Feed Supplement Insights

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469 oral supplements in one catalog!!!!!!!

- Fly control 7
- Joint 120
- Anti-inflammatory 29
- Insulin resistance / laminitis 11
- Hoof 40
- Weight 10
- Hair Coat 23
- Colic 9
- Vitamin / Mineral 32
- Respiratory 12
- Electrolytes 26
- Pro-biotic 14
- Blood 16
- Ulcer 14
- Performance 31
- Mare and Foal 27
- Pain 19
- Calm 27

Are Supplements ever warranted??

- Some supplements are of some value to some horses under some conditions some of the time...
- Useful if:
  - provides nutrients lacking in the base diet
  - reasonable efficacy data exists to address a specific condition
Definition of “Dietary Supplement”:

“a substance for oral consumption... intended for specific benefit ...other than provision of nutrients recognized as essential or ...for intended effect on the animal beyond normal nutritional needs, but not including legally defined drugs”

Human Dietary Supplement Regulation in the U.S.

- Dietary Supplement Health and Education Act (1994)
  - Regulates manufacturing operations, quality control, etc.
  - No safety or efficacy data required before supplement reaches the consumer
  - “Function claims” are allowed, but must be accompanied by a disclaimer

Animal Dietary Supplement Regulation in the U.S.

- DHSEA does not apply!
- AAFCO – Association of American Feed Control Officials
  - Private organization, but works with the FDA
  - Mission is to achieve uniformity in animal feed regulation
- Ingredients must be GRAS, with some exceptions
- No regulations on function claims
Regulatory Classifications

- Only approved ingredients can be used in feeds (glucosamine and chondroitin sulfate?)
  - $15 bag — $26 bag
- Feed ingredient... an essential dietary nutrient and must meet tag guarantees
- Drug... to treat or prevent a specific health related condition... it is a drug and must meet strict FDA regulations, in addition to label guarantees
- Nutriceutical supplement... sold under the premise of being a dietary supplement for the expressed intent of prevention or treatment of disease (currently these are not regulated)
- There are many unapproved supplements currently being sold!

It is in your feed?

- How much... enough for efficacy or enough for “tag dressing”?
- Sound research showing an essential or measurable benefit to all horses?
- Over supplementation is the rule rather than the exception!
- How much are you paying for water?

Assessing the Safety and Efficacy of a Dietary Supplement*

*adapted from Safety of Dietary Supplements for Horses, Dogs, and Cats, NRC 2008
Over supplementation in humans

- A recent meta-analysis published in the *British Medical Journal (BMJ)*...vitamin E supplements may increase the risk of severe strokes, broadly concluding that “indiscriminate widespread use of vitamin E should be cautioned against.”
- This meta-analysis follows a similarly negative study printed in *BMJ* last August that linked calcium supplementation to increased risk of heart attack.
- Analyses of very specific and narrow segments of the population may not address the potential inadequacy of the average diet.

Nutrient Intake Related to Performance

Supplementation Research Study

- Feeding management practices and supplement use in top-level event horses
  (Burk and Williams 2008)
  - 2006 and 2007 Jersey Fresh 3-Day Event (CCI**/CCI***)
    - Avg. - 4 supplements per horse
    - Electrolytes, joint, digestive, antioxidants
  - Majority of diets were nutritionally sound
  - Main concern identified was that horses were over-supplemented
Electrolytes

• Typical diet does not provide adequate electrolytes (Na, Cl, K) for intensely exercising horses

• Commercial supplements often contain additional (unnecessary) nutrients (i.e. sugar)

Electrolytes

• Endurance horses receiving electrolytes drank more water than those that did not (Dusterdieck et al. 1999)

• Some research suggests K-free electrolyte formulations should be administered to endurance horses during rides (Hess et al. 2005)
  – Moderate exercise can result in hyperkalemia

• Repeated electrolyte administration can exacerbate gastric ulcers (Holbrook et al. 2005)

Electrolyte Recommendations

• Supplement shortly before, during and after

• If adding electrolytes to water, also offer water without supplementation

• Na and Cl should be the primary ingredients; minimal sugar

• Supplement daily during work; discontinue during training breaks
Joint Supplements

- 40% of supplements tested contained less glucosamine than as listed on label (Oke et al., 2006)
- Glucosamine HCl bioavailability = 5.9% (Laverty et al., 2005)
- Chondroitin sulfate (low molecular weight) bioavailability = 32% (Eddington et al., 2001)

Other ingredients
- MSM
- Hyaluronic Acid
- Cetyl Myristoleate
- Yucca
- Silica

Recommendations

- Should be paired with appropriate medical treatment
- Choose a reputable company
  - Nutramax Cosequin

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<tr>
<th>Daily Dosage:</th>
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<td>Glucosamine</td>
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<td>Chondroitin</td>
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Multi-Vitamin/Mineral Supplements

- Can create nutritional imbalances...deficiencies...toxicities
- Do not address specific concerns

Mineral Interrelationships

Protein Ca P Zn Cu Se Vit E

% NRC Requirements

Ultium T&A Platinum Performance

Vit E/Se supp.
Vitamin E

- Exercise induces oxidative stress; Vitamin E is a powerful antioxidant
- 2007 NRC req’t for Vitamin E (heavy exercise):
  - 2 IU/kg BW (1000 IU/day)
  - 5000 IU/day – reduced some indications of exercise-induced damage (Williams et al. 2004)
  - 10000 IU/day – inhibited beta-carotene metabolism (Williams and Carlucci 2006)

Hoof Supplements

- Biotin supplementation promotes some improvement in hoof quality for some horses (Josseck et al. 1995)
  - 20 mg/day
- Other nutrients:
  - Methionine
  - Zinc
  - Copper

Probiotics/ Digestive Supplements

- Probiotics:
  - No demonstrated benefit for “normal” horses
  - Horses consuming >6 lbs grain/feeding may benefit
  - Post-antibiotic therapy and horses suffering from diarrhea may benefit
- Yeast:
  - May improve fiber digestibility (NRC 2007)
  - Primarily for high starch and/or low fiber diets
- “Digestive Conditioners”:
  - No published data available
**Pre-biotics**

- May provide GI health and immune benefits
- Dietary supplementation with short-chain fructo-oligosaccharides improves insulin sensitivity in obese horses (F. Respondek, 2010)

**Ergogenic Aids**

- “ergon” = work; “genic” = producing
  - Any factor which can increase or improve work production
  
  **Examples:**
  - Gamma-oryzanol
  - Creatine
  - Dimethylglycine (DMG)
  - L-Carnitine

**Other**

- Essential fatty acids
- Pro-sweating
- Chinese herbal preparations
- Adaptogens
- “Blood builders” – iron supplements
  - Fungi (mushrooms)
  - Calming
  - Etc…
Some USEF “forbidden substances”
- Chamomile
- Comfrey
- Devil’s claw
- Hops
- Lavender
- Skullcap
- Valerian
- Vervain
- MANY OTHERS

FEI now prohibits tyrosine and gamma-oryzanol

Caution!

Bottom Line

Safety and efficacy of a supplement in humans does NOT guarantee safety and efficacy in horses.

Supplements of benefit to diseased or injured horses are probably not applicable to the healthy horse.

Not enough is of no value…too much can be detrimental…what are you paying for?

“Let thy food be thy medicine and thy medicine be thy food”

Hippocrates (460 – 377 B.C.)
The Father of Medicine