

Down on the Farm



By JOELL M. BREWSTER

For anyone in the breeding industry, weaning stress is a very important issue. How to minimize this stress is a top priority.

Research shows that weaning stress can cause suppressed immune function (leaving foals vulnerable to infection), fluctuations in growth (possibly setting them up

sure immune cells. In the study, human subjects were given an adaptogen extract for 30 days. The adaptogen group showed an increase in all immune cells measured: T-helper/inducer (CD4) increased by 80 percent, cytotoxic T-cells (CD8) increased by 67 percent and; NK (natural killer) cells increased by 30 percent. Overall, the adaptogen group showed a total increase in T-cell numbers of 78

Nutritional Management of Weaning Stress

for developmental orthopedic disease—DOD), and gastric ulcers. Unfortunately, these are only a few of the potentially serious consequences to which a foal can fall prey during the stressful weaning period, any one of which could seriously impact the foal's racing career.

Good management practices can do much to alleviate the stress load on foals during this critical period, including:

- socializing them well to enable them to behave in a herd without their dams;
- insuring that they are nutritionally independent and have been sufficiently exposed to their 'new' diet;
- waiting until they show indications of becoming emotionally independent.

After that, it's anybody's guess, with veterinarians, breeders, and farm managers recommending numerous methods to get the job of weaning done while lessening the stress to bring their babies through healthy and sound.

One idea that is rapidly gaining ground is the use of adaptogens, plant compounds derived from specific herbs, to help lessen weaning stress. As the name suggests, adaptogens aid the body in its capacity to 'adapt' to stress. They do this in a number of unique and remarkable ways.

One of the most studied actions of adaptogens is their ability to enhance immune function. In a very convincing study done in Germany, flow-cytometry was used to mea-

percent. This measured increase in immune cells has obvious implications in reducing the incidence of respiratory disease in foals. In another study conducted over a period of seven years, human subjects were given an adaptogen extract daily. During this period, the incidence of respiratory disease in the population decreased from 41.8 percent to just 2.7 percent!

For many this would be reason enough to add adaptogens to their foal management practices, but there are other quite remarkable benefits provided by these herbs. To understand these benefits, one must understand the cascade of complex metabolic effects that occur during the stress response.

Metabolically speaking, the stress response is a protective response to an event that poses a threat (whether real or perceived) to an animal's well being. Physiologists have long described this response as readying the body for 'fight or flight.' For anyone who has witnessed the frantic reaction of a foal and dam separated in the first hours or days of weaning, this phrase fits perfectly.

One of the key events in the stress response is the release of cortisol by the adrenal glands. Cortisol is a hormone with wide-ranging effects on tissues throughout the body. One of the most widely recognized is its immunosuppressive effect.

Continued on page

But it also has a negative impact on energy regulation, which has important implications: cortisol decreases the movement of glucose from the bloodstream into muscle cells (and several other types of cells). This is meant to be a protective response, in that it conserves blood glucose for essential functions, such as brain activity. However, during the prolonged stress of weaning, cortisol decreases the availability of this energy source to the young foal.

Due to the blocking effect of cortisol on energy metabolism, prolonged stress can literally starve the cells of energy. This physiological effect has been well studied and is defined as the General Adaptation Syndrome or GAS. This General Adaptation Syndrome is a three-stage process:

- Stage One—Alarm
- Stage Two—Resistance
- Stage Three—Exhaustion

The GAS model of stress has been considered valuable in measuring the stress response because its stages are readily graded, and the functional changes that take place in them have been well studied. But, perhaps this stress model is most important because any disease passes, to a certain extent, through one or more of these stages.

With the addition of adaptogens to the diet, the first two stages, in particular, are handled very differently. Adaptogens modify the alarm phase and increase the resistance phase. This is critical, as these benefits provide unique protection to a stressed animal by helping to maintain optimal cellular function long before the onset of exhaustion.

When adaptogens are added to the diet, the animal still mounts an appropriate response to a stressful event, but the changes in cell function that result are more moderate and have less of an adverse effect on the entire body. The general action of adaptogens is well illustrated by looking at the effect of stress on blood glucose levels. Shortly after the animal becomes stressed, the stress hormones (adrenaline and cortisol) cause a rapid increase in blood glucose. Once it peaks, the blood glucose rapidly falls to lower than normal levels. Adaptogens moderate this response in the following ways:

- more rapid but less exaggerated response—blood glucose rises more rapidly after the onset of stress but doesn't rise as high;
- more sustained peak—blood glucose is elevated (and available for cell function) for a longer period of time;
- more gradual decline—a less precipitous drop in blood glucose.

In other words, adaptogens do not block the stress response; rather, they smooth out the 'roller coaster' highs and lows associated with the stress response. This conserves valuable energy in the alarm phase for use in the resistance phase. These effects appear to be related, at least in part, to adaptogens' effects on glucose metabolism:

1. They increase the blood glucose level by stimulating the liver to convert glycogen to glucose;
2. They enhance the entry of glucose into cells;
3. They enhance the utilization of glucose within the cells.

Electric Flatbed
Clean & Quiet!

Standard Equipment:
Head & Tail Lights
Horn
Bed Size 45" x 72"
1500 lb. Capacity

Base Price
\$4,495.00

800 / 451-0676
Santiago Golf Car Supply, Inc.

Complete Line of
Golf Cars & Industrial Vehicles Available

The advertisement features a black and white photograph of a woman in a white shirt standing next to a white electric flatbed golf cart. The cart is loaded with hay and has a horse standing behind it. The background shows a building with a sign for Santiago Golf Car Supply, Inc. and stacks of white containers.

To the stressed foal and his dam, these effects on cellular metabolism could have significant benefits.

To put these findings to the test in horses (previous clinical studies had been done primarily on lab animals and humans), Michael Van Noy, DVM, President of Auburn Labs LLC, ran a small two-year pilot study at a sporthorse breeding farm in California. After two years of using adaptogens on a daily basis from three days

after birth through weaning, the farm reported an appreciable drop in expected respiratory disease in their foals and an obvious reduction in the observed stress of weaning.

For more information on adaptogens and their use in race and performance horses of all ages, contact Auburn Laboratories LLC at 1-877-661-3505 or visit their web site at www.auburnlabs.com

What are Adaptogenic Herbs?

There are literally hundreds of herbs studied and used for various nutritional and medicinal applications. However, the category of adaptogen includes fewer than two dozen. The following is a list of some of the herbs categorized as adaptogens:

Eleutherococcus senticosus

Commonly referred to as Siberian ginseng, *Eleutherococcus senticosus* (E. S.) is not a ginseng at all. Considered to be the 'King of Adaptogens' by Russian researchers, it exhibits a wide range of beneficial and protective actions in the body. Numerous clinical studies have shown E.S. has a proven ability to help cells absorb glucose. E.S. has also been shown to be a powerful immunomodulator, strengthening the immune system significantly when used on a daily basis.

Schizandra chinensis (Chinese Magnolia Vine)

Schizandra chinensis has been shown to assist in the utilization of oxygen within the cell. Another interesting effect of *Schizandra chinensis* is the ability to suppress

excessive stomach acid. This may be shown to have a beneficial effect on the management of horses prone to ulcers.

Rhodiola rosea (Golden Root or Artic Root)

Rhodiola rosea has no biological relation to the 'common rose', but due to its similar fragrance, has been used as a substitute for Attar of Roses. Used for centuries to enhance mental and physical function, it has been shown in clinical studies to increase the blood supply to the muscles and brain, and also to increase protein synthesis. Cardio-protective, *Rhodiola rosea* improves heart rate recovery immediately after intense exercise. Perhaps just as importantly, it has also been shown to increase the body's ability to access lipids (fats) as an energy source.

Echinopanax elatus (Asian Devil's Club)

As its name implies, this plant is a relative of *Panax ginseng*, but with very different qualities. Unlike true ginseng, which can have side effects with long-term use, *Echinopanax elatus* exhibits a more indirect effect. It is particularly effective in regulating blood sugar and protecting cardiac function.



BALLENA VISTA FARM

26353 Old Julian Hwy. • Ramona, CA 92065 • (760) 789-3900 FAX (760) 789-7751

Inquiries to: Janine McCullough, Director of Operations
or Manuel Ochoa, Farm Manager



Ready to provide you with the service you deserve!

WWW.BALLENAVISTAFARM.COM