

A Different Look at Blood Composition in Performance Horses

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Blood Composition Evaluation in Horses: Not an exact science!

Many trainers pull blood on their horses for routine checks on fitness and readiness to compete. However, the interpretation of blood results is not an exact science, and failure to look at the entire blood report may give misleading information. Looking at only one or two items on a blood report is a bit like trying to describe an elephant while blindfolded, one can walk away with significantly different impressions if the whole report is not evaluated in its entirety. Even when the entire blood report is considered, many times the final interpretation of results is as much art as it is science. Individual horses can display significantly different blood parameters when they are performing at their peak. Therefore, knowing the horse's individual characteristics and applying them to a given blood report is just as important as the raw data provided by the blood report itself.

Timing and Frequency of Blood Samples:

The results of any individual blood sample taken from a performance horse will be affected by when the blood was actually drawn. The most important thing when using blood analysis for measuring fitness is to use a standardized protocol. Usually, the very first thing in the morning immediately after the lights go on is the best time of day to get a base line blood composition. As soon as horses become active either physically or emotionally certain blood parameters can begin to change (PCV for example due to contraction of the spleen). Additionally, taking only one blood sample may not provide an accurate picture of what is going on with an individual horse. For example, bilirubin values may be high immediately after a race but a decline to normal within a day or two may indicate the horse is actually fit and recovering well, whereas a slower decline to normal over a period of 7 – 10 days may indicate that the horse needs additional time to recover before resuming its normal training program. These differences can be due to individual differences between horses and do not necessarily have any reflection on the horse's training or nutrition program. Therefore, when using blood composition as a tool in your training program it is important to standardize when and under what conditions blood samples are actually taken and to also take multiple samples if any blood parameters are in question in order to get a more realistic picture of what is going on with an individual horse.

Can a horse perform beyond its fitness level and what affect does this have on blood composition?

Research has demonstrated that nutrition can affect a horse's ability to perform. In most cases, a horse's stamina level can be improved with proper nutrition and training, innate speed and agility tend to be determined by the individual makeup of the individual horse. But what if the nutrition and training programs are not perfectly in sync with one another? Is it possible for a horse to outperform its training level because it received a superior nutritional package? Yes, but only for a short period of time before it starts to "back up". For example, including fish oil in a race horse's diet has been shown via independent university research to lengthen stride length and therefore speed. Therefore, if a trainer is using galloping times for specific distances to measure fitness he/she may well over estimate the fitness level of an individual horse and begin pushing it too hard in its training program, or in other words begin to over train the horse. Over training can be reflected in routine blood work. Horses that are being worked beyond their fitness level will not improve their fitness level; instead they will tend to level off or may even back up. In worst case scenarios, certain body tissues such as bone or tendons will begin to fatigue and this in turn can lead to breakdowns. Such conditions can be reflected in certain blood parameters; for example: Alkaline phosphatase levels increase when bone is stressed and/or bone turnover rates increase; PCV and hemoglobin levels decrease as a result of the horse using up these constituents faster than they are being produced (a true symptom of over training); the ratio of neutrophils to lymphocytes can be used to detect chronic stress in a horse. Keep in mind that horses not in training rarely have abnormal blood composition if they are sound and healthy, even if their nutrition program is less than optimal. It is only when horses are asked to perform beyond their fitness level or they have a physical anomaly that they exhibit abnormal blood composition.

What Does It All Mean?

The take home message here is that if your nutrition program is half way decent abnormal blood parameters are most likely due to metabolic changes and challenges in the horse, not nutrient intake. This is not to say that nutritional deficiencies do not cause anemia or other abnormal blood composition, because they can. However, the incidence of true nutritional deficiencies causing these problems in well cared for and fed performance horses is not very common. If your horse exhibits abnormal blood chemistry the most common and usually most effective remedy is to back off the horse's training program and allow him or her to catch up with themselves in terms of what they are being asked to do. A superior nutrition program will allow your horse to eventually reach a fitness and performance level that it may not have been able to do otherwise. Your job as the trainer is to ensure that the horse is ready for the next training level before pushing him or her beyond their limits.

Triple Crown Feeds Bring You Superior Nutrition

Triple Crown feeds guarantee more minerals and vitamins on the feed label than most other equine feeds. Our equine feed specialists are able and willing to evaluate your horse's nutrient intake to ensure that they are receiving the proper amount of all nutrients in order to perform at their optimal level. Triple Crown feeds incorporate several nutritional technologies to enable your horse to maintain an accelerated training program and optimal fitness level. Many horses receiving Triple Crown feeds exhibit PCV and hemoglobin levels at the lower end of normal, this is due to increased total body hydration and often times to increased fitness levels. Be sure to evaluate other blood composition parameters including enzymes, white blood cell counts and erythrocyte sedimentation rate before assuming your horse has a blood composition problem. If a problem is suspected, evaluate the conditioning program first to see if the horse is stressed. Triple Crown wants you to succeed, please contact us with any questions or concerns you might have about your horse or our products.