

Effects of Essential Supplementation on Blood Parameters in Throughbred Horses under Heavy Training



Objectives

To evaluate the effects of the supplementation of Essential in horses submitted to strenuous physical exercise.

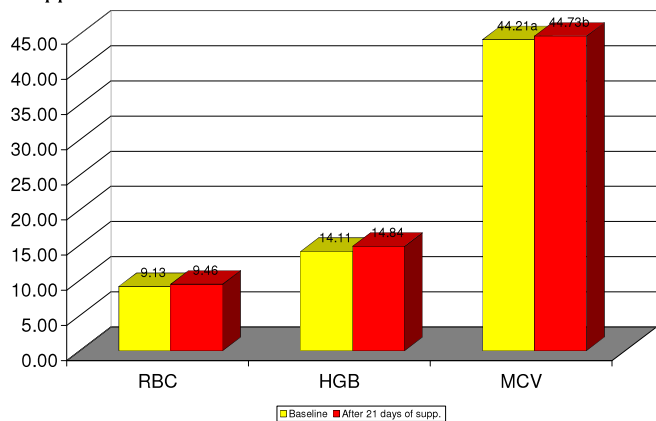
Materials and Methods

Seven Throughbred horses under heavy training were supplemented with 10 g/day of Essential during 21 days. Blood samples were taken at the beginning and at the end of the experiment and the following parameters were analyzed: white blood cells (WBC), red blood cells (RBC), hematocrit (HCT), mean corpuscular volume (MCV), mean corpuscular hemoglobin (MCH), mean corpuscular hemoglobin concentration (MCHC), platelets, neutrophils, lymphocytes, monocytes, eosinophils, basophils, sodium, potassium, chlorine, glucose, blood urea nitrogen (BUN), creatinine, calcium, phosphorus, total protein, albumin, AST, alkaline phosphatase, total bilirubin, CGTP and CPK. Statistics. An analysis of covariance was done using Essential supplementation and animal as discrete variables and serum albumin concentration as a covariate. Serum albumin gives an indication of the hydration state of the animals.

Results and Discussion

Mean corpuscular volume and calcium significantly increased ($P < 0.05$) and phosphorus decreased ($P < 0.01$) after supplementation. There was a tendency ($P < 0.1$) for a decrease in sodium and CPK. No other differences were significant.

Figure 1. Red blood cell (RBC), hemoglobin (HGB) and mean corpuscular volume (MCV) before and after 21 d of Essential supplementation.



Mean corpuscular volume is a measure of the average red blood cell volume, which would indicate higher oxygen transport capacity in the animals after supplementation. Essential antioxidant activity might be increasing the red blood cells life span, increasing the final total number. Other values related to MCV like RBC or HCT were numerically higher for the horses after supplementation.

Phosphorus is one of the main buffering systems in the blood and lower numbers indicate less need for buffering. This would indicate an improved energy metabolism and lower metabolic acidosis. An improved energy metabolism would also result in less oxidative stress and would relate to the lower CPK levels. As CPK indicates tissue destruction, lower levels indicate better cell membrane integrity. Again, this indicates either a better antioxidant capacity, a more efficient energy production system or both.

Conclusion

Essential supplementation improved the antioxidant capacity and energy metabolism of training Throughbred Horses.

Figure 2. Creatine Phosphokinase levels before and after 21 d of Essential supplementation.

