A 38-horse study of a supplement with glutamine and other amino acids designed to support the equine GI tract.

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Introduction: This 38-horse study was undertaken to test a feed supplement intended for distribution exclusively through veterinarians, formulated to support the GI health of horses facing the challenges of training, intermittent feeding and performance.

This Veterinary Formula (VF3) is composed of natural ingredients, including oat oil high in polar lipids, oat flour high in beta glucan, amino acids (including glutamine), nucleotides and yeast extracts. Glutamine is known to provide nutrition for enterocytes, so its inclusion is directed at supporting normal cellular growth and repair throughout the GI tract.

VF3 is a modification of a nutritional supplement for horses that has been on the market since 2004. VF3 includes the components of the original product with the addition of several amino acids and B vitamins. This study investigates blood work of horses fed the VF3 product over the four-month period from August 2013 to December 2013.

Methods: For four months, from August 2013 to December 2013, 38 performance horses (in training) were used to conduct a controlled study of a veterinarian-exclusive formulation (VF3) containing .785 g/serving of glutamine. The serving size was 26.5 g, fed once each day according to manufacturer instructions. For a typical horse of 500 kg, the daily feeding of .785 grams of glutamine amounts to .000157% of body weight, or 1.6 mg/kg BW. For comparison, amounts of glutamine four hundred times higher, up to 650 mg/kg BW, are tolerated well by human subjects. The goal of the study was to establish that blood panels of horses on the VF3 product remained within normal reference guidelines before marketing this version of the veterinarian product.

The horses were housed in three barns and placed on similar training and feeding regimens. All horses had water *ad libitum* and were fed TID on feed supplemented with grain. The horses were split into two randomly selected groups, with 20 horses on the formula and 18 horses as controls.

Blood counts and chemistry profiles were analyzed at the beginning of the four-month study and monthly thereafter for a total of five blood panels.

Results: All blood counts and chemistry stayed within normal limits for the entire span of the study. For the normal reference limits, we used those defined by Merck and UPenn. Each measurement of the study included the following standard equine panel:

The following are blood panel charts showing VF3 vs. controls for each of the monthly tests. The thick horizontal lines indicate the upper and lower limits of the normal range for each blood component.
Discussion: A new Veterinarian-exclusive formula (VF3), based on an existing oat-based feed supplement but with added amino acids and B-vitamins, showed no blood abnormalities over four months of daily feeding. Each blood panel, from both the control and VF3, were consistently within the reference ranges over the entire four-month period.

Within those normal ranges, it can be seen that the hemoglobin (HGB) levels were significantly improved over the controls. The differences in the levels are well outside of the standard deviation at each point. (In these graphs, in order to plot the data within the normal range, the y-axis has been compressed. This may make it difficult to make out the error bars at some print resolutions. In these cases, the error is within the size of the icon representing the data point.)

The amount of RBCs also improved significantly over the controls in four of the five months of testing. Serum hemoglobin provides oxygen for the high metabolic rates involved in athletic performance.

Total protein (TP) was significantly higher in 3 of 5 months and showed continued improvement. Albumin (Alb) also showed significant, steady improvement over controls throughout the study. Taken together, these blood component improvements may indicate a decreased permeability of the GI tract, a common site of normal blood loss.

Based on these results, it may be concluded that this product, with glutamine at .785 g/serving, is not detrimental to normal blood counts or chemistry profiles and may provide the benefit of diminished gut permeability and increased oxygen-carrying capacity.

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