

Is Your Pet's Food Failing Them?

A recent study exposes the significant differences in nutrient absorption from various dog food types. Discover which diets offer superior nutrition and why many pets might not be getting the energy they need from their meals.

Analysis by [Dr. Karen Shaw Becker](#)

STORY AT-A-GLANCE

- A new study shows that when it comes to amino acid digestibility and true metabolizable energy, fresh, frozen raw, and freeze-dried raw dog foods outperform extruded formulas
- Earlier research showed that dogs fed fresh food show positive microbiome changes and improved overall gut function
- Another study showed dogs eating lightly cooked and raw food had reduced blood triglyceride levels as well, even though those diets were higher in fat than extruded dog food (kibble)
- A nutritionally optimal, species-specific, fresh raw or gently cooked diet is always a better choice for pets than extruded diets

Late last year, a team of researchers at the University of Illinois Urbana-Champaign conducted a study that looked at the effects of **pet food processing**, particularly temperature and duration of heating, on digestibility. Specifically, they set out to determine “the amino acid digestibilities and nitrogen-corrected true metabolizable energy values” of different types of dog food.

This is welcome news, since research into which pet food formats provide optimal nutrition is sorely lacking. Until a sufficient number of scientific, nutrition-based comparisons are made between ultraprocessed vs. fresher alternatives for pets, dog (and cat) parents and veterinarians will continue to make choices and decisions based on incomplete information.

Extruded Diet Finishes Last in All Categories

The study, which was published in the *Journal of Animal Science*,¹ compared four different dog food formats:

- Hill's Science Diet Chicken and Barley Recipe (extruded)
- Just Food for Dogs Chicken and White Rice Recipe (fresh)
- Primal Pet Foods Chicken Formula (frozen raw)
- Primal Pet Foods Chicken and Sorghum (hybrid freeze-dried raw)
- Stella & Chewy's Chicken Dinner Patties (freeze-dried raw)

The results:

- **Amino Acid Digestibilities**

- Freeze-dried raw exhibited the highest; extruded showed the lowest amino acid digestibilities
- Lysine digestibility was notably higher in freeze-dried raw and frozen raw vs. extruded
- Threonine digestibility was higher in freeze-dried raw vs. extruded
- **Reactive Lysine: Total Lysine Ratios**
 - Ratios ranged from 0.93 to 0.96, with freeze-dried raw, frozen raw, and fresh diets maintaining a consistent high-quality profile
- **True Metabolizable Energy**
 - Frozen raw demonstrated higher true metabolizable energy than freeze-dried raw, fresh, and extruded
 - Hybrid freeze-dried raw exhibited higher true metabolizable energy than fresh and extruded
 - Freeze-dried raw showed higher true metabolizable energy than extruded

According to the study coauthors:

“Our results support the notion that differences in diet processing, as well as factors such as macronutrient composition, and ingredient source, characteristics, and inclusion may impact AA [amino acid] digestibility and TME_n [true metabolizable energy] of dog diets. More research should be conducted to determine exactly how, and to what extent, these different factors impact digestibility in dogs.”

Earlier Study: Mildly Cooked, Raw Diets Are More Digestible

An earlier study revealed how different types of diets affect the microbiome of dogs.² The objective was to determine fecal microbiota and metabolite concentrations in eight adult dogs fed four different diets, including:

- Two lightly cooked Freshpet diets
- One raw Freshpet diet
- One extruded diet (Purina Dog Chow)

The study results showed that (unsurprisingly) there are differences in gut bacteria depending on what food dogs eat! One of the study co-authors, Kelly Swanson, a professor of animal and nutritional sciences at the University of Illinois, told PetfoodIndustry.com the food dogs eat has a significant effect on the types of microorganisms found in their digestive tracts.

“The quality and chemical composition of the ingredients and nutrient digestibility are key factors,” says Swanson.

“That is an important factor in our study because the ingredient list, chemical composition (nutrient profile), and nutrient digestibility was quite different among diets. The mildly cooked and raw diets were generally higher in protein and/or fat and were more digestible than the extruded diet.”³

Based on this feedback, the lightly cooked and raw diets performed as I would expect them to, in that they were easier for the dogs to digest than the ultraprocessed extruded diet. And PetfoodIndustry.com made this observation:

“... despite having a higher fat content than extruded dog food, both lightly cooked and raw diets seemed to reduce blood triglyceride concentration, which would be considered beneficial long term. The biological reason for this is unknown.”

My guess is the lightly cooked and raw diets are simply more biologically appropriate (and therefore less metabolically stressful) than the Purina Dog Chow (one of the lowest quality, grain-based kibbles on the market), thus the decrease in the dogs' blood triglyceride values.

Raw Diets Result in Healthier Guts

Other research on how diet impacts the canine gut microbiome has provided better insight into the benefits of feeding species-specific diets to dogs. For example, a 2016 Italian study compared the influence of a raw meat and vegetable diet vs. an extruded diet in 8 healthy Boxers.

The study authors concluded that feeding a raw diet “... promoted a more balanced growth of bacterial communities and a positive change in the readouts of healthy gut functions in comparison to [an extruded] diet.”⁴

In another study in New Zealand of 15 adult dogs, the researchers discovered that the dogs fed a raw red meat diet showed higher levels of digestibility of protein and energy than dogs fed kibble. They also produced **less poop** with lower levels of fecal volatile fatty acids.⁵ As for gut bacteria, the study authors noted that:

“Diet significantly affected 27 microbial families and 53 genera in the faeces. In particular, the abundances of Bacteroides, Prevotella, Peptostreptococcus and Faecalibacterium were lower in dogs fed the meat diet, whereas Fusobacterium, Lactobacillus and Clostridium were all more abundant.”

The shift in the microbiota correlates to protein and fat digestibility in the dogs. By understanding the relationship between a dog's microbiome and digestibility of the food consumed, we gain insight into the influence of diet on the overall well-being of pets.

Fresh Food Is the Best Food for Pets

For the record, I'm not endorsing the Freshpet brand of dog foods, or any pet food made from USDA-failed, feed-grade ingredients. I'm most definitely an advocate of feeding pets human grade fresh food — but honestly, any brand of nutritionally balanced fresh food — over biologically inappropriate dry food.

I recommend transitioning your pet away from “fast food” (kibble), and instead feeding a nutritionally optimal, species-specific diet, which means food containing unadulterated, high-quality animal protein, moisture, healthy fats and fiber, with low to no starch content.

A nutritionally balanced raw or gently cooked homemade diet is the **top choice for pets**, but only for those pet parents who are committed to doing it right. If you don't want to deal with balancing diets at home, feeding a pre-balanced, commercially available raw food is a good alternative.

And be sure to incorporate a variety of **fresh foods** into your pet's diet, too. Blueberries, chia and hemp seeds in coconut oil, raw pumpkin seeds, fermented vegetables, and kefir can provide your furry family member with a variety of nutrition and flavors.

Sources and References

[PetfoodIndustry.com](#), November 14, 2023

¹ [Geary, E.L. et al. Journal of Animal Science, Volume 101, 9 November 2023](#)

² [Journal of Animal Science, Volume 95, Issue suppl 4, August 1, 2017, .pages 111](#)

³ [PetfoodIndustry.com](#), August 29, 2017

⁴ [BMC Veterinary Research. 2016; 13: 65](#)

⁵ [PeerJ. 2017 Mar 2:5:e3019](#)
