



Dr Anton C Beynen is affiliated with Vobra Special Petfoods. In the period of 1993-2007, he was professor of veterinary nutrition at the Faculty of Veterinary Medicine, Utrecht University, The Netherlands.

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All-meat Diets for Dogs

All-meat dog diets can vary widely as to ingredient and nutrient composition, but they all lack fibre and digestible carbohydrates. When the diet is free of liver and not supplemented, it is deficient in vitamins A and D. Diets only containing boneless animal parts fall short in calcium. Diets rich in thyroid gland tissue cause poisoning with thyroid hormone.

It is said that a true all-meat diet for dogs is nutritionally adequate only if it adheres to the prey-model concept. Accordingly, the diet should consist of whole (production) animals or mirror them in the form of a mixture of their body parts. Turning the prey-model concept into practice is virtually impossible. Moreover, nutritional adequacy of whole prey is not proven by long-term feeding experiments or extensive nutrient analyses. It is worth mentioning that, whole broiler chicken as sole source of nourishment may induce skeletal disease in growing dogs of large breeds through its high calcium content, whereas the high level of protein may enhance the development of chronic kidney disease in senior dogs.

Digestible carbohydrates furnish glucose, but they are not essential nutrients. When carbohydrate intake is zero, glucose will be formed from non-carbohydrate precursors which include certain amino acids derived from proteins. This implies that an all-meat diet should contain more protein than carbohydrate-containing foods. An all-meat diet rich in fat and therefore not superfluous in protein could lead to protein deficiency, especially in puppies and breeding female dogs. On the other hand, low-fat, all-meat diets may be so excessive in protein that they elicit diarrhoea.

All-meat Diets

All-meat diets may be defined as diets consisting of one or more animal tissues. According to the prey-model concept, the complete nutrient profile dogs need is attained when the diet is modelled on ratio of the parts found in intact animals. Over time, rations must not contain muscle meat only, but also head, skin, bone, organs and entrails.

Older publications say that arctic dogs thrive on rations containing fresh meat in the form of white whale, walrus, seal and halibut, has also been used. However, it is unknown whether the dogs ate these animal feedstuffs exclusively. Moreover, it is uncertain whether the classical arctic dog rations supported a long and healthy life.

Dogs foods marketed as complete, raw frozen or raw freeze-dried, and also some canned foods, get close to all-meat nutrition, but they contain a little plant ingredients. There are people who believe that meat is the only thing a dog should ever be fed.

Strictly meat diets take different forms. Variable diet components may be fed raw, cooked or dried and can be purchased in fresh, frozen, dry or canned form. Using true all-meat rations only, it is difficult to formulate a week menu that meets the dog's nutrient requirements eked out over the concerning period. Thus, all-meat diets entail risks of imbalances.

Risk of Diarrhoea

Puppies aged less than 17 weeks had diarrhoea when fed a multivitamin-supplemented diet consisting of boiled, ground chicken necks, including bones. The chicken-neck diet contained 39 percent protein in the dietary dry matter.

After consuming a commercial all-meat diet labelled as beef chunks and meat by-products, puppies had poorly formed, dark, foul-smelling faeces. Sled dogs fed so-called pemmican consisting of beef meal, beef drippings, dried yeast and bone meal had persistent diarrhoea. The pemmican



diet contained 66 percent protein in the dietary dry matter.

It seems that all-meat diets associated with diarrhoea are either relatively low or high in protein. The chicken-neck diet produced protein deficiency (see below). A dry diet comprising 80 percent greaves meal and 15 percent corn flakes and accommodating 65 percent crude protein in the dry matter has been shown to evoke diarrhoea in dogs. Very high protein intake may surpass protein-digestive capacity in the small intestine, leading to typical dark, watery diarrhoea.

The diarrhoea that occurs concurrently with the feeding of an all-meat diet may be aggravated by the lack of fibre. Studies indicate that the diarrhoea seen in dogs fed other types of fibre-free diets was relieved by dietary inclusion of insoluble fibre.

Protein Deficiency

In dogs fed all-meat diets, glucose is formed from amino acids derived from protein. This metabolic process, called gluconeogenesis, has high priority because brain function depends on glucose. As protein allowances for dogs hold for carbohydrate-containing diets, all-meat diets apparently adequate in protein can still induce protein deficiency.

The young puppies fed the chicken-neck diet showed more than 50 percent mortality. Their counterparts given a mixture of chicken necks, tomato juice and white bread developed normally. Both the chicken-neck diet and the mixture had a

protein content of about 15 g protein per MJ metabolisable energy, but the mixture contained carbohydrates at the expense of fat. For puppies up to 14 weeks of age, the protein allowance is 13.4 g/MJ (National Research Council, 2006). This allowance appears too low for a carbohydrate-free diet.

The protein allowance for pregnant and lactating dogs is 12.0 g/MJ. Three different studies using meat-based diets indicate that carbohydrate-free diets must contain about 25 g proteins per MJ in order to prevent perinatal pup mortality and low concentrations of milk lactose.

Further Nutritional Issues

Non-supplemented, bone-free, all-meat diets are notorious for calcium deficiency. This type of meat-only diets causes poor bone mineralisation and fractures in young dogs.

A recent case report describes that a commercial all-meat product caused growth retardation, elevated thyroid hormone levels, signs of restlessness and excessive thirst in a young dog. Presumably, the diet was contaminated by thyroid gland tissue, bringing about intoxication with thyroid hormone. Dietary change resulted in a return to normal blood thyroid hormone levels and relief from the symptoms.

Dr Anton C Beynen writes this exclusive column on dog and cat nutrition related items every month.