

Nutrition - The "Hidden Handicapper"

To Supplement or not to Supplement?

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Exercising horses have increased need for energy, Vitamins E, B12, thiamin, folic acid, biotin, iron, iodine, electrolytes and magnesium. **The nutrients in roughages and grains are far below the levels required for growth and performance. Supplementation of the average conventional diet is required** to supply energy demands, to replenish nutrients lost during work and to balance nutrient levels. *Many borderline nutritional imbalances and deficiencies* won't create overt clinical disease, but their effects are undetectable and indefinable - *poor performance, failure to reach performance, track breakdowns, reduced race winnings*. For this reason, incorrect feeding has been dubbed '**the hidden handicapper**'.

Correct nutrition is essential for expression of genetic potential. Nutritional imbalances play a major role in *disease and poor performance syndromes*, and *nutritional manipulation* may potentiate or inhibit performance. So it is important to **ensure that the diet is not the limiting factor for performance.**

The higher the level of desired performance, the narrower the optimal range of a nutrient. The horse in work has increased requirements for nutrients to perform hard exercise, but intake above requirements *cannot improve performance*. A surplus is as dangerous as a deficiency, such that a delicate balance is required between feeding enough to achieve best results and overfeeding just enough to cause disorders or inhibit performance.

78% of horses fed supplements are likely to receive excess energy, protein, calcium, phosphorus, magnesium, copper, manganese and zinc - at levels high enough to unbalance rations significantly. Excessive levels of individual nutrients occur up to 10 times more frequently when supplements are supplied - and deficiencies may still exist. Thus, vitamin and mineral supplementation may not improve the quality of the diet and in many cases can result in *significant imbalances*. Using several supplements can lead to overlap and hence an increased risk of excesses and subclinical toxicities (Jackson, 1996).

Supplements should only be used on veterinary advice and guidelines for the use of supplements include:

- **diet analysis** to detect deficiencies;
- product must be **formulated** specifically for horses;
- **high intakes** may occur in group-feeding situations;
- awareness of **potential toxins** such as fluoride,
- **purpose and likely effect** of supplement must be understood.

Balanced formulated rations are required. Research over the past 20 years has shown that it is possible to more precisely match the nutrients supplied by the feed, to those required by the horse. Computer-based diet analysis **takes the guess work out** of ration formulation and **removes many of the unknowns. Analysis of processed manufactured feeds allows them to be matched to** the needs of the horse, avoiding the need for supplementation and the attendant dangers. Providing a balanced complete feed is less expensive and meets the horses nutrient requirements better than providing a range of supplements without careful calculation and comparison of what is being supplied relative to what is required. Veterinary advice and analysis of total dietary nutrients will avoid the risks inherent in providing several supplements to cover all requirements.

Combining science and practical horsemanship allow us to feed the performance horse such that performance is not limited by what is, or isn't, in the feed bin.

CONSEQUENCES OF EXCESSIVE NUTRIENT INTAKES*	
Protein	reduced muscle energy levels; prolonged race times; respiratory irritation; body fluid and electrolyte loss
Energy	fatness, laminitis, diarrhoea, colic, impaired nutrient absorption
Iron	may induce selenium, copper, zinc, phosphorus (leading to poorly mineralised bone), copper and vitamins E and B12 deficiencies
Phosphorus	reduces iron availability
Magnesium	interferes with the levels and functions of sodium and potassium
Potassium	may produce nervousness, muscle tremors, loss of appetite, heart rhythm abnormalities and disturbance of sodium balance
Sulphur	can react adversely with selenium and copper
Zinc	can cause copper and selenium deficiency, anaemia and bone and joint abnormalities, lameness and stiffness
Copper	reduced liver function, selenium and copper deficiency
Manganese	nervous problems, muscle tremors and anaemia
Selenium	dullness, depression, loss of appetite, weight loss and hoof damage - due to wall separation - and lameness
Iodine	contracted tendons, hair loss, goitre
Fluorine	diarrhoea, bone lesions, lameness, general unthriftiness
Vitamin A	depressed growth, reduced iron, albumin and cholesterol, low red cell count, lameness
Vitamin D	calcium deposition in blood vessels, heart, lungs, kidneys, weight loss, bone and joint damage
Vitamin K	colic, laminitis, kidney damage
Electrolytes	dehydration
Calcium	deposits in tendons and other organs, bone and joint abnormalities, interferes with zinc absorption
Cobalt	depressed red cell production, fatigue, weakness, loss of appetite

COMMON ERRORS IN RACING STABLE DIETS**	
Errors	Clinical Consequences
<ul style="list-style-type: none"> • Variable protein and lysine intakes • Suboptimum protein to energy ratios • Extreme variability in calcium intake • Low calcium to phosphorus ratios • Excess vitamins A and D • Inadequate folic acid and salt • Incorrect quantities of vitamins, trace elements and minerals • Several non-complimentary supplements used in the same diet 	<p>Lameness and metabolic upsets (eg, azoturia, tying up); abnormal blood characteristics; excess iodine; poor performance; 'big head' (nutritional secondary hyperparathyroidism); laminitis; crumbly hooves, dropped soles, hoof rings and wide white lines (subclinical laminitis); soft, foul smelling manure and/or diarrhoea (caecal acidosis); gastric ulcers, impaction colic; spasmodic and flatulent colic; choke; intestinal obstructions; enteroliths; anterior enteritis;</p>

<ul style="list-style-type: none">• Frequency of feeding inadequate• Insufficient or excess energy• Diet changes introduced too suddenly• Overfeeding of grain and insufficient roughage• Oats and hay of variable and unknown composition constitute over 90% of the diet	intestinal inflammatory disease; displacements and torsions of colon
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