Abstract—Advocates of raw ingredient diets often suggest that such feeding strategies provide demonstrable health benefits to dogs and cats, while leading veterinary authorities typically dismiss these claims as lacking valid evidentiary foundations. Here we briefly review the published research on the issue. We find that, while there is evidence suggesting that the differences between the typical nutritional compositions of raw ingredient diets and processed diets (specifically the comparatively lower carbohydrate content and higher protein content of typical raw diets) may make raw ingredient diets more healthful, while processing has been shown to alter the nutritional content of pet food ingredients in ways that may impact digestibility and bioavailability, and while the logic of evolution via natural selection suggests that health benefits may in fact be associated with the consumption of raw ingredients, there is as yet no compelling experimental evidence proving that any such benefits exist.

Evidence Review
Scientific Advisory Committee, KetoNatural Pet Foods

Whether raw ingredient diets are more healthful for dogs and cats than commercially prepared, processed diets is a contentious issue. Raw diet advocates argue that such foods provide a number of demonstrable health benefits, while the American College of Veterinary Nutrition and other leading veterinary authorities dismiss such claims due to a lack of valid evidence. Below we offer our perspectives on the debate by examining the evidentiary basis for what seem to be the three most common arguments made in favor of the healthfulness of raw diets:

(1) Exposure to heat during processing destroys digestive enzymes that occur naturally in pet food ingredients, denying dogs and cats the health benefits that these enzymes would otherwise provide.

(2) Exposure to heat during processing renders the nutritional content of pet food ingredients less bioavailable, denying dogs and cats some of the health benefits that these nutrients might otherwise provide.

(3) Cooking is a recent innovation (in evolutionary terms) whose negative impacts on canine and feline health may not yet be fully understood.

Two important caveats must precede any responsible evaluation of these arguments.

First, as noted by the ACVN and others, raw ingredient diets are susceptible to contamination with food-borne pathogens in a way that cooked diets are not. We have evaluated the evidence surrounding the potential health risks associated with such contamination elsewhere in this white paper series and do not attempt to recreate that analysis here, but a complete evaluation of the costs and benefits of raw ingredient diets must weigh these risks against any potential health benefits.

Second, we note that the substantive macronutritional content of raw ingredient diets is typically quite different from the macronutritional content of commercially prepared, processed pet foods. Notably, raw diets typically contain far less dietary carbohydrate and more protein than processed diets. We have evaluated the evidence surrounding the potential health benefits associated with these differences elsewhere in this white paper series and do not attempt to recreate those analyses here, but a complete evaluation of the costs and benefits of raw diets should also take them into account.

Having noted these important preliminary issues, we now turn to the three arguments set forth above.

There is no published experimental evidence of which we are aware establishing that the enzymatic content of raw pet food ingredients is higher than or in other ways different from what is typically found in processed ingredients. Moreover, even assuming *arguendo* that the enzymatic content is in fact different, there is no evidence that this difference results in any particular health benefits for dogs and cats either. Indeed, since the majority of canine enzymatic digestion occurs in the small intestine, we find it highly unlikely that dietary enzymes could pass through the stomach undamaged without the use of supplemental enteric coatings, such as are commonly used to
ensure that human-use enzyme supplements pass safely through the early stages of the human digestive process.

Conventional heat processing has been reliably shown to physically change the structure of at least some of the proteins and amino acids in animal-based food ingredients. Moreover, it is clear that, to the extent these changes occur, they tend to render animal proteins less bioavailable, not more. It therefore stands to reason that heat processing is likely to reduce the bioavailability of the animal-based proteins and amino acids in pet food ingredients to at least some degree. (This is consistent with the results of studies finding that protein digestibility by domestic cats and other felines is higher with raw ingredients than with processed ones.) What is unclear is the extent to which these changes occur and whether, in the aggregate, they tend to alter the healthfulness of specific diets or pet food ingredients. While sufficient protein and amino acid intake is universally regarded as vital for the maintenance of optimal canine health, we are unaware of any experiments suggesting that processing alters these nutrients to a sufficient degree so as to impair health in any specific way.

The likelihood that such negative health effects exist, however, is heightened by the fact that consumption of processed ingredients is a relatively new phenomenon (in evolutionary terms) for the domestic dog. Chronic, incommunicable “diseases of modernity” such as obesity, arthritis, and cancers are disturbingly common in pet populations. Given the lack of prevalence of such diseases in wild species (whose environments still resemble those occupied throughout their evolutionary heritage), that one or several novel environmental stimuli are fundamental causes of these problems is, in our view, undeniable. As is the fact that consumption of processed food ingredients is a very novel environmental stimulus, as is explained elsewhere in this white paper series. To summarize, it is not the case that processed ingredients have been proven to damage canine health; but nor is it the case that this somewhat novel cultural innovation has been proven to be completely safe for dogs and cats either.

**OVERALL SUPPORT FOR PRIMARY THESSES**

1. Enzymatic changes - 1/10 (no experimental evidence of phenomenon; no experimental evidence of related health risks; theoretical model suffers from important flaws).
3. Novelty of food processing as a cultural innovation – 4/10 (no experimental evidence of specific health risks; compelling argument that specific risks may be uncovered through further experimentation).

**REFERENCES**