What do you call a veterinarian who agrees to talk at dinner to a group of feed mill managers about nutritional products???

AN IDIOT
"The art of medicine consists in amusing the patient while nature cures the disease."
-- Voltaire

Feed Additives for the Mill Manager

OR
Understanding why I never have enough microbin space
Topics

- Amino Acids
- Coccidiostats
- Antibiotics
- Enzymes
  - Phytase
  - NSP’s
- Prebiotics
- Probiotics (DFM’s)
- Essential Oils
- Organic Minerals

Amino Acids

- Building block of protein
- In corn-soy diets limiting amino acids are methionine, threonine, lysine, valine, arginine, and tryptophan
- Use of synthetic aa’s depends on cost effectiveness
- Limiting protein saves cost and nitrogen
- Examples – Alimet, Rhodimet
Soybean Meal Prices

Source: www.nasdaq.com

Table 12. The estimated reduction in N excretion and the estimated cost of diets with varying protein levels but balanced for amino acids using synthetic amino acids.

<table>
<thead>
<tr>
<th>Ingredient composition (%)</th>
<th>Corn-SBM pmx.</th>
<th>+Lysine</th>
<th>+Threonine</th>
<th>+Tryptophan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn</td>
<td>75.85</td>
<td>79.38</td>
<td>83.28</td>
<td></td>
</tr>
<tr>
<td>Soybean meal</td>
<td>21.15</td>
<td>17.50</td>
<td>13.40</td>
<td></td>
</tr>
<tr>
<td>Premix</td>
<td>3.00</td>
<td>3.00</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>Lysine • HCl</td>
<td>-</td>
<td>0.12</td>
<td>-</td>
<td>0.25</td>
</tr>
<tr>
<td>Threonine</td>
<td>-</td>
<td>-</td>
<td>0.06</td>
<td></td>
</tr>
<tr>
<td>Tryptophan</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Calculated content (%)

| Total crude protein       | 16.5          | 15.2    | 13.7       |
| Digestible lysine         | 0.70          | 0.70    | 0.70       |
| Digestible threonine      | 0.46          | 0.42    | 0.42       |
| Digestible tryptophan     | 0.14          | 0.12    | 0.12       |
| Digestible methionine     | 0.24          | 0.22    | 0.21       |
| Digestible Met+Cys        | 0.47          | 0.44    | 0.41       |

Ingredient cost ($/ton)

<table>
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<tr>
<td>220.6</td>
<td>218.7</td>
<td>239.1</td>
<td></td>
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</tbody>
</table>

Reduction in N excretion (%)*

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>-11</td>
<td>-24</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* % reduction as compared to feeding the corn-SBM premix diet without any added synthetic amino acids.
Coccidiostats

- The global cost of the prevention of coccidia in chicken is estimated at USD 300 million a year (Diseases of Poultry 11 ed, 2003, Y. M. Saif).
- Ultimate control is immunologic, we are just trying to lessen clinical effects
- Divided into ionophores or chemicals
- Beware of Nicarbazine in breeders, Salinomycin in turkeys, and Lasalocid in horses.
- Names you will see are Avatec, Coban, Monteban, Robenz, Clinacox, Deccox, Amprol, and Maxiban
- Products should change 3 or 4 times a year

Antibiotics

- All the evils of the world now appear to be due to their use
- Most are not absorbed from the GI tract
- Act to stabilize the bugs in the gut
- Bacitracin, Stafac, Flavomycin, Lincocin, Tetracycline, Penicillin
- GFI 209 will be a game changer
Enzymes

- A protein which helps to speed up chemical reactions in the body (digestion)
- Phytase – releases phosphorus
- Xylanase – releases sugars
- Make nutrients more available to the animal
- Rovabio, Hostazym, Rhonozyme

Enzymes

- Improve the nutritional value of ingredients, especially cereal grains (wheat, rye, barley)
- Reduce mucus (intestinal viscosity) in intestine
- Reduce fermentable substrates available to lower intestine
- Increase volatile fatty acid profile in ceca that favors beneficial bacteria
**Prebiotics**

- Indigestible carbohydrates that enable beneficial bacteria to thrive
  - A *non-living*, nondigestible food ingredient
  - Beneficially affects the host by selectively stimulating growth and/or activity of a limited number of bacteria in the gut
  - Potentially improves immune responses

- Examples
  - Mannan-oligosaccharide (MOS)
  - Fructo-oligosaccharide (FOS)
  - Lactulose
  - Galactooligosaccharide (GOS)
  - Various yeast cell wall extracts

**Direct Fed Microbials**

- Divided into two major classes
- *Bacillus* spp.
  - *B. subtilis*, *B. licheniformis*
- Acid formers
  - *Lactobacillus*, *Enterococcus*, *Peptococcus*, *Bifidobacterium*
- Need to administered early in life
- Repeat administration whenever steady state is disrupted
Bacillus spp.

- Science is in its infancy
- Administered as spores
- Does not colonize – administer continuously
- Source of VFA’s, antimicrobials, bacteriocins, enzymes, CE, mucin stimulants
- If it ain’t broke can’t fix it

“Natural Products”

- Issue is not under FDA control for either efficacy or potency
  - Generally recognized as safe (GRAS)
- GRAS ≠ GRAE(effective)
- Don’t do Internet Science
Essential Oils

- Botanical extracts
  - Extracts of plants that shift the microflora balance toward beneficial bacteria
  - Examples
    - Garlic
    - Rosemary
    - Oregano
    - Aniseed
    - Cassia (cinnamon)
    - Ginger
    - Horseradish
    - Juniper
    - Thyme
    - Yarrow Herb
    - Cayenne Pepper

Organic Minerals

- Trace minerals have to be bioavailable
  - To improve either use increased levels or use organic minerals
  - Availa Zinc, Optimins, Mintrex
Summary

- Microbin space is going to continue to be at a premium
- Start/continue to ask for combo products
THE END

http://i600.photobucket.com/albums/v181/ambubabe/ANIMAL BUTTS WALLPAPER.jpg