

Some Feeding Problems With Hospitalized Dogs

MARK L. MORRIS, B.S., D.V.M.

Raritan Laboratories, Inc.

STUDIES using dogs for both experimental and test purposes have made available much information during the past decade concerning the requirements of dogs for proteins, vitamins, fats, minerals and energy. From the list of 13 questions prepared by Dr. Harlan E. Jensen, 3 have been selected as a guide for this discussion.

Question—What Basal Diet Is Fed the Dogs in Your Hospital?

This is an important question and one confronting every veterinarian operating an animal hospital. What is a basal diet? We consider it that portion of the ration which furnishes the majority of the energy, the carbohydrates, minerals, some of the fat and a portion of the vitamins. Thus, it can be appreciated that the basal diet is an important part of a ration and not just a filler as many seem to believe. In discussing nutrition with veterinarians, too frequently the comment is made, "We feed horsemeat, with kibbled biscuit as a filler." Actually the kibbled biscuit is the basal portion of the diet; it is the foundation for the ration consumed.

The basal diet employed at the Raritan Hospital for Animals is not a constant one. For feeding boarders and other essentially normal animals one of the better known dry meal-type commercial dog foods is frequently used. The majority of such foods are too low in fat, thus 5-8 per cent (dry basis) beef suet, pig lard, bacon grease or other animal fat is added. This improves palatability and raises the fat content of the diet to the desired level. To this mixture is added an animal protein of high biological value. For this purpose horse meat, beef or poultry by-pro-

ducts can be used. The amount is not constant.

For example, to a Doberman Pinscher pup 3 months old that is in for worming, serum and a short period of board, it would receive $\frac{2}{3}$ basal diet (moist basis) and $\frac{1}{3}$ meat product. A 5 year old Cocker Spaniel, in a good state of nutrition, would receive $\frac{7}{8}$ basal ration and about $\frac{1}{8}$ meat supplement. In other words, the diet of each individual dog is prescribed by the veterinarian in charge, and all of the dogs in the hospital are fed from the same general pool of mixed food. In my opinion it is an error to attempt to feed a hospital of dogs from a large kettle of kibbled biscuit, meat and vegetables. Such a practice over-nourishes some, under-nourishes others, fails to provide levels of certain nutrients required by special cases and in view of our present knowledge of nutrition, is impractical and unsound.

Moisture also constitutes an important part of the ration. We make it a practice to either weigh or measure the water added so that the finished product is of the proper consistency. Certain diets require slightly more or less water than others. It has been our experience that the correct amount is between 50 and 60 per cent by weight of the total dry food employed. Thus, to each pound of dry food add from 1 pint to $1\frac{1}{4}$ pints of hot water or broth. Rations of a sticky, gummy consistency should be avoided and rations which are too sloppy are undesirable. Sufficient time should be allowed following addition of moisture to permit thorough absorption by the dry food. It is an unwise practice to place dry food in a pan, turn water over it from a faucet,

give it a stir and place it in the cage for the dog to eat. Thus, in addition to the careful selection of ingredients, the technique of preparation is also important.

Question—What Would You Suggest as a Feeding Program for a Mother and Large Litter of Pups Showing a Very Definite Anemia?

The proper nourishment of dogs during reproduction constitutes one of the major problems for the breeder. The best time to give attention to such a problem is prior to or at least at the time of breeding. As soon as the bitch is in oestrus, consider her in a state of reproduction and start feeding her for the tremendous stress which is placed upon her body by the developing feti and the suckling young. To initiate a special feeding program following the birth of the pups is frequently too late. The pregnant bitch should receive a carefully balanced, highly digestible diet, containing protein of good biological value and a vitamin-mineral balance that provides an excess of all the required factors. How can this be done? First select a good basal diet. Whenever possible this should consist of well cooked whole grain cereals, e.g., whole ground wheat, yellow corn meal, hulled barley, cracked rice, rolled oats, etc. The use of cereal wastes, poultry mashes, mill sweepings and similar products will prove unsatisfactory. To these whole grain cereals should be added a sufficient amount of mineral to meet the requirements of the bitch and not increase the ash content of the ration and lower digestibility. The feeding of large quantities of bone meal is contra-indicated. Another common error is to add excess quantities of calcium salts, such as calcium gluconate, carbonate, or other forms of lime. This is done in an effort to provide the bitch with adequate amounts of calcium for skeletal development of the young, but the mother and young also need phosphorus, therefore, it is much better if the calcium-phosphorus content of the ration is maintained at about a 1:1 ratio and at a level which can be utilized by the female and not simply excreted in the feces.

Careful attention must also be given to the vitamin balance of the ration if good results are expected. Vitamin A should be present in sufficient amounts, which may or may not be supplied by the dry basal ration employed. Therefore, it is wise to supplement the feed with a good quality of fish oil. Oil containing 2,000 to 3,000 I. U. of vitamin A per gram is satisfactory. High potency oils containing 50,000 units of vitamin A per gram are unnecessary. If each pound of the moist food supplies 2,000 units of vitamin A, the bitch should have no difficulty with vitamin A deficiency.

Vitamin D can either be supplied by the fish liver oil, or in the form of irradiated yeast. The daily requirement is variable depending upon the breed, but the average oil, containing approximately 3,000 units vitamin A and 400 units vitamin D per gram, will prove adequate.

The vitamin B complex fraction of the ration fed the bitch during reproduction is the most difficult to provide. The requirements for thiamin, riboflavin, pyridoxine, niacin, pantothenic acid, biotin, choline, folic acid, and other trace unidentified factors must be met. For practical purposes, and for those unfamiliar with the specific requirements for all of these various B vitamins, the safest procedure would probably be to employ some good quality brewer's yeast and fresh mammalian liver. Hog liver, beef liver and horse liver are dependable sources of most of these factors. The level of liver feeding will depend to some extent upon the breed of dog and the character of the basal diet, but a practical level in most instances will be about 15 per cent of the total moist food. Bitches at the termination of gestation, or at the beginning of lactation, having hemoglobin concentrations of 10 to 12 grams per 100 cc. of blood and red blood cell counts of 3,000,000 to 4,000,000 cells per cubic millimeter, should receive prompt attention if the pups are to be saved. The feeding of the diet mentioned above will probably be insufficient to obtain good clinical results. In such instances treatment with potent liver extracts will be necessary. It is suggested that the low unit liver extracts be em-

ployed, that is the 1, 2, or 3 unit, and not the refined concentrates. If the pups are in the first week of life and both bitch and pups are anemic, inject the bitch and the pups with the same extract. Repeat the treatment every other day until the pups are gaining normally. Bitches in such condition should also receive cooked whole eggs. The feeding of eggs will furnish protein of high biological value and aid the body in the metabolism of hemoglobin and red blood cells. The best index to adequacy of the therapy is increase in bodyweight of the pups. A suckling pup should increase in bodyweight almost daily by a substantial percentage otherwise good results will not be obtained.

Pups born of mothers having nutritional deficiencies characterized by both hemoglobin and erythroblastic anemias should be weaned to solid food containing high quality protein and liver at the earliest possible moment. If the owner will spend some time with the whelps in addition to nursing, consumption of solid food can usually be encouraged during the third week of life.

The feeding of the bitch during reproduction is a complicated problem, if good, healthy, normal offspring are expected.

Question—Does Diet Have Any Relationship to Skin Conditions Such as Dry and Moist Dermatitis, Parasitic Mange, or Just Dry Itchy Skin?

In replying to this question personal opinions based on experience will be employed rather than information from controlled experimental data.

Dry and moist dermatites are commonly a reflection of some form of either malnutrition or body dysmetabolism. A percentage of these conditions are associated with various fungus infections and these will be omitted. In our experience dry and moist dermatites occur commonly in all breeds of dogs fed rations containing protein of low biological value and low digestibility but having a high nitrogen content. To clarify, the food may contain 25-30 per cent protein calculated from the nitrogen analysis but the biological value

of the nitrogen may be such that much of it is eliminated in the feces and urine, thus the actual amount utilized is less than 50 per cent of that ingested. Such protein is; therefore, deficient in one or more of the essential amino acids. The dog in an effort to meet the body requirements consumes large quantities of food and the organs of digestion and elimination are subjected to heavy stress, particularly the liver and kidney, with the result that normal physiological function is impaired. This is reflected in the quality of the skin and the coat.

Low Fat Diet

The fat content of the diet also plays an important role in normal skin health. Low fat diets frequently predispose to dry, poorly nourished coats, falling hair, scratching and poor clinical condition. It is also our observation that the quality of the fat is important and that possibly there is a difference in results obtained with the saturated and unsaturated fatty acids.

In studying parasitism of the skin of soldiers during the war, nutrition was found to play a very important role. Troops receiving deficient diets were more commonly infested with lice. The well-nourished dog is much less susceptible to demodectic and sarcoptic mange. The feeding of a well balanced diet and one containing protein essentially 100 per cent utilizable will go far in preventing the development of either demodectic or follicular mange and will also play a very important function in the treatment of dogs afflicted with these parasitic diseases.

If a practical suggestion is in order, whole boiled eggs fed to dogs with either form of mange will greatly assist the therapeutic procedures employed.

Cases of dry, itchy skin may develop in what appears to be a well-nourished dog. If a careful diet history is obtained from the owner, it can be detected that an excessive portion of the daily calories are being derived from one source throwing the diet out of balance. Often the simple calculation of the exact amount of food required by such a dog, based either on bodyweight or surface area, will do

much to eliminate this condition, particularly if it occurs in the obese.

Unquestionably, allergy plays some role but it is rather doubtful if it is as important as we formerly believed, since it is our observation that allergies practically never occur in a colony of dogs on nutritional studies.

The handling of skin diseases in dogs resolves itself to an individual problem. Diagnosis must be as accurate as possible and clear concise diet histories should be obtained from the owner. The feeding must be adjusted to meet the specific requirements of the individual case. This can only be learned through observation and experience. A thorough understanding of physiology, application of principles of sanitation and hygiene, the use of good common sense, and intelligent advice to the owner go far in alleviating these troublesome conditions.

Veterinary College in China

The following letter written Dec. 31, 1946, was received by us from Dr. H. J. Stafseth, professor of bacteriology, at Michigan State College. We are publishing it in its entirety:

"I have just had a letter from Dr. T. S. Sheng of the Veterinary College at the National Lanchow University, Lanchow, China, which was established last fall. I have particular interest in this college since it was my good fortune to be able to furnish the spark which was necessary for the establishment of the first real veterinary college in China. In saying that, I should give due credit to two American missionaries, who, by their long experience in China, were able to suggest a method of approach which I made to the Chinese government officials in getting this long-neglected undertaking started.

"Some of the things that this college needs greatly are books, journals, reprints and even instruments. I am wondering if it would be possible for you to send them whatever literature you may be in a position to donate and I also

wonder if it would be in order for you to publish a letter appealing to practitioners throughout the country who may be missionaries at heart to see if they might be willing to donate certain books, journals and even instruments that they may no longer need and which might be in usable condition.

"It should be remembered that China has never had a real veterinary college. There are only about 14 or 15 Chinese veterinarians graduated from recognized veterinary colleges, mostly the United States. A few of them have graduated from European institutions. Since this veterinary college at Lanchow University, located in Kansu Province in Northwest China, is the first of its kind and since the success or failure of this college will largely determine the future of veterinary education in China, I think it would be a nice thing if we in America would lend them a helping hand. I might say that someday they may even wish to have American veterinarians come there as visiting professors.

"Dr. Sheng, the new dean, is a man in his middle thirties. He was educated in Germany, and holds the degrees, M. D. and D.V.M. While he has never lived in an English-speaking country, he speaks English perfectly, writes it well and is a very capable and energetic worker. I shall appreciate very much any assistance you can give him."

According to an article by Dr. S. W. Haigler of St. Louis, the laity have a tendency to blame commercial dog food for many canine illnesses really due to parasitic infestation or other causes. A heavy infestation of hookworms seemed to be the most common parasite involved. Dr. Haigler states that there were fewer cases of dietary and nutritional disorders in canine patients during the war period as compared with 12 to 15 years ago.

Americans spend an estimated \$7,000,000 each year on remedies and veterinary services for their dogs.