

# Breed-Specific Pet Foods

Countries in which most dogs and cats consume industrially-produced foods have a mature pet food market. Sales of a particular brand can only grow at the expense of the competitors' business. As a result, pet food manufacturers continuously launch new products that accommodate nutrition trends or have increasing degrees of individualisation.

Life-stage nutrition versus a single, complete diet for all ages is one form of individualisation. Breed-specific, life-stage diets are further individualised. There is insufficient information on the nutrient requirements of different breeds. Thus, breed-specific dog and cat foods may not contain breed-specific, optimum nutrient contents. Nevertheless, formulation of safe, breed-specific foods is possible. The foods could contribute to the prevention of breed-dependent diseases when formulated in the light of indirect argumentation. Production and sales of breed-specific, instead of all-breed foods can be justified by marketing strategy.



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The concentration of each nutrient in a complete pet food, must sustain optimum health. Long-term intakes below the minimum requirement of a nutrient induce overt signs of disease: the state of deficiency. Long-term intakes above the maximum tolerable level also cause health disorders: the state of toxicity.

In the nutrient-response relationships (see graph), deficiency and toxicity states are indicated by the hatched areas. Between deficiency and toxicity, there is a range of safe and adequate nutrient intake, which supports health and performance. Within this optimum range, the animal can adapt absorption, metabolism and excretion of the nutrient

in question in order to meet its need. At lower or higher nutrient intakes, further adaptation is impossible and either deficiency or toxicity develops. The optimum range includes the recommended allowance.

### Breed Differences

Between breeds, there can be differences in the nutrient-response relationship. Young, growing Great Danes require more calcium for optimal skeletal development than young dogs of small and medium-sized breeds. Growing-up Great Danes also have a somewhat higher protein requirement. Some Siberian husky and malamute dogs have low efficiency of zinc absorption, and thus need more zinc to prevent deficiency.



The graph illustrates that the deficiency range is wider for breeds with increased nutrient requirement.

Bedlington Terriers often develop copper storage disease due to impaired biliary excretion of copper. Young, growing Great Danes are prone to calcium-induced osteochondrosis (impaired maturation of joint cartilage). In these two breeds, copper or calcium toxicity occurs at lower intake levels.

Young Great Danes have unique calcium metabolism. Compared with other breeds, their calcium requirement is higher for optimal bone development, but osteochondrosis develops at lower calcium intakes. Consequently, the optimum range between calcium deficiency and toxicity is narrower for Great Danes than for other breeds.

### Nutrient Supply

All-breed and breed-specific foods should be formulated using the same data set on nutrient-response relationships.

For all-breed foods, nutrient levels must fall within the optimum range for all breeds. Breed-specific foods may address the breed concerned.

For six dog breeds, there are data on calcium intake and skeletal health in young animals. However, the data are too sparse to construct breed-dependent, nutrient-response relationships. For nutrients, other than calcium there is less or no information.

As mentioned, young Great Danes readily develop calcium deficiency or toxicity. A dry puppy food for Great Danes should contain about 0.7 percent calcium (0.45 g calcium/MJ of metabolisable food energy). An all-breed diet should contain a similar amount. On the other hand, a dry puppy food for small breeds, which are less sensitive to calcium toxicity, may contain up to 1.1 percent calcium.

### Breed-Specific Disease

Ideally, breed-specific foods reduce the risk of breed-dependent disease. To this



Package of a dog food being part of an all-breed, life-stage line

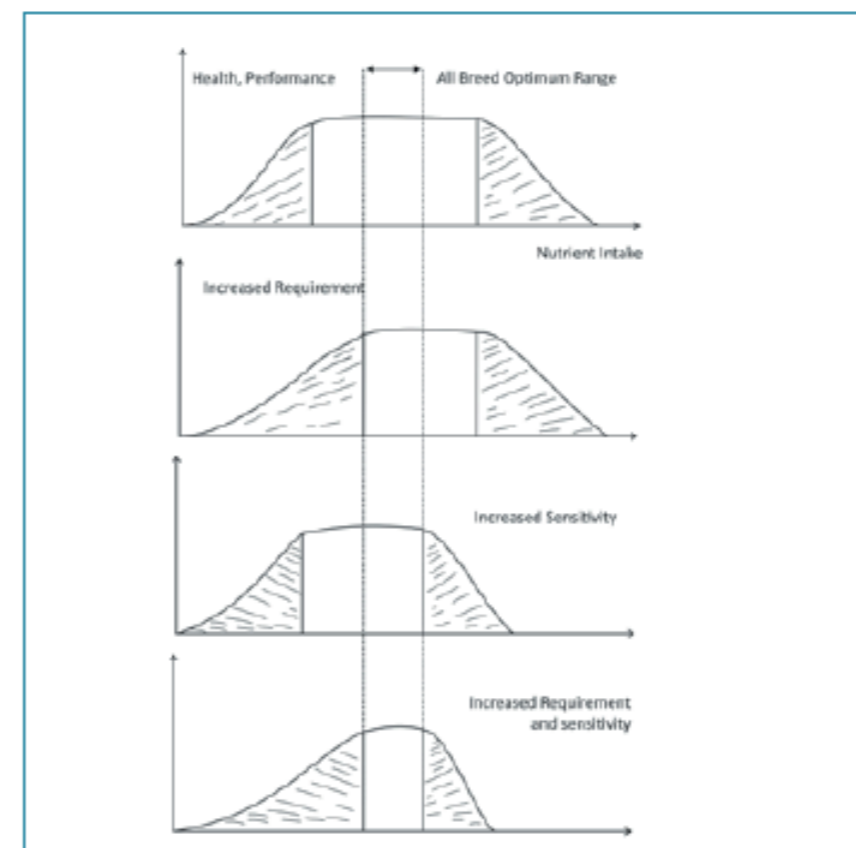
end, nutrient levels may be adjusted or functional ingredients be used. There is breed dependency regarding the development of obesity, joint disorders, urinary stones, cancer, heart failure and chronic kidney disease. Common knowledge on nutrition and disease could be used to formulate breed-specific foods, with plausible efficacy in the prevention of disease associated with the breed concerned.

### Practice

A pet owner does not look for a pet food, but for a food suitable for his or her own pet. Breed-specific foods have a clear marketing advantage. The consumer is being communicated that his or her pet needs a food that is tailor-made for its breed. That communication is reinforced by a breed-matching picture on the food label.

Legend to graph: The proportional width of the three nutritional states (deficiency, optimum, toxicity) can vary widely among nutrients and depends on age and breed. The graph illustrates how each state changes with increased nutrient requirement and/or increased sensitivity to excessive intake. The combination of these conditions is taken into account by the all-breed optimum range.

Dr Beynen will be writing this exclusive column on dog and cat nutrition and nutrition-related items every month.



Nutrient-response relationships: Schematic relations between the intake of an essential nutrient and the animal's response in terms of its health state