



Whole Animal Nutrition

Leading with Technical Expertise - White Paper

[Leah Lambrakis](#) & [Jarrod Kersey](#), Department of Technical Services

The Comeback

Market trends in the pet food industry have greatly evolved and typically reflect our own lifestyle choices and food philosophies. Whether the drivers are natural and familiar ingredients, nothing artificial or minimally processed foods, the “humanization” trend was born. Today, we believe that the humanization of pet food is no longer a trend but rather purposeful nutritional and philosophical choices we have made for our pets. What has been lost in this evolution, however, are some of the fundamentals that built the pet food industry. One such fundamental is the use of animal by-products from the meat and poultry processing sector. Today, we are seeing a comeback of many of these animal parts, such as organ meats and offals, as we evolve towards whole prey and biologically appropriate, nutrient dense foods for our pets. To begin, let’s dive into what animal by-products are.

What Are Animal By-Products?

To most, organ meats and offals are the internal organs and entrails from meat and poultry. The American Association of Feed Control Officials (AAFCO) is a State-voluntary organization that has set standards for animal feeds and pet foods in the United States. These standards include nutrient recommendations, nutritional adequacy statements, guaranteed nutrients, ingredient definitions, product claims, product labeling and state registration of pet food products sold in the United States. AAFCO has clear definitions for animal by-products which are detailed below (AAFCO, 2020):

9.3 Meat by-products is the non rendered, clean parts, other than meat, derived from slaughtered mammals. It includes, but not limited to, lungs, spleen, kidneys, brain, livers, blood, bone, partially defatted low temperature fatty tissue, and stomachs and intestines freed of their contents. It does not include hair, horns, teeth and hoofs. It shall be suitable for use in animal food. If it bears name descriptive of its kind, it must correspond thereto. (Proposed 1973, Adopted 1974, Amended 1978)

Therefore, meat by-products are the parts of the animal that are not striated muscle tissue and are often not used in the edible (human) food industry, such as kidney, spleen, lung, liver and tripe. These organs and entrails are derived from beef, pork, sheep, lamb, and venison, to name a few. It is important to note that animal livers do have their own definition in AAFCO, however. Notably, many cultures and regions widely embrace the consumption of many of these animal parts such as kidneys, livers and tripe, as a delicacy or in a traditional dish.



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9.14 Poultry by products consists of non-rendered clean parts of carcasses of poultry, such as heads, feet, viscera, and whole carcasses, free from foreign matter except in such trace amounts as might occur unavoidably in good processing practices. If it bears name descriptive of its kind, it must correspond thereto. It shall be suitable for use in animal food. (Proposed 1963, Adopted 1964, Amended 2000, Proposed 2016 rev. 1, Adopted 2018 rev.1)

To this, poultry by-products are the parts of the bird exclusive of the carcass that would typically be found in grocery and butcher stores. Poultry Viscera has its own AAFCO definition, including hearts and livers and gizzards. Known as giblets when combined (hearts, livers and gizzards), these organ meats are often used in our kitchens as unique and tasty food options derived from the bird.

In the same spirit, there are similar definitions for Poultry By-Product Meal (9.10) and Meat and Bone Meal (9.41), which are commonly used in dry pet foods. These are ground and rendered clean parts of the animal, exclusive of added feathers (poultry), hair, hoof, horn, hide trimmings, manure, stomach and rumen contents (meat).

What meat and poultry by-products are not, are waste or random debris from farms, road-kill, nor sweepings from the slaughter-room floor. Misleading and false statements of what animal by-products might be, have influenced the perception of these available ingredient options and their benefits to the nutrition of a pet food formulation. Granted, trust and integrity by the ingredient processors define the quality of the raw materials that each of us in manufacturing source and procure. This wholly lands on the strength of the food safety and quality assurance programs that are implemented, by both the supplier and manufacturer.

Considerations & Benefits

What makes animal by-products good options when considering a pet feeding regime?

Whole Prey and Optimal Nutrition

While both from the *Order Carnivora*, cats are strict carnivores, otherwise described as obligate carnivores, and dogs are truly omnivores. Consumption of the whole animal naturally offered organs and offals (viscera) as a typical and meaningful part of an ancestral diet for both dogs and cats. Organ meats and other animal by-products are wholesome sources of protein and key nutrients such as vitamins, minerals and fatty acids. Those that practice and promote a raw-feeding regime for pets have recognized these benefits as part of providing nutritional variety.



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Animal by-products in the form of organ meats and offals are good sources of highly digestible protein (amino acids), fat (and fatty acids), vitamins and minerals (Marti et al., 2012). As an example, animal livers most notably have very high protein digestibility and quality, and are high in vitamins A, D and C, B vitamins, iron, zinc, copper, and fatty acids (Cramer et al., 2007, Marti et al., 2012). Similarly, many organ meats such as lungs and kidney are high in B vitamins and iron, with heart tissues being high in protein and the amino acids taurine and L-carnitine, plus the potent antioxidant Co-enzyme Q10. The addition of organ meats allow for complimentary nutrition to striated and deboned muscle meats, further optimizing the nutritional balance for our pets.

Palatability

Organ meats are not only nutritious but provide enticing flavor and elevated palatability to cats and dogs. We at Simmons Pet Food, have conducted numerous studies to assess the palatability preferences across the types of organs and offals (liver, lung, spleen, kidney, viscera and tripe), the animal source (beef, pork, lamb, chicken, turkey, among others) plus their inclusion level in the diet. As one can imagine, depending on a dog or cat's physiological or natural preference, the inclusion of one type of organ or animal part may be preferred quite differently from another, and preferred differently between cats and dogs. With this research data, are then able to arm our formulators to make intentional choices when developing a new product, thereby allowing for an enhanced feeding experience. One limitation of by-product meals vs. fresh or frozen animal by-products, is that rendered meals can have both highly variable nutritional composition and quality, and thus varying bioavailability of key digestible nutrients (Kawauchi et al., 2014) compared to fresh or frozen parts.

Earth Mindfulness & Sustainability

The pet food industry historically was sustainable by nature, by sourcing ingredients that were considered secondary from the human food chain. As pet parents are increasingly considering pets as family members, the desire to offer their pets higher quality foods such as cuts of meats suitable for humans, has also kept pace. Considering 'nose to tail consumption' could aid in alleviating the strain on both supply and the environment while providing nutritious complements within the complete diet.

Another consideration is the excess in nutrients that most pet foods contain, directly impacting the health of the animal as well as the environment. As described by Swanson et al., (2013), many commercial pet foods are formulated to provide nutrients in excess of current minimum recommendations, use ingredients that compete directly with the human food system, or are overconsumed by pets, all resulting in food



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wastage and obesity. The researchers go on to describe these combined challenges in optimizing the sustainability of the pet food system.

When we consider the wide range of offerings in the pet food market today – high meat, high protein, single sourced protein, novel meats, as few examples, as an industry we must pause and think about the impact. Protein is the most expensive macronutrient in both economic and ecological terms, plus protein is arguably the nutrient that requires most attention in terms of sustainability (Swanson et al., 2013). In a 2017 study by Gregory Okin at the University of California, it was found that cats and dogs are responsible for 25 to 30 percent of the environmental impact of meat consumption in the United States. Further, the edible by-product yield is around 12 percent of live weight from cattle and about 14 percent of live weight from hogs when pork rinds are included (Ockerman and Hansen, 2000). These numbers represent a substantial volume of animal products that are available for use.

Are we feeding too much meat, thus too much protein? Let's consider this: the protein content of most pet foods range from 18-40% on a dry matter basis in dry kibble and reaching over 50% or more dry matter protein in wet pet foods. The minimum requirement for protein as outlined in AAFCO's published Nutrient Profiles, are 18% and 22.5% for adult dogs and growing puppies, respectively, with the later including reproduction. For cats, the minimum dry matter protein requirements are 26% for adult cats and 30% for growth and reproduction. While higher intake levels of good quality protein can certainly provide health benefits (lean body mass, sports endurance, caloric efficiency), the key is *high quality* protein in terms high digestibility and bioavailability, and most importantly a balanced amino acid profile that is available to the animal.

Food for Thought?

We are strong believers in food variety and diversity for optimal nutrient balance. Considering whole animal nutrition in the form of fresh, frozen or dried organ meats and offals, can provide nutritious, palatable and sustainable sources of animal products to our pets.



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Our Commitment – Leading with Technical Expertise – Leah and Jarrod are here to provide guidance and insights – do not hesitate to connect with us at Simmons Pet Food. We would love to hear from you and be part of your pet’s nutrition solution!

Literature Referenced

AAFCO. Association of American Feed Control Officials. 2020. Official Publication.

Cramer KR, Greenwood MW, Moritz JS, Beyer RS, Parsons CM. 2007. Protein quality of various raw and rendered by-product meals commonly incorporated into companion animal diets, *Journal of Animal Science*, Volume 85:12, 3285–3293,

Kawauchi I, Sakomura N, Pontieri C, Rebelato A, Putarov T, Malheiros E, Gome, MOS, Castrillo C, Carciofi A. 2014. Prediction of crude protein digestibility of animal by-product meals for dogs by the protein solubility in pepsin method. *Journal of Nutritional Science*, 3, E36.

Marti DL, Johnson RJ, Mathews KH. 2012. Where's the (Not) Meat? By products from Beef and Pork Production. *Journal of Current Issues in Globalization*, 5(4),397.

Ockerma HW, and Hansen CL. 2000. Animal Byproduct Processing and Utilization, First edition, Lancaster, PA: *Technomic*. Pp 23.

Okin GS. 2017 Environmental impacts of food consumption by dogs and cats. *PLOS ONE* 12(8): e0181301.

Swanson KS, Carter RA, Yount TP, Aretz J, Buff PR. 2013. Nutritional Sustainability of Pet Foods. *American Society for Nutrition, Adv. Nutr.* 4(2): 141–150.