

Blood Tests in Endurance Horses

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A healthy horse maintains a concentration of red and white blood cells, blood protein, electrolytes, muscle, liver and kidney enzymes and other blood components within defined limits or 'normal' range, relative to its age, breed, degree of fitness and nutritional adequacy. The 'normal' range of values is established by analysing blood samples from a large number of healthy horses of various ages and levels of fitness. Deviations from the normal range, either above or below the limits of the range, in one or more blood components, can signify an underlying disease process. The degree of these changes can be used to determine the relative severity of a disease, deficiency, level of stress or response to training.

A comparison of parameters between two or more successive blood tests can be used to highlight the underlying reasons for a less than optimum performance and medical problems that can affect a horse's health. The use of blood tests to determine dietary deficiencies or imbalances is of limited value in endurance horses, with the exception of electrolyte abnormalities that could be associated with lack of stamina, muscle soreness or 'tying-up', or chronic dehydration.

Blood tests can also be used to determine the dehydration state, degree of anaemia, a possible underlying cause of poor performance, the immune response to and rate of recovery from, infection, as well as metabolic conditions such as 'tying-up', bone stress and liver abnormalities.

In endurance horses, blood counts of red and white cells have limited value in assessing the relative degree of fitness for long distance exercise. However, if a horse lacks stamina, fails to recover within a standard time, has an elevated temperature or symptoms of muscle soreness and 'tying-up', then a blood count and biochemical values may be useful in establishing the severity of the problem and a possible underlying cause.

The most accurate and repeatable results that reflect the health status of a horse, or used to compare changes between successive blood tests, are obtained when the blood sample is collected before exercise or daily training, prior to feeding and when the horse is relaxed and at rest.

Reading the Blood Test

This is a job for your vet. It is paramount that blood cell count and biochemical results are interpreted in conjunction with as much clinical information that can be provided at the time the blood sample was taken. Your vet will normally carry out a full clinical examination at the time of collection to confirm or establish a diagnosis. An elevated white cell count, for example, is strongly indicative of an underlying infective process, which may be confirmed by an elevated temperature and clinical signs of local swelling, discomfort and in some cases, an infective discharge.

However, if you collect the blood yourself and forward it to your vet or direct to the testing laboratory on your vet's behalf, ensure that your vet has a full history, TPR and clinical assessment, and details of the training program, especially when a horse is obviously debilitated or has had a recent metabolic episode, such as 'tying-up' or the 'thumps', viral respiratory infection or an infected wound, hoof or skin abscess.

There are also some variations between individual breeds and animals relative to their normal blood parameters and ability to perform, how they react to infection or the stress of long distance exercise. As an example, the red cell numbers and haemoglobin content of blood taken from a fit endurance horse will invariably be 10-20% lower than the parameters of a racing or sprint horse, which reflects their specific requirement for higher oxygen uptake at faster speeds. The 'normal' endurance parameters would be regarded as being indicative of anaemia in a racehorse, even although the long distance horse is "fit" for the speed and intensity of average endurance competition.

The differences between individual animals may also reflect the training and feeding methods used by riders, without affecting their ability to perform at the highest level. These may need to be taken into account when interpreting changes in blood electrolyte concentration and balance, in combination with specific clinical signs, length of time in training, and a history of less than expected performance or vet-out in a ride.