ISSUE 1 JULY 2019

bestie®

kitchen

The science of dog nutrition simply explained

PLUS
How to check if your dog is fat!

FRESH & BALANCED!

3 EASY STEPS

TO HOMEMADE DOG FOOD

hello & welcome!

This little book was written because I was pissed off. Really!!!

The short story is this: I'm a foodie. And I'm also a dog-parent. Over the last 10 years, as our little dog Mondoe inched closer to 22 years old, we moved further and further away from processed food. For ages we tried kibble for what I thought was 'the balanced stuff' with fresh lean mince on top. But both Mondoe and pack-partner, 18-year old Alfy, ate the mince… and left the kibble.

That led me to hunt for a better way to feed our dogs. The more I researched how kibble and other dry food is made, the more worried I became. (See *Kibble: today's dog cake?*) The more I researched the science of dog nutrition, the more pissed off I became.

Why? Well, there's an anti-homemade food campaign going on. It's a push that's been going on for some time, to convince dog guardians that they can't provide the right nutrition for their dogs. I don't believe that's the case.

However, I do believe that dog nutrition is a science and I also know that the majority of homemade diets out there aren't nutritionally balanced. That is a problem.

I wrote this book to explain the science, and outline a simple method that makes the fresh food you give your dogs, complete and balanced. This simple method uses our bestie balancing supplements and **thebestie.app**. After all, we designed both of those things to make it easy to create balanced homemade food for your dog, right from your own 'bestie kitchen'.

a short history of modern dog food

Shaped by our relationships to our dogs, our food…and the influence of big money.

The war on table scraps begins:

"table scraps will break down his digestive powers [making] him prematurely old and fat"[1]

Ken-L-Ration moves onto TV in the 50s, running commercials on shows like ***The Adventures of Ozzie and Harriet***.[2]

"This dog food uses only USDA, government-inspected horse meat!"

1860

James Spratt, an entrepreneurial American lightning rod salesman, notices dogs hanging around the English wharves are eating left over human biscuits. He creates and launches **Spratt's Fibrine Dog Cakes**, made of wheat, vegetables, beetroot and beef blood.

1876

A young **Charles Cruft** starts working for Spratt, promoting dog cakes to breeders and English gentlemen. Making the connection between pure breed dogs, dog shows and 'canine nutrition', Cruft launches the **Great Dog Show** in 1891. It still runs today.

1880's

A Boston veterinarian introduces **A.C. Daniel's Medicated Dog Bread**, and declares that unlike the competition it's "free from cheapening ingredients such as talc powder and mill sweepings".

1890

Spratt's launch in the USA.

1908

F.H. Bennett Biscuit Company launch Maltoid dog biscuits, making biscuits shaped like bones.

1922

Chappel Brothers in Illinois launch **Ken-L-Ration**, the first canned dog food in the United States, made from horse meat. In **1930** they start sponsoring a popular radio show, *The Adventures of Rin Tin Tin*. Ken-L-Ration becomes such a success that by the mid-30s they're breeding horses just for dog food (and slaughtering 50,000 of them a year).

1931

Nabisco buys F.H. Bennett and renames the biscuits **Milk-Bones**. In **1940** they start making the first different-sized kibble for different breeds, and in **1950**, they use Rin Tin Tin and Rusty to promote the product.

1939

Veterinary nutritionist and Hill's founder **Mark Morris** develops a specialised diet — **Prescription diet k/d** — for a guide dog named Buddy, who had been diagnosed with renal failure. Other prescription diets follow, sold through vetinary practices.

1941

Canned dog food now has 90% share of the market… until the United States enters World War II and the government starts rationing tin and meat. Then dry dog food becomes popular again. This **coincides with the growing popularity of human processed food** and the fact that agricultural industrialisation has made commodities like **meat, grain and their by-products, cheap and plentiful f**or dog food manufacturers.

1956

Purina Dog Chow makes the **first 'kibble': pet food** made using extrusion to form distinctive shapes.

FROM THE WILD

TO THE BARNYARD

TO THE FRONT YARD

TO THE FRONT PORCH

A SHORT HISTORY OF MODERN DOG FOOD CONTINUED

“Our biggest competitor is still table scraps.[3]”

Chairman,
National Pet Association Manufacturers Committee.

In the 60s, dogs become widely regarded as family members; dog food companies convince guardians that **commercial diets are superior nutrition** for dogs and better than table scraps. They gain the trust of vets, who then recommend clients feed their dogs commercial food. They also hit marketing… **pet food companies begin an unofficial campaign against the feeding of “people food” to dogs both by emphasising the derogatory nature of the phrase “table scraps” and by playing up the various health components of commercial diets**.[4]

“We got stuff in one thousand daily and weekly papers,”

reports George Pugh, an executive of Swift and Company (makers of Pard dog food)
to industry colleagues at a 1964 meeting of the Pet Food Institute.

Pet Food Institute staff also “assist” 14 popular magazines in the preparation of feature articles about dog care, which advocate commercial pet food to the exclusion of everything else. A script prepared and distributed by PFI, warning of the dangers of table scraps, gets airtime on 91 radio stations throughout the country.[5]

1964

The Pet Food Institute, a lobbying group for pet food industry, begins **a campaign to get people to stop feeding their dogs anything but packaged dog food**.

1966

In Australia, a young **John Mars** sets up his factory in Albury Wodonga and his Petcare Information and Advisory Service (PIAS), a public relations and marketing offshoot.

1968

The **Association of American Feed Control Officials** (AAFCO) develop the first regulations for the pet food industry.

1993

Australian veterinarian **Ian Billinghurst** releases the book, ***Give Your Dog a Bone***, and introduces to the world a novel way of feeding dogs — the **Bones And Raw Food**, or **BARF**, diet.

2007

Canadian pet food manufacturer **Menu foods** issues the largest pet food recall in history – 4000 cats and dogs dead. The cause? Wheat gluten, imported from China, contains high levels of melamine and cyanuric acid causing pets to die from acute renal failure.

In Australia, imported chicken-jerky treats from China cause kidney toxicity in 108 dogs.

Post 2007

Alternative commercial dog foods and home-prepared diets grow in popularity.

2008

In Australia, 87 cats develop symmetrical hindlimb ataxia, paraparesis, tetraparesis, paraplegia or tetraplegia in association with eating an imported, irradiated dry pet food.

March 2018

Nine Victorian police dogs succumb to a rare disease, megaesophagus, believed to be attributable to the **Mars’ Advance Dermocare** kibble.

June 2018

Animal ear tags are among plastic and metal rubbish being ground up and put into pet food, insiders confirm to the **ABC’s 7.30**.[6]

October 2018

Senate Enquiry into the regulatory approaches to ensure the safety of pet food kicks off. At this time, the pet food industry in Australia is self-regulated, with no mandatory recall system, and no mechanism for consumers to report adverse events. The Australian Standard for the manufacturing and marketing of pet food is voluntary and published behind a paywall.

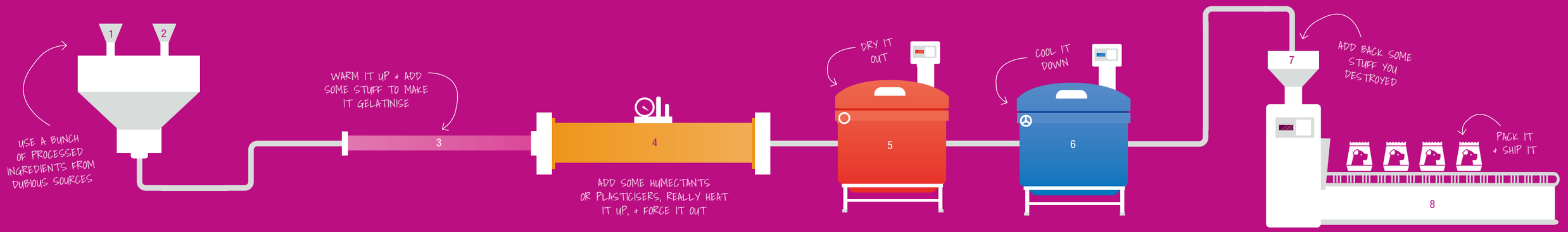
TO THE LIVING ROOM

TO THE BEDROOM

TO THE BED[7]

kibble: today's dog cake?

Big pet food companies claim the high ground in animal nutrition – but is kibble really all it's cracked up to be? We break down the manufacturing process.



1 Dry ingredients

Rendered protein meals are a common dry ingredient in kibble. Rendering cooks and dries meat carcasses, offal and potentially other contaminants (plastic, metal[1]) into a dry product. Rendering is done at high heat, from 120°C to more than 175 °C. At these temperatures, any fat in the material will essentially fry the material being rendered, leading to a relatively crispy product. When ground, as is typical for by-product meal, the crispy texture creates high shear and *the shear forces disrupt the native structure of the protein molecules. The combination of the high temperature and the shear, denatures a substantial portion of the proteins in the rendered meal.*[2] (My italics.)

The structural change in the protein is a possible trigger for food allergies. Research shows the immune system may not recognise the altered protein structure and treats it as a foreign invader.[3]

2 Wet ingredients

Refrigerated, meaty slurries are pumped into the extruder barrel.

3 Pre-conditioner

The dough is heated in the preconditioner prior to introduction to the extruder. Here, starch ingredients may be mixed with water in the pre-conditioner. When the starch-containing dough is forced through the extruder at high temperature and pressure, the starch gelatinises and expands, forming a "puff" or "kibble" as the dough comes through the extruder die, the kibble being somewhat less dense than the dough prior to extrusion.[4]

Artificial colours, flavours, preservatives, and other additives used in some commercial dog food can damage a dog's internal organs, especially the liver.[5]

4 Extruder

The extruder is where the primary cooking phase happens. The dough is cooked under intense heat and pressure as it moves toward the open end of the extruder. The hot dough then passes through a shaping die and knife (similar to the action of a meat grinder) where the small pieces expand rapidly into kibble once they are under standard air pressure. Here, viscosity-increasing agents, such as xanthan or other gums (as derived from a natural source, chemically modified, or fully synthetic), carboxymethylcellulose (CMC), pectins, agar, or gelatin are added to adjust specific mechanical energy (SME) during extrusion.

The extrusion process primarily destroys vitamin A, vitamin E and the B-group vitamins in dry food ingredient mixtures. Keep in mind that B-group vitamins are water soluble, meaning your pet's body can't store them – they must be provided daily through diet.[6]

5 Oven

The kibble is dried in an oven until its moisture content is low enough to make it shelf stable like a cookie or cracker.

Dogs' natural diet is up to 70 percent water and their bodies have evolved to consume a diet that is rich with water. The manufacturing process makes kibble too dry, which means your dog's body has to provide enough moisture to reconstitute the food in their digestive tract. "A lifetime of minor dehydration is stressful to multiple organ systems, but most notably the kidneys."[7]

6 Cooler

The drying oven is followed by a cooling phase.

7 Coating

The kibble may pass through a machine that sprays on a coating, which is generally a flavour enhancer. Additional fats may also be added after extrusion, with fat-based or fat-containing coatings.

Fats added in coatings are susceptible to oxidation, which causes the fat particles to break down into smaller compounds such as malondialdehyde, and the fat becomes rancid. Rancid fats can destroy vitamins, which can lead to vitamin deficiency. To avoid rancidity developing, preservatives are added.

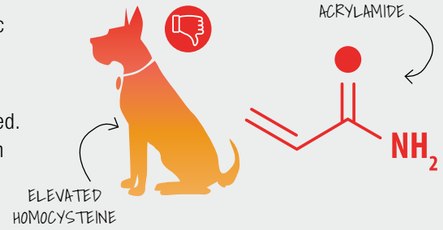
8 Packaging

Bags, boxes, pouches, etc.are filled during the last step to precise amounts, to meet the weight advertised on the label. The final result is finished pet foods or treats.

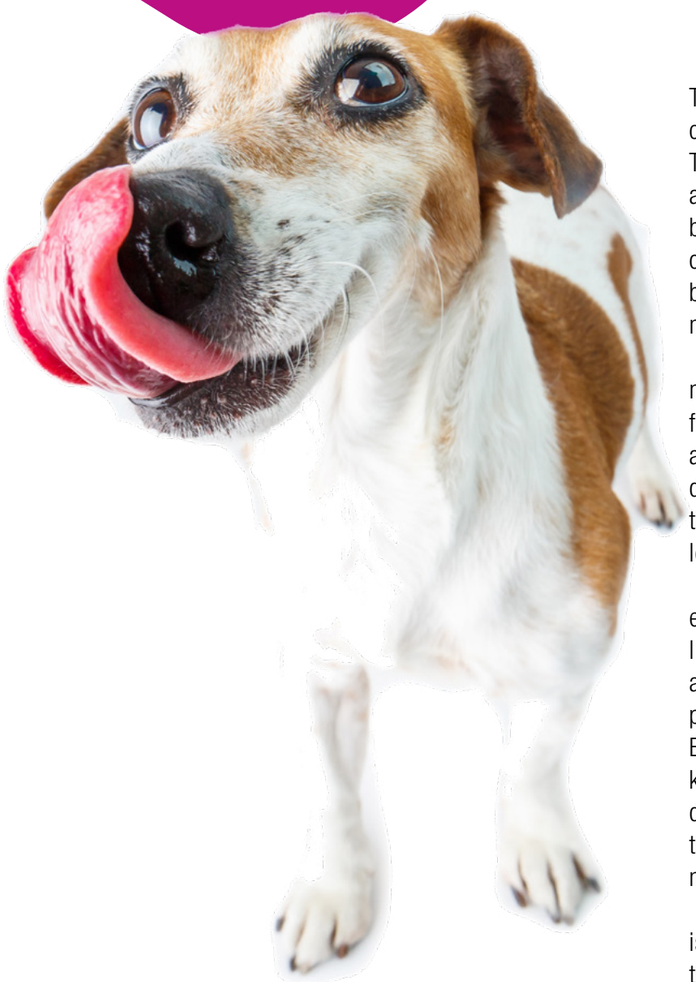
SOME PROBLEMS WITH KIBBLE

- When a protein joins with a carbohydrate, the biochemical result is a compound — advanced glycation end products (AGE) — that can cause widespread inflammation and damage in the body. In humans, a direct link exists between the amount of processed foods consumed and the level of AGE in the blood; AGE has also been shown to exacerbate diabetes and interfere with kidney function. **Research now shows that the less processing that occurs in pet food, the less heat applied, the more moisture maintained, and the lower the AGE**.[8]

- Dry fed dogs showed significantly elevated levels of homocysteine, a marker for systemic inflammation. Homocysteine levels and obesity are strongly correlated.[9]
- Two potent, cancer-causing substances are created when dry pet food is made by the extrusion process. When protein is extruded, carcinogenic heterocyclic amines are created. The byproducts of extruded starches are acrylamides. Both are known to cause cancer in dogs and cats.[10]



what a dog should eat



Despite how we feel about them, dogs aren't little humans. Here's a simple guide to the basics of dog nutrition.

There's a lot written that suggests that dogs are carnivores and therefore entirely meat eaters. That isn't strictly true. In fact, dogs and cats are members of the biological order Carnivora, but while cats are pure meat eaters, dogs are omnivores. This means they've evolved (see breakout) to eat a lot of meat and some plant material.

The dogs' diet, and in particular the macronutrients — carbohydrates, protein and fat — are what gives our dogs the energy to run after the ball, lie around on the couch, breathe, digest, sleep and poo. The amount of energy they need, depends on the dog's age, activity level and other factors.

However, when it comes to the amount of energy in the food you feed him, things get a little tricky. Firstly, the energy in dog food that's available to the dog after that lost in weeing, pooing and farting, is known as Metabolisable Energy (ME). Expressed as kilocalories per kilogram (kcal/kg), ME indicates the amount of digestible energy in the food. The higher the ME, the more energy in the food, and the less you need to feed of it.

However, what the ME number doesn't tell us is the amount of carbohydrate, protein and fat in the food. Two foods could have the same ME but different amounts of protein — and carbs.

In fact, when it comes to carbohydrates, research shows that the 'gluconeogenic capacity' of a dog's liver and kidney is adequate to supply their needs for glucose — even as puppies[1]. That means dogs have no nutritional requirement for dietary carbohydrates. High levels of dietary fibre, will increase food volume while decreasing energy content.

Several studies[2,3] show that high-protein, low-carbohydrate diets, promote greater weight loss while also maintaining lean muscle mass, than high-carb and high-fibre diets.

In summary, key things to remember are that:

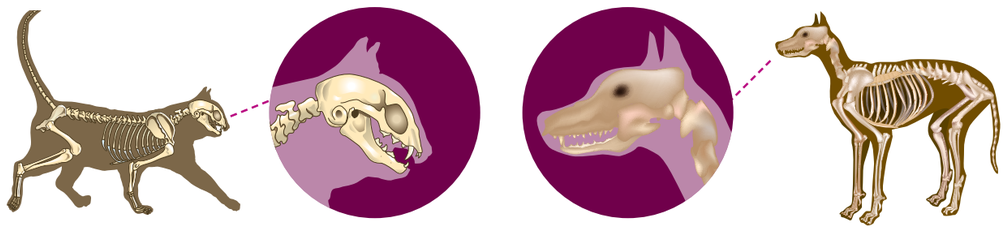
- Fat delivers most of the energy a dog needs, as well as essential fatty acids.
- Protein provides essential amino acids.
- Dietary carbs aren't needed.
- The remainder of the diet needs to provide essential minerals, vitamins and water.

How to calculate ME

The ME can be calculated using the Atwater Factor, a value determined by multiplying the percentage digestibility by the energy value. (And with a factor of 8.5, fat packs more of an energy punch than protein or carbohydrate.) Simply multiply the percentage of fat, protein, and carbohydrate by the respective Atwater Factors, add together, and multiply by 10.

Nutrient	% Digestibility	Energy Value (kcal/gm)	Atwater Factor (kcal/gm)
Fat	90%	9.4	8.5
Protein	80%	4.4	3.5
Carbohydrate	84%	4.15	3.5

The modern Carnivora



The modern Carnivora is divided into two groups, of which Fissipeds is one. That in turn, is split into two superfamilies, of which the Canoidea is one, and Feloidea is the other. (There was a third; it's now extinct.)

Cats are members of the Feloidea family and are pure meat eaters, while dogs are members of the Canoidea family and are omnivores. Dogs' omnivorous dietary patterns were also established early in evolution.

Dental formula is a key indicator and that of dogs suggests an omnivorous diet. In contrast, the dental formula of the cat is consistent with a strict carnivorous diet. A comparison of modern dogs with one of the first Canids, shows there's been little change in the form and function of the teeth, for about 30 million years.[4]

3 STEPS TO

Homemade Dog Food

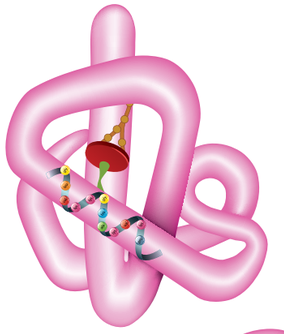
Making balanced homemade food for your dog, that also boosts their health, can be easy as one-two-three.

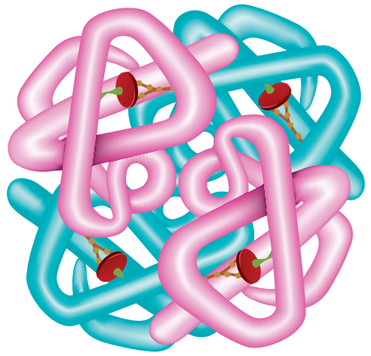
1 + PROTEIN

2 + VITAMINS, MINERALS & FATTY ACIDS

3 METHOD

1 PROTEIN





Proteins are made up of chains of amino acids, and dogs need 22 of them to stay healthy and alive.

Amino acids are either essential, in that they can't be produced during metabolism by the body and must be provided by diet, or non-essential, in that they can be produced in the body from other proteins.

How they work

Once absorbed into the bloodstream, amino acids can be used to form new proteins that help build muscle, repair tissues, create enzymes and hormones, transport oxygen and iron in the blood and support immune function. Proteins are also a source of energy and a major component of hair, skin, nails, ligaments, tendons and cartilage.

What dogs need

While human adults need eight essential amino acids, dogs need 10. However, not all proteins are equal. Proteins from animal sources provide the highest quality protein; plant proteins don't provide all the amino acids a dog needs in the right proportions. Not only that, but the availability of amino acids each protein supplies can be different; that's known as biological value. For example, eggs have a biological value of 100, beef, 80 and wheat, 55.

The digestion coefficient expresses how the protein is best utilised in the body, and it depends on the protein source as well as how it's processed. For example, protein from raw red muscle meat is highly digestible, around 94% compared to the digestibility of 78% in beans and 86% in whole wheat[1].

In a research study done with adult Beagles, comparing commercial diets and fresh mince, the fresh mince had a significantly higher digestion coefficient than the commercial diets.[2]

What about water?

Water is essential for your dog's healthy diet. It helps eliminate waste from the body, regulates body temperature, and transports nutrients. Always have water freely available. However, if you're feeding fresh protein, along the lines that we've recommended here, about 70% of that protein will be moisture. If you're sticking with kibble, your dog needs even more water, to help with digestion.

Feed the ~~man~~ dog meat!

An IAMS™ research study shows that meat-based protein was better for senior dogs.

The IAMS™ Company examined how the type of protein in a diet **affected the body composition of adult and senior dogs.**[3] Adult and senior dogs were fed diets with varying amounts of protein from chicken and corn-gluten meal, and their body composition (muscle versus fat tissue) was analysed. In addition, levels of key blood and muscle proteins were measured.

Compared with dogs fed a diet with 100% chicken protein, dogs fed diets with decreasing levels of chicken and increasing levels of corn-gluten meal showed:

- Decreased lean tissue
- Increased body fat
- Decreased levels of blood proteins routinely used as markers of superior nutritional status

This was independent of the overall dietary protein level (12% or 28%), which was also examined.

In another study conducted with senior dogs, those fed the higher chicken protein, chicken-based diet had better body composition, and a muscle-specific protein pattern identical to that in healthy, young-adult dogs.

Takeaway

Make fresh animal meat the foundation of your dog's diet, to supply high quality protein, and, depending on the choice of meat, most of the fat your dog needs too. (As we saw in ***'What a dog should eat'***, fat is your dog's most concentrated energy source.) At Bestie Kitchen, our animal nutritionist works on the basis that 95% of the meal should be fresh meat when feeding adult dogs. (We make it 88% for growing dogs.) Raw meat is better but if cooked, do it lightly.

2 VITAMINS, MINERALS & FATTY ACIDS

What dogs need: fatty acids

As we've seen, dietary fats provide the most concentrated source of energy for your dog. However, they also supply essential fatty acids that act as carriers for important fat-soluble vitamins. Fatty acids play a role in cell structure and function.

In particular, dogs, like most other mammals, have a dietary need for polyunsaturated fatty acids of the omega-6 series. For example, an omega-6 deficiency is due to a lack of dietary linoleic acid. The signs of that eficiency are skin lesions, dermatitis, retarded growth, increased metabolic rate and reproductive capacity, among other effects[4]. A deficiency in omega-3 is due to a lack of alpha-linoleic acid. The signs and metabolic role are less defined.

What dogs need: vitamins

When it comes to vitamins, dogs need the following vitamins from the diet, in various amounts: vitamin A, vitamin D, vitamin E, thiamine, riboflavin, pantothenic acid, niacin, vitamin B6 (pyridoxine), biotin, cobalamin, folic acid and vitamin K.

These vitamins have a variety of roles. For example, thiamine helps regulate energy and carbohydrate metabolism, and activates ion channels in neural tissue. Vitamin B6 is responsible for glucose generation, red blood cell and nervous system function, hormone regulation, immune response, niacin synthesis, and gene activation. Pantothenic acid helps with energy metabolism.

Folic acid plays a role in amino acid and nucleotide metabolism and in mitochondrial protein synthesis.

What dogs need: minerals

There are 12 essential minerals for dogs. Calcium and phosphorus are crucial to strong bones and teeth but they need to be in the right ratio. Dogs need magnesium, potassium, and sodium, for nerve impulse transmission, muscle contraction, and cell signalling. They need iodine for normal thyroid function and zinc for normal bone and cartilage development. Many minerals that are present only in minute amounts in the body, including selenium and copper, act as helpers in a wide variety of enzymatic reactions[5].

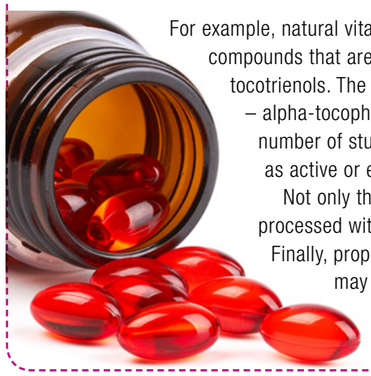
Meeting (and beating) the standard

The combination of bestie ALLROUNDER and protein in recommended quantities, meets the nutritional levels in the AAFCO Dog Food Nutrient Profiles for All Life Stages.

In some instances, we have also included vitamins that are not regarded as essential, but where research has shown a benefit, like vitamin C. For example, when dogs are stressed or as they age, they become less proficient at producing their own supply of vitamin C. In a longitudinal study of aging beagles, a diet rich in antioxidants – including vitamins C, E, and flavonoids and carotenoids from fruits and vegetables – improved cognition and reduced oxidative damage[6]. You can find the AAFCO guidelines on P.26

Natural vs synthetic?

While synthetic vitamins can have the same chemical constituents as natural ones, debate is still ongoing as to whether they're as 'bioavailable' or effective.



For example, natural vitamin E is a collection of eight chemically unique compounds that are derived from plants, including four tocopherols and four tocotrienols. The less expensive, synthetic vitamin E is one compound – alpha-tocopherol. Holistic Dr of Vet. Medicine Dr Jane Bicks, cites a number of studies that show that the synthetic form of vitamin E is not as active or easily absorbed as the natural form of vitamin E[7].

Not only that, but most vitamins in supplements are made or processed with petroleum derivatives or hydrogenated sugars[8].

Finally, proponents of 'food synergy' believe that whole ingredients may provide health benefits that the individual fractionated ingredients or single nutrients cannot provide[9].

Takeaway

Your dog needs a balance of the essential fatty acids, 12 vitamins and 12 minerals, in the diet. While some of these come from meat, the remainder need to come from dietary sources. The right balance of all of these fatty acids, vitamins and minerals is difficult to accurately create at home. At Bestie Kitchen, our animal nutritionist has formulated the bestie balancing supplements to provide the missing essentials and works on the basis that 5% of the meal should be the bestie balancing supplement when feeding adult dogs. (It's 12% for growing and reproducing dogs.) We also believe that whole food, dietary sources are superior to synthetic supplements, so our balancing supplements are all natural.

3 METHOD

We said our method for homemade dog food was easy, and it is. It's literally, one-two-three. But before you whip out the food bowl, there's preparation – and not the kitchen-related kind.

Preparation

The key first step is work out how much you need to feed your dog. That's because we need to manage our dogs' weight. (We talk about why portion control is essential in *Is fat killing your dog?*)

We created **thebestie.app** to make portion control easy and scientific. Either jump online or access **thebestie.app** on mobile, and punch in your dog's weight, age and activity level.

However, before the app gives you the daily feed quantity, it will ask you what proteins you intend to feed your dog over the next week.

Why is this important? Two reasons.

Firstly, we believe in rotating the proteins. That's because the nutrient composition of various meats is not the same. For example, the level of thiamine – deficiencies in this essential nutrient were the basis for a number of pet food recalls in 2017[10] – is three times higher in lamb than beef. If we want to make sure our dogs get a truly balanced diet, then we won't just feed one protein.

Secondly, many argue that feeding one type of diet increases the risk of food allergies, often manifesting as itchy skin. (Plus, one type of meal day-in, day-out is boring!)

If you are going rotate the proteins, as we recommend, then the app is going to give you a different feed quantity, based on the protein. That's because, as we saw before, fat is your dog's most concentrated energy source. However, the fat content of lean lamb vs lean beef vs kangaroo is vastly different – about 4.7gm/100gm vs 2.8gm/100gm vs 0.7 – 1.1gm/100gm respectively.[11,12]

Once you've chosen your proteins then, the app will work out exactly how much food you'll need to give your dog, and a shopping list for the week. Preparation, you've done it.

Cooked or raw?

A famous dietary study done with about 900 cats, between 1932 and 1942, by human doctor, Francis M. Pottenger, may have the answer.

For several generations, one group of cats was fed a completely raw diet – meat, bones, milk and cod liver oil. Other groups were fed the same foods completely or partially cooked. The results were astounding. In summary:

- Cats on the entirely raw food diet were completely healthy and never needed veterinary attention.
- The cats on the cooked diet had a series of health problems – bladder inflammation, skin disorders and mouth and gum issues. With each generation their dental arches became more and more deformed, and their skulls became thin. In just three generations their bone density fell to 3% of the calcium of the healthy cats. In the same time, they'd deteriorated until they could no longer reproduce.
- It took three to four generations on an all-raw diet, for cats to recover tooth and jaw formation, skeletal structure, and health.

Pottenger went on to conduct other studies with cattle, chickens and guinea pigs to test the difference that cooking makes. While Pottenger did not study the impact of raw vs cooked feeding on dogs, we infer that cooking is generally less beneficial for our dogs than raw. However if your dog doesn't like raw, light cooking, at low temperatures is the next best thing.

Simple by design

It's possible you might think we cheated. After all, the key reason this method is so simple is because the bestie balancing supplement is doing the hard yards. Instead of you trying to work out how much of each food is needed to make meals that are both balanced and palatable, we've done that for you.

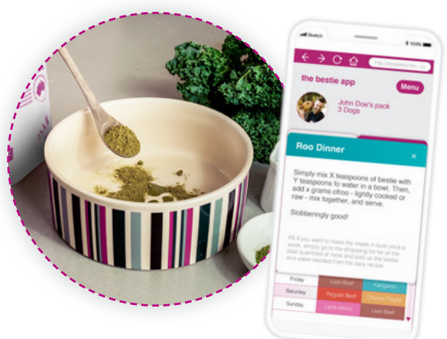
This simplicity is by design, not accident. As we said at the beginning, we created Bestie Kitchen to help you easily balance your homemade dog food and boost your dog's health, right from *your* own 'bestie kitchen'.

The one-two-three of feeding

At mealtimes, the 3-step homemade feeding method is as simple as this:

1

Measure out the right amount of bestie balancing supplement (you'll get this from



2

Mix it with a dash of water

3

Add the right amount of raw or lightly cooked meat protein (you'll get the right amount from **thebestie.app**)

bestie®

BALANCERS

You add the meat.
We'll balance and boost it.

The majority of homemade diets for dogs are nutritionally unbalanced. At Bestie Kitchen, we set out to solve this problem.

By simply adding the ALLROUNDER blend of 19 super-nutritious whole foods to the recommended quantities of raw or lightly cooked protein, your dog will get the essential amino and fatty acids, vitamins and minerals, so often missing in homemade diets, as well as some extras to help maintain good joint, immunity and gut health.

bestie® kitchen

is fat killing your dog?

The human obesity epidemic is well-known, but the spread of the canine epidemic may be more of a surprise. A fear of ‘fat shaming’ and ‘optimism bias’ may stand in the way of fixing it.

You might think the word ‘epidemic’ is too sensational to apply to obesity in dogs. However, in Australia, 41% of dogs are overweight or obese[1]. In the US, it’s almost 56%. Worldwide, it’s 59% with about 21% of dogs overweight by the age of six months[2]. Those figures have been climbing rapidly – 158% over the last 10 years, in the US[3].

The problems that result are myriad. Obesity is essentially a state of chronic inflammation, which leads to a host of diseases, like cardiorespiratory, endocrine, metabolic, orthopaedic and urogenital disorders, body dysfunction, and cancer.

Over the past 10 years, for example, arthritis and tracheal collapse have increased by 82% and 83% respectively[4]. A recent study of 50,000 dogs also showed that the lifespan of overweight dogs was up to two and a half years shorter than their ideal-weight counterparts[5].

Most common obesity-related conditions in dogs

US insurer Nationwide Mutual reported the top obesity-related conditions found in dogs based on 630,000 insured pets:[13]

1. Arthritis
2. Bladder/urinary tract disease
3. Liver disease
4. Low thyroid hormone production
5. Torn knee ligaments
6. Diabetes
7. Diseased disc in the spine
8. Chronic kidney disease
9. Heart failure
10. High blood pressure

Association for Pet Obesity Prevention founder Dr Ernie Ward, says that excess fat causes an ‘adipokine storm’ inside your dog’s body.

“Adipokines are signal proteins produced by fat tissue…We know adipokines cause or contribute to hundreds of harmful inflammatory processes throughout the body. Think of every fat cell as a little factory pumping out hundreds of potentially toxic compounds. Multiply that by millions or billions in an obese pet. The real danger of excess fat isn’t the fat; it’s the inflammation the fat causes.[6]”

My dog’s not fat!

Despite the data on overweight dogs, owners’ perceptions aren’t always in sync. According to the Banfield State of Pet Health 2012 Report, 76% of dog owners believe their dogs are an ideal weight. This finding is echoed by Professor of Small Animal Medicine at the University of Liverpool Alex German.

“Owners are often unaware that their dog is overweight, and many may not realise the impact that it can have on health… Worryingly, it is estimated only one in five pet owners always measures how much food they are giving their pet, with four in five (87%) always or often simply estimating the amount of food they think their pet needs at each serving.”[7]

Not only that, but other studies show that overweight people are more likely to own overweight dogs![8]

Ernie Ward believes that while people know obesity is dangerous, they just don’t think anything bad will happen to them or their pet. He links this to ‘optimism bias’, our tendency to overestimate the probability of positive events and underestimate the probability of negative events happening to them in the future.

Other studies show that vets were reluctant to talk about obesity, for fear of offending the guardian. (Lack of time is another factor.)[9] A Sydney study found that “fewer than expected of the owners of dogs in the overweight group were informed of their dog’s weight classification, suggesting that some veterinarians may be compounding the reluctance of some owners to admit that there is a problem.”[10]

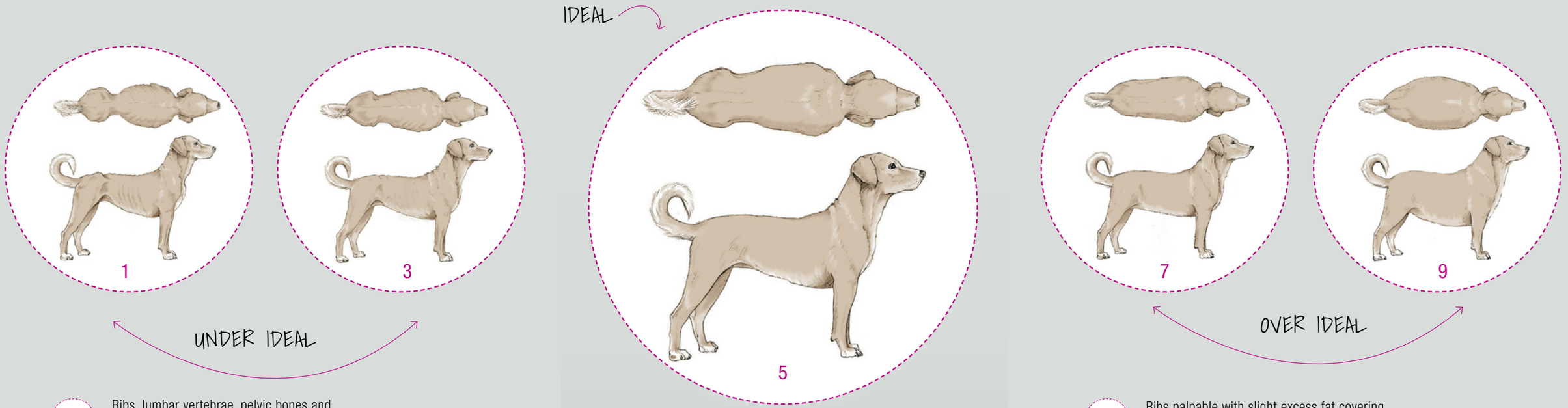
How to reduce the fat

Portion control tops the list of most weight management recommendations. While some advice equates portion control with calorie control, a calorie is not just a calorie.

Studies show that high-protein, low-carb diets may also be key to weight loss and management[11]. With these diets, weight loss is driven primarily from an increased loss of fat mass while maintaining lean muscle mass. Low carbohydrate diets also help stabilise blood glucose levels throughout the day, preventing the hypoglycemia after a high carbohydrate meal that causes hunger.[12]

how to check if your dog's overweight

While there are a number of body composition charts, this system has been more extensively validated, for example by comparing scores against precise measures of body fat mass using dual-energy X-ray absorptiometry, (DEXA). It is also the system that has been recommended by the WSAVA Global Nutrition Panel.



1
Ribs, lumbar vertebrae, pelvic bones and all bony prominences evident from a distance.
No discernible body fat.
Obvious loss of muscle mass.

2
Ribs, lumbar vertebrae and pelvic bones easily visible.
No palpable fat.
Some evidence of other bony prominences.
Minimal loss of muscle mass.

3
Ribs easily palpated and may be visible with no palpable fat.
Tops of lumbar vertebrae visible.
Pelvic bones becoming prominent.
Obvious waist and abdominal tuck.

4
Ribs easily palpable, with minimal fat covering.
Waist easily noted, viewed from above.
Abdominal tuck evident.

5
Ribs palpable without excess fat covering.
Waist observed behind ribs when viewed from above.
Abdomen tucked up when viewed from side.

6
Ribs palpable with slight excess fat covering.
Waist is discernible viewed from above but is not prominent.
Abdominal tuck apparent.

7
Ribs palpable with difficulty; heavy fat cover.
Noticeable fat deposits over lumbar area and base of tail.
Waist absent or barely visible.
Abdominal tuck may be present.

8
Ribs not palpable under very heavy fat cover, or palpable only with significant pressure.
Heavy fat deposits over lumbar area and base of tail.
Waist absent.
No abdominal tuck.
Obvious abdominal distention may be present.

9
Massive fat deposits over thorax, spine and base of tail.
Waist and abdominal tuck absent.
Fat deposits on neck and limbs.
Obvious abdominal distention.

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AAFCO Nutrient Requirements for Dogs[a]

Nutrient (% or per kg of diet)	Growth & Reproduction Minimum	Adult Maintenance Minimum	Adult Maintenance Maximum
Protein (%)	22.0	18.0	
Arginine (%)	0.62	0.51	
Histidine (%)	0.22	0.18	
Isoleucine (%)	0.45	0.37	
Leucine (%)	0.72	0.59	
Lysine (%)	0.77	0.63	
Methionine + cystine (%)	0.53	0.43	
Phenylalanine + tyrosine (%)	0.89	0.73	
Threonine (%)	0.58	0.48	
Tryptophan (%)	0.20	0.16	
Valine (%)	0.48	0.39	
Fat (%)	8.0	5.0	
Linoleic acid (%)	1.0	1.0	
Minerals			
Calcium (%)	1.0	0.6	2.5
Phosphorus (%)	0.8	0.5	1.6
Ca:P ratio	1:1	1:1	2:1
Potassium (%)	0.6	0.6	
Sodium (%)	0.3	0.06	
Chloride (%)	0.45	0.09	
Magnesium (%)	0.04	0.04	0.3
Iron (mg/kg)	80	80	3,000
Copper (mg/kg)	7.3	7.3	250
Manganese (mg/kg)	5.0	5.0	
Zinc (mg/kg)	120	120	1,000
Iodine (mg/kg)	1.5	1.5	50
Selenium (mg/kg)	0.11	0.11	2
Vitamins			
Vitamin A (IU/kg)	5,000	5,000	250,000
Vitamin D (IU/kg)	500	500	5,000
Vitamin E (IU/kg)	50	50	1,000
Thiamine (mg/kg)	1.0	1.0	
Riboflavin (mg/kg)	2.2	2.2	
Pantothenic acid (mg/kg)	10	10	
Niacin (mg/kg)	11.4	11.4	
Pyridoxine (mg/kg)	1.0	1.0	
Folic acid (mg/kg)	0.18	0.18	
Vitamin B12 (mg/kg)	0.022	0.022	
Choline (mg/kg)	1,200	1,200	

[a] Nutrient requirements are indicated on a dry-matter basis and are per kg of diet, not per kg of body weight of animal. These AAFCO nutrient profiles for dog foods presume an energy density of 3.5 kcal ME/g dry matter. Rations >4 kcal/g should be corrected for energy density.

ENDNOTES

a short history of modern dog food

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