic minerals such as boron, chromium, vandium
  - Helps improve structural soundness, and protein and energy utilization
  - Helps increase immune system activity

Benefits of New Technology

- Horse performance is hard to measure, but longevity is not. Horses are living longer more useful lives.
- Insurance policy for unprepared or unmanageable conditions – stress, weather, etc.

How Does This Relate To Triple Crown?

- Triple Crown contains the following digestive and fermentation aids (EquiMix)
  - 6 Organic Minerals – 40%
  - Live Yeast Cultures - guaranteed
  - Probiotics (Digestive Bacteria) guaranteed
  - Digestive Enzymes guaranteed
  - Kelp Meal
  - Mos
  - Yeast based Toxin binder
  - 100% Organic Selenium

Basic Point

- Do not overfeed sugar or starch
- Overweight issues can cause or exacerbate EMS and related disorders
- Exercise your horse
- Use Digestive aids if needed (high levels for chronic sufferers)
- Lengthen warm up/cool down for chronic sufferers

TRIPLE CROWN

Thank You!

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TRIPLE CROWN FEEDS
beet pulp based feeds

Low carbohydrate, high fiber, high fat diets

- fat is from Flax (omega 3), soy bean oil & flax (omega 3 & 6), better immune function, better hair coat, energy without hyperactivity
- Contains Equimix Technology

- ***Triple Crown Complete*** 12% Protein, 12% Fat, 15% Fiber - Excellent for mature horses in work
- ***Triple Crown Growth*** 14% Protein, 10% Fat,17% Fiber - Ideal for weanlings, yearlings and broodmares
- ***Triple Crown Senior*** 14% Protein, 10% Fat, 17% Fiber. Ideal for the older horse, soft to make it easy to chew and digest

TRIPLE CROWN FEEDS

- Triple Crown Lite (pelleted feed)
  - 12% Protein, 3% Fat, 20% Fiber
  - Low carbohydrate, low calorie diet - Excellent for overweight horses, ponies and miniature horses
  - Low Feeding rate – 2# per 1,000 lbs

  Triple Crown Low Starch (pelleted feed)
  - 13% Protein, 6% Fat, 18% Fiber
  - Guaranteed low carbohydrate diet for insulin resistant horses, cushings (thin horses) HYPP, tying up, chronic founder or colic issues.
  - 5# per day, 1,000 lbs to meet vit/min

TRIPLE CROWN SUPPLEMENTS

- ***Triple Crown 30% Supplement***
  - Designed to balance grains or pasture
  - Higher vitamin and mineral fortification
  - Contains Equimix Technology
  - Can improve quality of economical feeds
  - Triple Crown 30% is designed for easy keepers: primarily broodmares in their last trimester and during lactation, foals, yearlings (stocky breeds)
  - Voted BEST VALUE SUPPLEMENT IN AMERICA BY Horse Journal

TRIPLE CROWN SUPPLEMENTS

- **Triple Crown Fish Oil Powder** (Fat Supplement, high in Omega 3 fatty acids, DHA & EPA)
  - 13% Protein, 30% Fat
  - Better coat, skin, immune response and fertility
  - Fat supplement for added calories, weight gain, and coat condition with out hyperactivity
  - Anti-inflammatory response, Increased Circulation= All Tissue's repair faster! (hoof quality improvement)
  - **Triple Crown Omega Max**

    -Human Grade – GMO Free – 2 year shelf life

    -100% Flax Seed (Sliced)

    -Top dress on any feed

    - 17% Protein; 32% Fat; 12% Fiber

Summary

- Use Organic Minerals For Special Applications
  - improve bone growth and reduce DOD
  - improve reproduction in problem mares
  - improve stress resistance in all performance horses
  - improve skin, hair and hoof condition

Summary

- Higher soluble fiber
- Lower NSC level if needed
- Higher fat for consistent energy and performance without hyperactivity
- Use Digestive Aids
  - Less Colic/Laminitis
  - Less RER issues
  - Better health and performance

The End


NOT SEEING RESULTS?
THEN YOU'RE NOT USING
TRIPLE CROWN
FACT: Horse owners who use Triple Crown feed see more results than those who don't. That's because we're focused on providing your horses with the most scientifically advanced nutrition available. And now, we can prove it. Take advantage of Triple Crown's nutrient comparison tool and see how your feed stacks up to the competition. After all, if it isn't good enough for our horses, we wouldn't recommend it for yours.
VISIT TRIPLECROWNFEED.COM/COMPARE
TO DISCOVER THE NUTRITIONAL TRUTH
TRIPLE CROWN.