

ANIMAL PROTEIN SOURCES FOR PREPARATION OF LIVESTOCK FEEDS

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Abstract: The protein enrichment derived from animal tissues is obtained primarily from inedible tissues, such as meat packing, from surplus milk by- products or from marine sources. Protein availability will be reduced and some nutrients are lost if the feed is heated excessively. Fish meal is a good source of vitamins of the B complex, particularly choline B12 and riboflavin and has an enhanced nutritional value because of its content of growth factors collectively known as Animal Protein Factor (APF). Care must be taken to check the presence of urea, which is added as adulterant by unscrupulous businessmen with inferior type of fishmeal to raise the nitrogen content.

Introduction

Protein supplements derived from animal tissues are obtained primarily from inedible tissues, such as meat packing, from surplus milk by- products or from marine sources. Many such compounds are difficult to process and store without some spoilage and nutrient loss. If not properly dried or heated to destroy, disease producing bacteria they may be a source of infection. On the other hand, protein availability will be reduced and some nutrients are lost if the feed is heated excessively (Crawshaw, 2001). These materials are given to animals in much smaller amounts than the oilseed derivatives so far discussed, since they are not used primarily as sources of protein but to make good deficiencies of certain indispensable amino acids from which non-ruminant animals may suffer when they are fed on all vegetable protein diets. Due to high cost, large scale use of animal proteins become uneconomic.

Meat meal or Meal scrap

1. It is obtained from mammal tissue exclusive of hair, hoof, horn stomach contents and hid trimmings by proper drying and grinding to which no other matter has been added, but which may have been preliminarily treated for the removal of fat and dried blood.
2. The product is normally used for swine and poultry.

3. Rich in crude protein (50-55%) and ash (21%) with high calcium about 8% and 4% phosphorus – but low in methionine and tryptophan (NRC, 1994).
4. Good sources of vitamins of B complex, especially riboflavin, choline nicotinamide and B₁₂.

Meat and Bone meal or scrap

1. The product is similar to meat scrap except it contains more bone, and consequently is higher in calcium and phosphorus and lower in protein, about 40% (NRC, 1998).
2. Used primarily in rations of swine and poultry.

Blood meal

1. The meal is prepared by passing live steam through the blood until the temperature reaches 100 °C. The treatment causes sterilization and the blood gets clotted. It is then drained, pressed to express occluded serum, dried by steam heating and ground.
2. It has got high protein value, 80% but the protein is lower in digestibility and quality than most other animal protein feeds. Poor in calcium and phosphorus content.
3. The meal is unpalatable and its use has resulted in reduced growth rates in poultry and it is not recommended for young stock. For older birds rates of inclusion are limited to about 1 to 2 percent.

Feather meal

1. Single stomach animals do not digest poultry feathers. However, when feathers are either processed under low pressure (130°C) for 2 ½ hours or under high pressure (145°C) for 30 minutes and dried at about 60 °C and ground to pass a 20 mesh screen, the product is highly digestible.
2. The product is extremely high in protein, usually containing well over 80%
3. Concentrates of dairy cattle may contain as high as 10%
4. The product is used primarily in rations for swine and poultry.
5. Since feather meal is deficient in several essential amino acids, it is customary to use the product up to 5% or less in the ration of poultry.

Hatchery by – product meal

1. Hatchery refuse consisting of infertile eggs, dead embryos, shells of hatched eggs and unsalable chickens, can be made into a useful feed by cooking, drying and grinding.
2. Its high level of calcium (15-25%) limits its inclusion in ordinary diets but upto 5% level it can go with broiler type rations. It has got variable percentages of protein (45-55%) and fat (10-13%) depending upon the type of materials used.

3. It is used primarily in rations of swine and poultry.

Fish meal

1. Fish meal consists of fish or fish by-products, which have been dried and ground into a meal.
2. There are several types depending on the type of fish and method of preparations.
3. Small scale production is made under rural condition in the following way: the fish or fish waste is ground or chopped, boiled for a short time and squeezed in cloth to get rid of water and excess oil. The residue is then dried in the sun. Another simple way is to dry fish materials directly under the sun on sea shore with an admixture of salt after removing alimentary tracts. The product is known as '*White fish meal*' and is made from fish, which contains minimum fat.
4. The protein content of fishmeal is usually around 60% with a digestibility of between 93 and 95 per cent. Fishmeal protein has a high content of lysine, methionine, and tryptophan. It has about 20 percent mineral content which is high in calcium (8%) and phosphorus (3.5%)
5. They are a good source of vitamins of the B complex, particularly choline, B12 and riboflavin, and have an enhanced nutritional value because of their content of growth factors collectively known as *Animal Protein Factor* (APF)
6. For pigs and poultry, fishmeal has become a standard ingredient and is added to about 10% of the ration to make up for deficiencies of essential amino acids. Response from fishmeal is greater than other protein sources in ruminants have been achieved but high cost makes it uneconomical.
7. Care must be taken to check the presence of urea, which is added as adulterant by unscrupulous businessmen with inferior type of fishmeal to raise the nitrogen content.
8. Fish meals containing high levels of fat are considered to be of low quality. If they are incorporated into poultry feeds, they tend to impart a fishy flavour to poultry products. Also, problems of rancidity are greater in high-fat fish meals.

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