

## The “Emergency” Temporary Diet - with modifications for Arizona and the Southwest

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Desert Equine Balance

The Equine Cushings and Insulin Resistance (ECIR) group, co-owned by equine nutritionist Eleanor Kellon, VMD, has long supported using a low sugar/low starch diet for horses showing signs of laminitis, founder, insulin resistance (IR) or Cushing’s disease (PPID - pituitary pars intermedia dysfunction).

*The Emergency Diet by Dr. Kellon* as posted on the ECIR group is not intended as a long-term complete diet but as an initial measure to bring symptoms under control until hay can be analyzed to check for suitability and mineral balancing. While some horses may begin to show improvement right away when high sugar/high starch triggers are removed from the diet, most won’t show real changes until their diet has been balanced and their trim optimized for a few months.

This is a modified version of the ECIR Group *Emergency Diet* with some suggestions based on local (Southwest) availability.

### Do Feed –

**Grass hay** – most hay fed in the Southern Arizona area is Bermuda; much of it comes from Imperial Valley, some is grown in Arizona and other areas. As a “warm season grass” Bermuda hay tends to have low sugar and starch levels but can be as high as 13-14% simple sugar plus starch. If your horse is actively laminitic, is showing signs of IR or has high insulin and/or glucose levels, the hay should be soaked (1/2 hour in hot water, 1 hour in cold water) and drained to remove soluble sugars until you have it tested to make sure it is safe.

If your hay is other than Bermuda (i.e. Timothy, orchard grass, etc.), definitely soak/drain until you can confirm by testing that the sugar+starch levels are below 10%.

Feed at a rate of 1.5 to 2.0% of body weight – even if your horse needs to lose weight, do not underfeed! Weight tape and body condition score your horse and weigh all hay and feed. Consider using small mesh hay nets – this will help even out your horse’s energy intake and alleviate boredom.

Many IR horses do not tolerate alfalfa hay, even though it has low sugar+starch levels. Signs to watch for include swelling of the udder (mares) or sheath (geldings, stallions) that subsides when the alfalfa is removed. We really don’t know why some IR horses are alfalfa intolerant while others have no difficulty with alfalfa hay or pellets. It’s safest to exclude alfalfa from the diet initially - once any symptoms of laminitis, IR or PPID are controlled it can be cautiously reintroduced.

Also avoid “small grain” hay such as oat hay; sugar levels in these hays can be quite high.

**Beet pulp** - Beet pulp (BP) is used as a *carrier* for supplement/mineral recommendations and as a *replacement* for higher sugar/starch feeds. Beet pulp should be rinsed/soaked/rinsed till clear to remove surface contamination and any residual sugar. Plain (unmolassed) BP, either as pellets or shreds, is available in most feed stores. (I prefer shreds as they take less time to soak.)

Beet Pulp can be fed in a small amount as a supplement carrier, or can be fed in larger amounts to replace some hay or if a horse needs to gain weight. Beet pulp is not *necessary* in the emergency diet - plain hay pellets or a small amount of a low sugar/starch feed such as Triple Crown Lite can be used as a supplement carrier - it is simply very convenient.

### Add –

- Iodized salt - 1 to 2 oz. a day (approximately 1 to 2 heaping Tablespoons). Regular iodized

table salt added to the beet pulp is fine. If your horse is not used to salt in his feed, start small (1/4 teaspoon or so) and work up.

- Magnesium – 5 grams/day (5,000 mg).
- Vitamin E 1000 IU/day per 500 lbs body weight. Use 400 IU gel caps from the drug store or Walmart, etc.; natural vitamin E is preferred.
- Flax - 3 oz freshly ground flax seed or *stabilized* flax
- Have a *plain white* salt block available at all times.

These add-ins can be added to the beet pulp.

### **Do not feed –**

- Grain (oats, barley, corn, etc.)
- Textured feeds and most pelleted or senior feeds, etc. Even feeds marked “low” or “controlled” starch likely have sugar + starch levels that are too high (>10%) for an actively laminitic or IR horse.
- Grass of any kind (even if it looks dead). Stressed (sparse, short, overgrazed) grass usually has high sugar levels.
- Carrots, apples or treats containing molasses, sugars or grain
- Beet pulp with molasses added
- Mineralized salt blocks

Horses lived and evolved for thousands of years on the basics provided by forage and salt - your horse does not *require* any additional bagged feed in most circumstances. However, the “emergency” diet is a temporary measure and will, at some point, need to be mineral balanced. The ideal way is to have your hay analyzed and use a custom supplement based on the results of the analysis. The analysis will also give you information on digestible energy (DE - calories/energy) which will help guide the amount you need to feed, and crude protein (CP), sugar, starch and mineral levels. Feeding a custom supplement based on your hay analysis may often cost less than using a quality “off the shelf” supplement.

If unable to test hay, using a “regional” supplement can address many of the known deficiencies and excesses in “typical” Southwest hay and include generous levels of copper and zinc to counter the usual excess iron found in these hays.

## **Feeds and Supplements**

### **Commercial Feeds**

There are many feeds advertised as “low starch”, “controlled starch”, “safe xxx”, etc. but few are guaranteed to be less than 10% simple sugar plus starch. The term “NSC” or “non-structural carbohydrates” has mainly been replaced by “ESC+starch” – Ethanol (alcohol) soluble carbohydrates or “simple sugars” plus starch. Almost all “senior” and “complete” feeds have ESC+starch levels that are too high for a laminitic or IR horse.

Three feeds guaranteed less than 10% ESC + starch are:

- Ontario Dehy Timothy Balance Cubes (<10%) – these are balanced by Eleanor Kellon, VMD and can be used as a complete diet with the addition of plain salt, flax and vitamin E (as gel caps). The cubes can be moistened or made very wet for horses unable to chew long stem hay. (These can be ordered by any Triple Crown dealer.)

The “Emergency” Temporary Diet is based on *The Emergency Diet* by Eleanor Kellon, VMD as posted in the files of the Equine Cushings and Insulin Resistance Group <http://pets.groups.yahoo.com/group/EquineCushings/files/> with permission of the author.

- Triple Crown Safe Starch Forage (6.1%) – a “chopped” forage product with added vitamins and minerals that can be used as a complete diet.
- Triple Crown Lite (9.5%) – a pelleted highly fortified “supplemental” feed (2-4 lbs/day) to be fed with hay. While it won’t “balance” your hay, it will, when fed at the recommended rates, provide “minimum” mineral requirements.

Triple Crown distribution has been expanded and many feed stores in the area are now carrying or can order these.

Other feeds may be useful once all symptoms are well controlled or for PPID horses with no accompanying signs or symptoms of insulin resistance.

### Hay pellets

Mountain Sunrise Timothy pellets and Bermuda pellets have no additives and have been successfully used as a 100% forage diet for “senior” horses or others with difficulty processing long-stemmed hay. They have consistently tested low sugar/starch (less than 10%) but can vary from batch to batch and occasionally have tested above 10%. If used as a complete diet, they should be analyzed and mineral balanced and fed with the addition of salt, flax and vitamin E. I like using these to provide some nutritional “variety”.

Alfalfa/Bermuda or alfalfa/Timothy pellets can be fed if additional protein or calcium is needed as long as the horse has no difficulty tolerating alfalfa.

Hay pellets can also be used instead of beet pulp as a supplement carrier.

### Flax

Flax provides Omega-3 fatty acids needed by horses which are fed hay and not on pasture. Hay quickly loses its Omega-3 when cured so should be supplemented for all hay-fed horses. Ground flax also quickly loses its Omega-3 so must be ground fresh or purchased as **stabilized** flax. Three to six ounces per day will provide adequate amounts of Omega-3. Flax (like all fat-containing nutrients) should be stored away from excess heat (i.e. not in a hot barn or tack room).

Flax can be purchased as whole flaxseed from most feed stores and ground fresh as needed or in larger amounts to store in the refrigerator (up to one week) or in the freezer (up to 3 months or so).

Stabilized flax is available from [www.HorseTech.com](http://www.HorseTech.com) as “NutraFlax”. Omega Horseshine is stabilized flax with a small amount of ground oats and a negligible level of added minerals. It’s available from [www.omegafields.com](http://www.omegafields.com) and at some feed stores. Triple Crown now has stabilized flax available but it may not be stocked and will need to be ordered through your feed store.

Flax seed oil (from health food stores) may be used instead of flax seed - two Tablespoons will provide 14 grams of Omega-3.

### Source

Source (the “original” form mixes in easiest) can be used to supply iodine. Feed at about 2/3 of the supplied scoop (approximately 2 teaspoons) to provide between 4 and 7 mg iodine. When using Source, give plain salt instead of iodized salt.

### Salt

An “average” 1,000 lb. horse in Arizona needs a minimum of 1 to 3 ounces of salt (sodium chloride) a day for maintenance, and more when working to replace sweat losses. This should be in the form of loose salt added to the feed or supplied in a small bucket or pan, in addition to a plain white salt block. Most commercial electrolytes do not provide sufficient sodium or chloride and often contain a high level of potassium, which is already abundant in forage.

### **Commercial Mineral Supplements**

An “average” 1,000 lb. horse requires a minimum of 91 mg of copper per day at maintenance. Similar to the human “MDR”, this is a minimum established where illness does not occur, not an “optimal” level. Industry nutritionists generally use 150% of the NRC minimum in formulating rations and supplements (or 137mg for our “average” horse).

For a commercial supplement, I first look for a copper level of at least 125mg or more per serving, then for a zinc level about 3 times the copper. (If they’re shown in “ppm”, divide by 2.2, then by 16 to see how much copper is in one ounce.)

Because high or excessive iron can compete with copper and suppress zinc levels, I **avoid supplements with added iron**, which is often shown in the ingredients but not in the analysis (look for “ferrous”). Southwest “regional” supplements contain higher copper and zinc levels to counter the normally high iron levels in our forage.

Southwest Bermuda hay usually has calcium levels that are more than adequate and some even require additional phosphorus to maintain a correct calcium to phosphorus ratio. The only way to know for certain if a grass hay needs added calcium is to have it analyzed. Avoid supplements targeted for “grass” or “grass hay” – they may cause an even greater imbalance instead of correcting the Ca:P ratio.

### **Bute and Jiaogulan**

Anti-inflammatories such as “bute” (phenylbutazone) can help during the first few days of a laminitis attack but will slow healing in the long run. As long as the horse is eating/drinking/pooping/peeing, resist the urge to continue using bute. A moderate level of pain can be “protective” and reduced activity may lessen the chance of additional injury to the laminae.

The herb Jiaogulan (*Gynostemma pentaphyllum*) has a documented record of improving circulation and was shown to be superior to isoxsuprine in improving hoof circulation in horses with laminitis.

If your horse is in extreme pain, especially if his appetite is suppressed due to pain, do not withhold pain medication per your veterinarian’s instructions. Often, laminitis pain can be relieved by cold hosing or ice and the application of foam pads and padded hoof boots.

### **Grazing Muzzles**

If your horse is sound enough to be turned out and the only area available is in pasture, use a grazing muzzle. If your horse has active laminitis or IR, completely tape over the openings so there is no access to grass (or other “green” stuff). Horses wearing grazing muzzles need to be observed fairly frequently, and they should be attached to a break away type halter. Most horses adapt quickly and seem to prefer being out with the herd in a muzzle to being confined.

### **Expectations**

If your horse has been diagnosed with laminitis or founder, he will not be fully sound until there has been at least one full growth cycle of the hoof capsule - and the following conditions are also met:

- PPID symptoms are well controlled (if present, usually only in aged horses)
- IR symptoms are well controlled (IR may be present in very young as well as older horses)
- Hooves are trimmed for ground parallel coffin bone
- Horse is exercised as tolerated (not forced or not medicated to “allow” movement)

When changed to the “Emergency” diet IR horses should begin to show improvement in their signs and symptoms fairly quickly. This should include:

- Reduction in crest size and firmness
- Reduction of fatty deposits behind shoulders, at tail head and above eye orbit
- Reduction of excessive drinking and urination
- Improved energy

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- Less foot soreness if mildly chronically laminitic

This should be followed up by placing the horse on a mineral balanced low sugar/low starch diet for long term maintenance.

Even with diet changes, horses with PPID may show little or no improvement or change until they are placed on medication - either chaste tree berry (*Vitex agnus-castus*) or pergolide (compounded or Prascend).

### **Feeling Overwhelmed**

By now, your world has probably been turned upside down and you might be feeling a bit intimidated by all the new information. The very first thing you need to do is take a deep breath and realize you don't need to learn everything at once. Grass hay, soaked & drained if not tested, salt and water are the basic minimum requirements your horse needs and will buy you thinking time. Your horse will be fine without anything that comes in a bag or a bucket for a long time.

Next, join the ECIR Group, work with your vet to order pergolide or chaste tree berry (if needed for PPID) and to get X-rays and work with your trimmer to get your horses padded with foam or boots for comfort if he has laminitis.

***Don't waste your hard earned money*** on expensive "magic" supplements - what your horse will need nutritionally in the upcoming weeks is readily available (either locally or see the links below) at reasonable cost. Hay analysis is affordable (\$32 for most hay), as is nutrition consulting. Use your nutritionist to work on finding the most cost effective ways to provide your horse's nutritional needs.

Do invest in good boots such as Soft-Rides (or EasyBoot Trails which should be oversized to allow for padding) that are easy and convenient for you to use, and in frequent trims (which may need to be every two weeks or so for a couple of months). If you have more time and energy than cash, ask your trimmer to show you how to maintain "touch ups" between trims and consider continuing taped on foam for padding and clean wash sand for supportive footing.

If you board it will be a little more difficult but you can do it! You will also hear a lot of conflicting advice and suggestions. Think them through, use common sense and trust your gut. I try to stay with science-based recommendations but also try to remain open to other ideas - just make certain anything you do try won't cause harm.

## **Resources and links**

**ECIR Horse** – learn about the causes, signs, diagnosis and treatment of endocrinopathic laminitis and founder, Insulin Resistance and Cushing's disease on this easy to follow website  
<http://ecirhorse.com/>

**Equine Cushings and Insulin Resistance group** – help and support for horses and their owners  
<http://pets.groups.yahoo.com/group/EquineCushings/>

**Horse Tech** – quality flax-based supplements, custom supplements and individual minerals (including magnesium oxide in small quantities)  
<http://www.horsetech.com>

### **Triple Crown Feeds**

TC is the only US manufacturer that lists carbohydrate levels of their feeds *and* has feeds with ESC +Starch <10% which is the target for laminitic, foundered and IR horses.  
<http://www.triplecrownfeed.com/article/carbohydrate-values-triple-crown-horse-feeds>

### **Desert Equine Balance**

Information on AZ Copper Complete and other regional supplements  
<http://www.desertequinebalance.com>

Articles:

*You Want Me to Eat What?*

Basics about beet pulp and some tips for boarders

*Introducing New Feeds and Supplements to Your Horse*

(aka "Salting the Environment" or "Taking the Time It Takes")

*Small Mesh Hay Nets*

What you need to know in pictures

<http://www.desertequinebalance.com/articles>

### **Best Friend Grazing Muzzles**

Basic to deluxe

<http://www.bestfriendequine.com/horse-grazing-muzzles.htm>

also available at many other online equine supply sites

### **Jiaogulan (Jiao Gu Lan, "J-herb")**

*Gynostemma pentaphyllum*

Helps improve circulation in the hoof

<http://www.mybesthorse.com/>

<http://www.mountainroseherbs.com/>

<http://www.herbalcom.com/>

### **Chaste Tree Berry**

*Vitex agnus-castus*

Has similar action as pergolide

<http://www.mountainroseherbs.com/>

<http://www.herbalcom.com/>

### **Compounding Pharmacies**

For compounded pergolide; contact for ordering instructions. Request capsules for greatest shelf life. (Also carry Prascend; best price found at Thriving Pets)

<https://www.thrivingpets.com/>

<http://www.wedgewoodpetrx.com/>

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### **Soft-Ride Comfort Gel Boots**

The ECIR group has found these to be the most comfortable and pain-relieving for most horses recovering from laminitis.

<http://www.softrideboots.com/>

### **EDSS Styrofoam Support Block System**

First line support padding for acute laminitis. Can also use closed cell construction foam from building supply store. Plan on lots of duct tape. The video (at bottom of page) also extremely helpful.

<http://www.hopeforsoundness.com/cms/styrofoam-support-pad-instructions.html>

### **Local Feed Stores (Arizona)**

Arizona Feeds has been able to supply magnesium oxide in 50# bags for under \$35.

Any Triple Crown dealer can order TC Safe Starch Forage or Ontario Dehy Timothy Balance Cubes.

There may be a two to four week lead time to actually stock these; the store owner can contact their TC rep to see if these can be obtained more quickly. TC Lite is <10% sugar/starch and considered "safe" for an IR or laminitic horse.

Nutrena has begun to list sugar and starch on their website, but these feeds are still too high for an IR horse with uncontrolled insulin or an actively laminitic horse. Their Empower Balance (30% protein) and Safe-Choice Special Care are both appropriate for a PPID horse which is not insulin resistant.

The "30%" highly fortified Triple Crown and Nutrena feeds can supply adequate minerals to meet requirements but do not account for high iron or other excesses or deficiencies in your hay. Most feeds should be considered "balanced to themselves" and will not "balance" your hay.