

# 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



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## 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



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**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*"**



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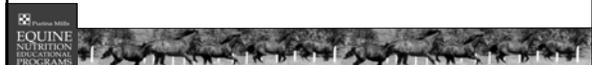
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**Human Dietary Supplement Regulation in the U.S.**

- **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**



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**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***



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### 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
- Nutraceutical 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 !!




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### 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??




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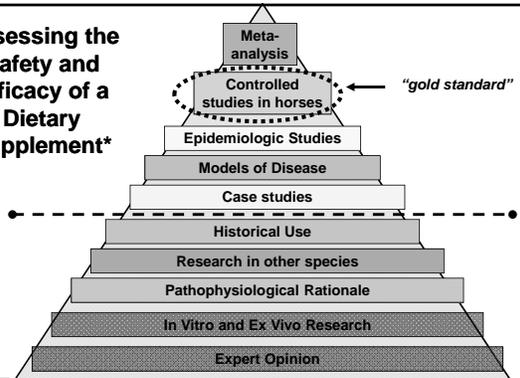
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### Assessing the Safety and Efficacy of a Dietary Supplement\*




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## 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



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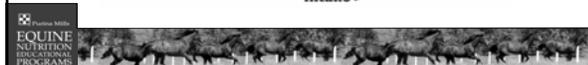
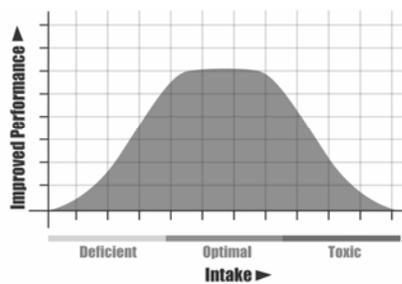
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## Nutrient Intake Related to Performance



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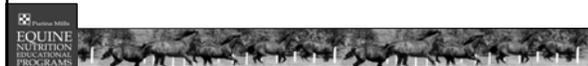
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## Supplementation Research Study

- **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



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## 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)**



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## 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)



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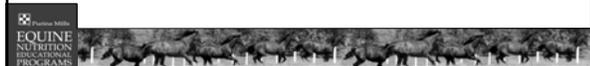
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## Electrolyte Recommendations

- **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**



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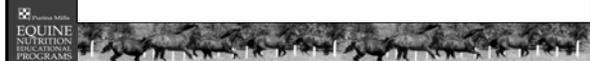
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## Joint Supplements

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




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## Joint Supplements

- **Glucosamine and Chondroitin are synergistic**
- **Other ingredients**
  - MSM
  - Hyaluronic Acid
  - Cetyl Myristoleate
  - Yucca
  - Silica




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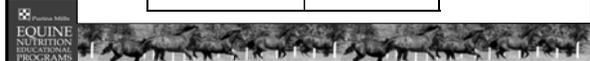
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## Recommendations

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

Daily Dosage:	
Glucosamine	10,000 mg
Chondroitin	2,500 mg




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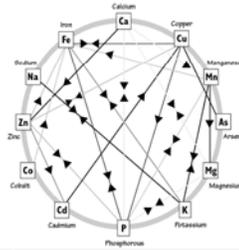
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## Multi-Vitamin/Mineral Supplements

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

### Mineral Interrelationships

Placements of arrows represents relative strengths of each mineral in balancing, antagonizing or opposing other minerals.




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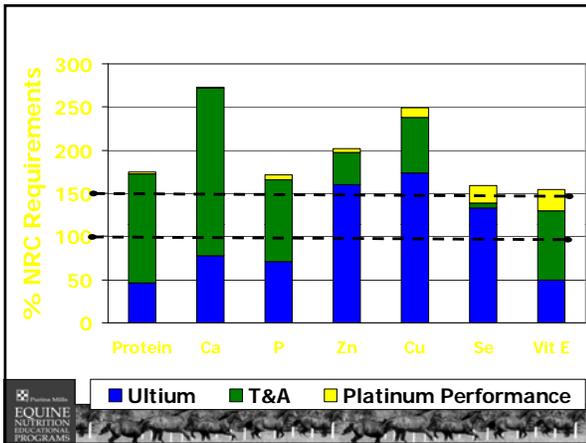
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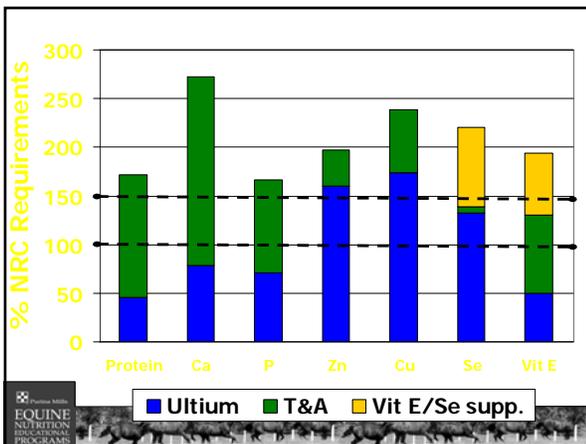
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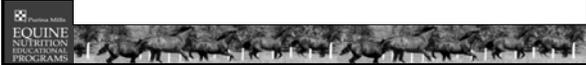
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## Vitamin E

- **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)



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## 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



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## 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



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## 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)



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## Ergogenic Aids

- “ergon” = work; “genic” = producing
  - Any factor which can increase or improve work production

### Examples:

- Gamma-oryzanol
- Creatine
- Dimethylglycine (DMG)
- L-Carnitine



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## Other

- Essential fatty acids
- Pro-sweating
- Chinese herbal preparations
- Adaptogens
- “Blood builders” – iron supplements
- Fungi (mushrooms)
- Calming
- Etc...



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***Caution!***

- **Some USEF “forbidden substances”**
  - Chamomile
  - Comfrey
  - Devil’s claw
  - Hops
  - Lavender
  - Skullcap
  - Valerian
  - Vervain
  - ***MANY OTHERS***
- **FEI now prohibits tyrosine and gamma-oryzanol**











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**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?**





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

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






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