

Basics of Canine Nutrition Unit 11 – Assignment by Bianca d’Avoine

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07/02/2024

One size doesn't fit all: Raw versus cooked canine feeding

The practice of feeding dogs a raw diet is gaining popularity in the pet food industry thanks to social media and influencers promoting its benefits. Most raw-based diets are based on certain ideologies, such as the prey model or Biological Appropriate Raw Food (BARF). This essay will explore why a raw diet may or may not be suitable for every dog considering factors such as genetics, age, health concerns and energy requirements, as well as the owner's financial circumstances and time limitations. The potential risks and benefits to raw feeding will be explored as well as identifying between misinformation and evidence-based sources.

Nutrients are chemical components found in food that a dog's body requires to maintain good health (Morris AL, Mohiuddin SS. Biochemistry, Nutrients. PMID: 32119432.). Each species has its own unique requirements for nutrients and many factors can affect these needs, such as growth, life stage, reproduction, genetics, energy requirements, and health conditions. To account for these variations, nutrient requirements are expressed as a range, with lower limits indicating the required amount to prevent deficiencies and upper limits indicating the amount not to exceed, in order to avoid toxicity. (Case, 2011)

Nutrients known as 'essential' nutrients (Fascetti, 2012), cannot be produced by the body and must be obtained through diet to maintain normal health. Some nutrients don't work in isolation; their interactions with other nutrients can affect how well they're absorbed and used by the body. An example is iron and Vitamin C. Vitamin C has an influence on the transportation and storage of iron (Lynch, 2009). Therefore, it's important to balance nutrient intake accurately to ensure that dogs receive all the nutrients they need to function at their best.

Meeting nutritional needs- Cooked or raw

Heat processing of foods can lead to a loss of nutrients such as Vitamin C and B vitamins and can damage food proteins. Heat processing can enhance the likelihood of simple sugars, such as glucose and fructose, to bind with certain amino acids and make them nutritionally unavailable. One essential amino acid that is affected by this process is Lysine. The body can no longer use the end product, an altered form of lysine. Despite this, a (2018) study by Massae Oba comparing raw and cooked (steamed) chicken showed that cooked chicken had a higher digestibility and higher levels of available essential amino acids compared to raw.

Heat processing can also be beneficial by destroying nutrient inhibitors. Examples include Trypsin found in raw egg white which can reduce a dog's ability to digest proteins in the food and anti-thiamine in raw fish which can cause deficiencies in B vitamin thiamine.

Digestibility

Digestibility refers to the ability of an ingredient to deliver nutrients to the dog during the process of digestion. When it comes to the ability of dog food to provide nutrition, digestibility is an important factor to consider. It's not just about whether the food is cooked or raw, but also the quality of ingredients and their sources. Commercial pet foods are often highly processed, which can lead to nutrient loss. In contrast, raw foods tend to be more digestible due minimal processing.

A 2017 study (Sandri MS, Dal Monego G, Conte S, Sgorlon B, Stefon B) conducted on eight adult dogs, fed four different types of food (dry, raw, moderately cooked, and moderately cooked grain-free), measured the protein digestibility. Although the study was small, it did show that the digestibility of moderately cooked proteins was significantly higher (94.6%) than raw (88.3%). Interestingly, when comparing fish, chicken, and lamb meal, fish meal had a much higher digestibility rate than chicken and lamb. This highlights the importance of ingredient sources when it comes to digestibility, regardless of whether the food is cooked or raw.

Economic and lifestyle factors

Lifestyle and budget are important factors that influence the decision-making process when it comes to feeding dogs. While a well-balanced raw diet can be ideal it can be time-consuming to prepare, which may not be feasible for those leading a busy lifestyle. Additionally, sourcing ingredients that meet the nutritional needs of dogs can be challenging in certain regions.

According to a survey conducted in 2001 by Wissink, which involved almost 1500 participants, 81% of the respondents reported feeding their dogs dry food, while 17% purchased fresh food and 9% purchased raw food. However, when the participants were asked what they would purchase if they had unlimited money and availability, the percentage of people opting for kibble dropped to 36%, while fresh food increased to 34%. Raw food experienced a slight decrease to 7%.

In the same study 14% of participants said they would not purchase fresh because it was difficult to store and serve, this shows that cost is not the only factors in influencing feeding choices.

Individuality

There is no one-size-fits-all answer to what dogs should eat, and it's important to understand that each dog is an individual with unique nutritional needs. While raw diets may work for some dogs, it's not necessarily the best option for all dogs. In fact, as dogs age, their requirements for and ability to digest food can change, and what

worked for them in the past may no longer serve them well. Additionally, dogs with food allergies or other health issues may require a specialised diet that is not easily achieved with a raw or homemade diet. Ultimately, what a dog eats should be based on what best serves their individual needs and circumstances, considering their age, health, living situation, and the owner's resources. The benefits of feeding a dog a perfectly balanced raw diet are limited if the dog cannot tolerate the food or doesn't find it palatable. The following is a reflection by this pages author.

When I first started feeding my dogs, I believed that raw food was the best diet for them. My previous dog thrived on raw food until he turned 10. However, I later realised that every dog is unique, and their nutritional requirements and digestion process can change with age. My dog started experiencing digestive issues and I continued feeding him raw food because of my belief. It took me a year to understand that raw food no longer served him and switching him to a cooked diet helped him thrive. With my second dog I was more knowledgeable and had a nutritionally balanced recipe for him. However he had many food allergies and required an extremely high-calorie diet, which was difficult to maintain. Ultimately, we had to switch him to a processed kibble diet to get him to a healthy weight. After two years, we are now at a stage where we can test out individual fresh foods to find what he is and isn't allergic to. If I had persisted with a raw or cooked diet I probably wouldn't have a dog today.

If we are to place all dogs in a box that they should eat raw or cooked we are doing our dogs a disservice by making an overall rule instead of considering the individual dog. By understanding each ingredient picked for a dog, what it has to offer and how we can complement it with other ingredients we can achieve a well-balanced healthful diet.

Pitfalls of popular raw feeding, ratio diets and balancing over time

When it comes to feeding dogs, ratio diets and balancing over time have become increasingly popular. However, by focusing solely on ingredients rather than nutrients, we can overlook the vast differences in nutritional profiles that exist between sources. For instance, the amount of copper found in chicken liver versus beef liver vary greatly, which means that the nutrient profile of a ratio recipe can differ significantly depending on the source of liver used. Chicken liver contains .5 mg of copper per 100g whereas beef liver contains 9.8 mg per 100g. It can safely be assumed that depending on location, budget, food allergies and what the dog will find palatable will have owners using a particular ingredient.

Dr Ian Billinghurst author of the book *Give your dog a bone* (1993) and founder of the BARF diet positions himself as the father of the worldwide movement of raw feeding. ‘Your dog will not, cannot, suffer mineral deficiencies, imbalances or excesses, when raw meaty bones make up the bulk of the diet, this applies to dogs of all ages including puppies’ (Billinghurst,1993). Billinghurst states that all you need to do is follow very simple nutritional guidelines as follows; (Billinghurst,1993 pg 266-267)

1. *The bulk of your dog’s diet should be raw, meaty bones*
2. *Feed your dog a wide variety of foods based on the type and quantity of foods a wild dog would eat*
3. *Most of your dog’s food should be raw*
4. *Your dog should have balanced diet overall. But not every meal needs to be balanced. ...better overtime, during consumption of lots of different meals*
5. *Watch your dog and vary accordingly to weight*

To summarise the assertions in Billingshurst’s book a recipe should consist of:

- 60% raw meaty bone (majority poultry sources)
- 20% meat (majority poultry sources)
- 10-15% organ
- Remainder “veggie pulp” (pg. 269) recipe/ grain

A recipe following this BARF diet for one day would look as follows:

Chicken Wing w/S RMB *	246.00	g
Chicken Thigh	120.00	g
Chicken Liver	60.00	g
Beef Kidney	30.00	g
Chicken Egg	50.00	g
Carrots	20.00	g
Peas	20.00	g

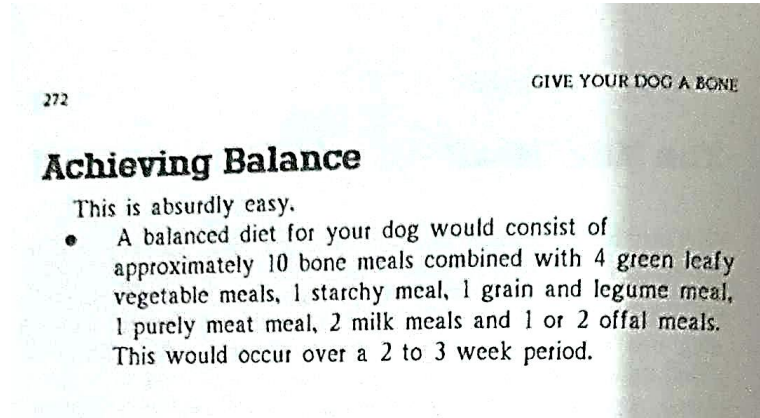
Celery	30.00	g
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Low fat Kefir	15.00	g
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Safflower oil	4.50	g
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NOW Kelp 325mcg capsules	1.00	capsule
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Brewers yeast	2.85	g

Note:* Dr Billingham makes references to a 25 kg dog, recipe is based on this weight. * mcg not stated for kelp tablets just one capsule per day.* W/S denotes with skin RMB denotes raw meaty bones

While this recipe looks from an ingredient level to have a wide variety and cover all basis, this recipe is deficient in:

- Omega 3 both EPA and DHA
- Magnesium
- Zinc
- Copper
- Manganese
- Thiamine
- Potassium
- Vitamin E
- Vitamin D3

It's clear that ratio diets don't always ensure that your dog is getting all the necessary nutrients. However Dr Billingham's book suggests that balancing a diet over time is the solution. By following his guidelines, it's possible to achieve balance within just a few weeks - typically two to three, according to the author.



A recipe over a two-week period includes:

Chicken Wing w/S RMB *	2146.00	g
Chicken Thigh	120.00	g
Chicken Liver	510.00	g
Beef Kidney	30.00	g
Chicken Egg	50.00	g
Carrots	20.00	g
Peas	20.00	g
Celery	530.00	g
Low fat Kefir	65.00	g
Safflower oil	18.00	g
NOW Kelp 325mcg capsules	7.00	capsule
Brewer's Yeast	11.40	g
Ground Beef 3%	1500.00	g

Canned Sardine in Water	300.00	g
Lamb Ribs RMB *	750.00	g
Skinned Whole Rabbit without head or feet RMB *	700.00	g
Pork Kidney	500.00	g
Apple w/S	300.00	g
Blueberry	300.00	g
Chicken Egg	50.00	g
Spinach	500.00	g
Medium-grain Brown Rice, Cooked	200.00	g
2% Cottage Cheese	300.00	g
Goat Milk	200.00	g
Buckwheat Groats, Cooked	200.00	g

This recipe is still deficient in:

- Zinc
- Copper
- Magnesium
- Manganese
- Iodine
- Thiamine
- Vitamin D3
- Vitamin E

Conclusion

When considering whether raw feeding can be balanced and offer what your dog needs to thrive the short answer may be 'yes'. There are many great attributes to feeding your dog raw when done correctly. The longer answer is more complex and includes consideration of a range of factors as explored in this essay. Choosing an appropriate diet for your dog requires thoughtful consideration of both raw and cooked food options and the

different roles they play in providing suitable nutrition to fit both the dog and the financial and lifestyle situation of the owner. Whether feeding raw, cooked or a combination it is crucial to prioritise the quality of ingredients and ensure that the nutrients are well-balanced to cater to your dog's specific needs. By understanding the way nutrient's function and how your dog utilises them, you can make informed decisions and avoid being swayed by anecdotal claims, providing your dog the nutrition to help them thrive.

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