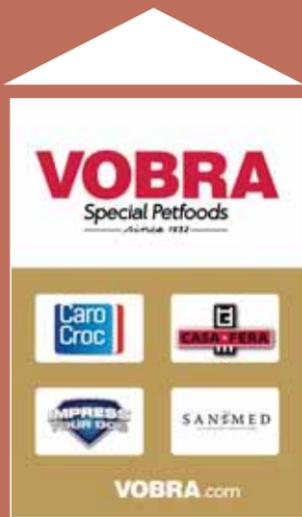




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Meat in kibble petfood

Quite some dog and cat owners feed dry kibble because of convenience and economy while believing that meat-based diets are the natural and healthy way. They look for kibble foods with meat as the number one, most abundant ingredient. However, both character and quantitative impact of the first meaty ingredient are difficult to assess. Compared to dry ingredients, moist ones generally contribute less nutrition as their considerable water fraction is without nutrients.

High-meat dry foods usually contain rendered meal rather than meat. Rendering involves cooking of slaughter by-products, thereby separating fat, and drying the remaining material into poultry, meat or fish meal. Certain pet food marketing and advertising, rating sites and online writings disseminate that animal meal is unnatural and unhealthy. This has fueled the dry market segments of raw freeze-dried, raw-infused kibble and raw-included kibble products.

As the three product groups are manufactured foods, raw is a contradiction in terms: it cannot stand for unprocessed, unprepared or fresh. Raw-infused dry foods represent a combination of kibble plus freeze-dried meat(y) pieces. The ingredient panels of raw-included kibbles normally list both (fresh) meat and animal meal. A few kibble foods tout the absence of (poultry) by-product or animal meal, implying that fresh is superior to rendered.

Both the meal and meat(y) ingredients pass the extrusion cooking and drying procedures to finish dry kibbles. Animal meal is rendered and meaty constituents also undergo various forms of pre-treatment. The two types of animal ingredients have highly variable qualities that are not given by the food's ingredient list. For details owners should contact the manufacturer. There is no evidence that well-formulated meal- and meat-based foods have differential effects on pet health.

Meal and meat

Rendered meals are universally used as protein sources for extruded dry pet food. In the ingredient lists, the word meal has prefixes such as animal, by-product, meat, poultry or fish. Meals are also named by species origin (chicken, duck, beef, lamb, salmon etc), with or without meal as noun. Meals are derived from tissues of farm mammals and fowl, exclusive of avoidable hair or feathers. By-products refer to clean carcass parts other than meat: muscle with accompanying structures.



Raw-included kibble foods are made by introducing wet animal ingredients into the extruder barrel. Commonly used insertion forms are refrigerated, pumpable meaty slurries. The protein level in the final food may be increased by supplementing slurries with (partially) dehydrated or hydrolysed, concentrated animal ingredients. Other insertion forms are cooked slurry or ground frozen meaty blocks. Details of the methods and materials are not found in end-product communications.

Ingredient list

Ingredients are listed in descending order by weight before processing. When

the animal protein sources are declared by individual names and inclusion percentages, the food's meaty nature can be scrutinised. For instance, a kibble food offers 75 percent chicken meat without mentioning fresh. The first two ingredients are 66 percent chicken and 8 percent chicken mince as the dominant protein sources. The food states 37 percent crude protein so that chicken may refer to meal containing about 50 percent protein.

A dry dog food declares 25 percent fresh turkey meat and 28 percent crude protein. If poultry meat comprises 75 percent water and 20 percent protein, then turkey provides 6.1 percent protein in the final product with 10 percent moisture. In other words, turkey meat makes up one fifth of total dietary protein. A brand of dry kibble food purports "no meat meal" and "100 percent fresh meat". The chicken product for dogs asserts 41 percent fresh chicken and 21 percent crude protein, thus chicken representing half of total protein.

Protein digestibility

Meat meals and slurries vary tremendously in chemical and physical characteristics. For proper comparison, parts of the same animal tissue material should either be rendered toward meal or converted into slurry and then incorporated into extruded kibbles. The kibbles should differ only in isoproteinous amounts of the meal and slurry components. Even then, the outcome of a digestibility trial holds true exclusively for the preparations concerned.

A digestibility study in dogs (1) covered comparisons of rendered beef meat and bone meal versus fresh beef and poultry by-product meal versus fresh poultry (viscera, necks and backs). Part of the dehydrated whole egg in the control diet was replaced by a beef product plus tallow or by a poultry product plus poultry fat. The method of fresh ingredient injection into the extruder is not described. The five extruded and kibbled diets contained



13 percent fat, 9 percent variable and 21 percent total protein.

Apparent small intestinal protein digestibility was measured in ileally cannulated dogs. Protein digestibility for diets with rendered and fresh beef was 79.9 and 80.4 percent; for rendered and fresh poultry the values were 73.9 and 82.8 percent. The differences between meal and meat were not uniform. At 43 percent of total dietary protein, fresh instead of rendered poultry increased ileal protein digestibility by 8.9 percent units. At 20 percent of total protein, the calculated difference is 4.0 percent units.

Meat-first and canine health

The composition of 10 meat-first foods was computed. The kibbles, which are recommended for dogs of all life stages, on average accommodated 35 percent protein and 1.3 percent phosphorus. These high levels put senior dogs at greater risk of chronic kidney failure as suggested by data from canine models of the disease (2-4).

List of references is available on request from the author (beynen@freeler.nl)

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