The nutritional value of animal by-products for use in Poultry

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The nutritional value of animal by-products for use in Poultry

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- Use of Rendered Protein Sources
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  - Fishmeal
- Summary
Members of the South African Association of Animal Feed Manufactures (AFMA):

- 1.469 million metric tons of feed for layers and parent stock
- 2.768 million metric tons broilers feed.
Demand for protein and essential amino acids

- Least cost in its simplistic form not always the best
- Basis is maize and soy mixes
- Processed soybean meal might create problems (under / over processed, oligosaccharides, etc)
- Physical properties, pelleting etc.
**Ration and Recommended Amino Acids for Mixed Flock Broiler 13-22 Days**

**Composition of Ration % of Ration**

- Corn: 57.00%
- Soybean Meal, Argentina: 38.00%
- Feed Ingredient Without AA: 5.00%
- Sum: 100.00%

![Your amino acids balance chart](chart.png)
### Ration and Recommended Amino Acids for Laying Hens

**105 g/day Intake**

**Composition of Ration % of Ration**

- Corn: 65.00
- Soybean Meal, Argentina: 23.00
- Feed Ingredient Without AA: 12.00
- Sum: 100.00

**Demand for protein and essential amino acids**

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**Evaluate a Ration**

User: Leon Ekermans

**Your amino acids balance**

<table>
<thead>
<tr>
<th>Amino Acid</th>
<th>Actual AA Level</th>
<th>Recommended AA Level</th>
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<tbody>
<tr>
<td>LYS</td>
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<tr>
<td>VAL</td>
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</tbody>
</table>

**Graph showing the comparison between actual and recommended amino acid levels.**
Profile of amino acid deposition in chicken and eggs

Lysine

- Chicken tissue
- Egg
- Corn
- Soybean meal
- Fish meal
- Bloodmeal
- PBY RSA
South African legislation in the use of Animal By-products in Poultry Feed

The Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947), prohibits the use of mammalian origin by-products.

Except: where farm feeds are manufactured only for predators, dogs and cats (separate premises)

- Meat and bone meal - No
- Bovine blood meal - No
- Poultry blood meal – Yes
- Poultry by-product meal – Yes
Rendered Fats

Benefits of fat:
• Concentrated source of energy - main method of increasing the energy content.
• Increased rate of gain can decrease age at market.
• Increased feed efficiency, decreased feed intake.
• Source of linoleic acid
• Decreased dustiness of feeds and reduced dust losses
• Increased palatability of feeds
• Lower heat increment during heat stress keeps caloric intake up.
Concerns that should be noted with fat utilization:

• Use of higher levels of fat may negate the effects of pelleting.
• Measurement of metabolizable energy (ME) content can be difficult.
• Potential for rancidity.
• Poor digestibility of saturated fats by the young bird.
Use of Rendered Protein Sources:

**Advantages:**
- Generally, cost competitive relative to vegetable protein sources
- Source of high quality protein
- Highly digestible
- Balance the amino acid needs
- Provide slightly faster growth rates than vegetable protein-only diets
- Excellent source of highly available phosphorus and other minerals
Use of Rendered Protein Sources:

Concerns:
- Poor quality control could result in decreased amino acid digestibility.
- Proper formulation methods must be used to make most effective use.
- Potential for microbial contamination if improperly handled.
- Variation in product due to material mix, processing methodology.
1. POULTRY MEAL

- Poultry meal is the dry rendered product from a combination of clean flesh and skin with or without accompanying bone.
- Derived from the parts of whole carcasses of poultry.
- Exclusive of feathers, heads, feet, and entrails.
Use of Rendered Protein Source:

2. POULTRY BY-PRODUCT MEAL

- PBY
- Wide definition of content = variation in nutritional value
- Ash content varies significantly
Use of Rendered Protein Sources:

3. HYDROLYSED POULTRY FEATHER MEAL

- Not less than 75% of its crude protein content must be digestible by the pepsin digestibility method.
- Poor amino acid balance and is thus not heavily used in the poultry industry
- It is generally economically priced.
Use of Rendered Protein Sources:

4. POULTRY BLOOD MEAL

- The method of drying does affect the nutritional quality of the protein.
- The process of manufacturing spray dried blood meal is similar to that of skim milk powder.
- Spray dried blood meal in comparison with other drying methods has a greater content of total and available amino acids and is of better nutritional quality.
Fishmeal

• Historically the most important animal protein, but highly popular as component of aquaculture diets, especially in the international trade.
• Export prices and quality parameters often results in low spec meals offered to the local market.
• New advanced analytical parameters should be applied when local fishmeal is traded for use in poultry diets.
• notwithstanding above a very good source of AA.
Summary

• Animal proteins are an important class of ingredients for animal nutritionists.
• Poultry meat meal provides an excellent source of amino acids and phosphorus.
• Feather meal is very high in sulphur amino acids.
• Combined, these products can be used to provide a substantial cost savings to the poultry industry and use of the products is quite high by the industry.
• The rendering process kills *Salmonella* and other food pathogens, although post process contamination can still occur.