

TOXIC FOODS?

UNDERSTANDING THE IMPACT OF LEGUMES AND OTHER COMMON "GRAIN-FREE" PLANT-BASED INGREDIENTS USED IN DOG FOODS.

There has been much focus recently on the potential negative effects of legumes, lentils, potatoes and other plant food sources on dogs (and people as well). This is based on the awareness of antinutrients in plants, which are also termed *plant toxins* (a topic presented well by Billy Hoekman in the last edition of *Dogs Naturally*).

In this article I'll discuss several emerging topics being recognized as issues associated with the digestion and potential toxicity of many plant-based foods.

It's important to note that the impact and effects of antinutrients are greatly influenced by the methods used to prepare these foods for consumption, as well as by the overall volume consumed (whether they are a small vs large portion of the diet).

A few of the commonly known antinutrients include lectins and phytic acid

(phytates). These compounds are recognized as *plant toxins* that bind to specific minerals and vitamins, making nutrients less bioavailable to the body eating them. Phytic acids are found primarily in whole grains (wheat, soy, rice, barley, etc), nuts, seeds, beans and legumes. Lectins are proteins that are ubiquitous components of essentially ALL plants. Lectins are found in lentils, beans, grains, peas, squash, potatoes, tomatoes, peppers, peanuts, cashews and even fruits.

I should also clarify that antinutrients are *natural* components of plants. They're not man-made, nor are they the product of genetic engineering. They're a normal part of plant foods. Traditional cultures soaked and sprouted grains and legumes to reduce the amount of antinutrients, making these foods more digestible and nutritious. Fermentation was another method used by ancient and traditional

cultures to prepare foods in a way that offered more benefits and delivered more nutrients. Such wisdom in the ages!

FOOD PREPARATION MATTERS

It's known that methods of soaking, sprouting and fermenting are all effective in activating *phytase* which reduces or eliminates phytic acid. Phytase is the enzyme that neutralizes phytic acid, freeing up phosphorus and other minerals for absorption by the body. It's interesting to note that the phytase enzyme actually coexists in the plant foods containing phytic acid. And for more good news, as research by Famularo and others has shown, beneficial bacteria and probiotic species can also produce phytase, which means that a healthy and balanced intestinal flora will have an easier time with foods containing phytic acid. (I'll talk more about the microbiome impact on antinutrients and toxicity of foods below).



Katie Kangas DVM CVA CVCP owns and operates Integrative Veterinary Care (intvetcare.com), a private holistic and integrative practice in San Diego, California. In addition to her CVA from the Chi Institute in 2008, Dr Kangas has training in Advanced Acupuncture, Food Therapy, Herbal Medicine and Veterinary Orthopedic Manipulation (VOM). She has authored several articles published in veterinary journals and pet magazines and lectures nationally and internationally. Dr Kangas was the Medical Director of the San Diego Humane Society & SPCA from 2002 to 2007.

When it comes to preparing plant foods for consumption, Malleshi's research, *Nutritive value of malted millet flours*, shows us that soaking and sprouting will reduce the quantity of antinutrients and increase nutritive value of the food. For example, soaking lentils for 12 hours and then germinating or sprouting them for three to four days will remove nearly all phytates. In fact, lentils that are simply soaked for 12 hours at 78°F will still contain up to 20 percent fewer phytates.

However, just as there are beneficial ways to prepare foods, there are detrimental ways to prepare foods as well. Unfortunately, this is what the modern pet food industry (and the human food industry) is creating: detrimental changes via the heavy processing and high temperatures used to treat foods for today's market.

For example, the phytase enzyme is destroyed by steam heat at about 176°F in ten minutes or less. In a wet solution, like canned foods, phytase is destroyed at even lower temperatures in the range of 131 to 149°F. Thus, the high heat processing that's used to create most commercial pet foods (dry and canned) will completely destroy phytase. This is one of the reasons why dry kibble can be a recipe for digestive problems and mineral deficiencies.

MICROBIOME AND GUT HEALTH

Let's look at some important additional factors that are leading to digestive problems and toxic reactions.

We have a rapidly growing awareness of the critical importance of the microbiome in our dogs' (and our own) bodies, and the role it plays in overall health and wellness. Simply put, the more diversity within the body's microbiome, the healthier the dog (or human) is!

Unfortunately, modern methods of agriculture and food processing are proving detrimental to microbiome health and diversity. Healthy gut bacteria are dramatically altered by a diet of heavily processed foods and also by heavy exposure to the herbicide glyphosate. Glyphosate is the main ingredient in Monsanto's Roundup product. Interestingly, not only is glyphosate a toxin, but it is technically also an *antibiotic*, as it interferes with enzymatic pathways in many bacteria. With this understanding, it's easy to see why this herbicide affects the body's beneficial bacteria and microbiome status. Indeed, glyphosate is one of many factors associated with the growing problem of widespread antibiotic resistance, and is part of the issue leading to superbugs and resistant infections in all species.

According to Rhonda Patrick PhD (expert in nutrition and biomedical science), the lectin toxicity issue is heightened by the fact that gut health and gut integrity are often altered and compromised. Dr Patrick explains the antinutrient factors are exacerbated when the gut lining is compromised by inflammation, barrier destruction and an altered microbiome or imbalanced gut bacteria. In this scenario, the immune system is already over-reactive and thus more affected by these plant toxins. This situation may be even more likely to affect our canine companions who are often exposed to a greater degree of chemicals and poorer quality diets than their human caretakers.

GLYPHOSATE AND LEAKY GUT

While glyphosate is recognized as an antimicrobial agent as well as an herbicide, it's also known to break down the tight junctions of the cells that form the lining of the gut or gastrointestinal tract. This breakdown of cellular junctions causes a loss of the gut's intelligent barrier system and creates *leaky gut syndrome*, which allows other additional toxins (beyond glyphosate) in as well. In other words, chronic exposure to glyphosate is leading to inflammation in the gut, increased toxin absorption, depletion of the numbers

and diversity of gut microbes, and altering the digestion and immune response to components in food.

This aligns with the work of Dr Zach Bush (*Gliadin and glyphosate independently, and in combination, induce tight junction injury, and epithelial membrane leak in small bowel and colon epithelial membrane*). Dr Bush has extensively studied glyphosate and educates about the research that shows a “toxic synergy” between glyphosate and the breakdown of gluten, which is gliadin. This explains why gluten reactivity has become such a huge issue affecting the health of dogs and humans.

“HOWEVER, JUST AS THERE ARE BENEFICIAL WAYS TO PREPARE FOODS, THERE ARE DETRIMENTAL WAYS TO PREPARE FOODS AS WELL. UNFORTUNATELY, THIS IS WHAT THE MODERN PET FOOD INDUSTRY (AND THE HUMAN FOOD INDUSTRY) IS CREATING – DETRIMENTAL CHANGES VIA THE HEAVY PROCESSING AND HIGH TEMPERATURES USED TO TREAT FOODS FOR TODAY’S MARKET.”

It’s now recognized that both gluten and glyphosate have their own individual effects that are harming the intestinal lining. They do this by breaking down tight cellular junctions and allowing leakage through the epithelial membranes in the small intestine and the colon. However, the combination of these two offenders together add up to a greater than *one plus one* insult to the body. This research shows that consuming glyphosate and gluten together creates a synergistically toxic effect, leading to exponential damage to the gut.

Dr Bush’s work (specializing in internal medicine, endocrinology and alternative

medicine) led him into soil science research and subsequently extensive knowledge on glyphosate toxicity, gut health and the vast impacts of the microbiome on the immune system, brain health and whole-body wellness. He created a unique product called Restore for humans, labeled as Luma-Pet for dogs and cats. This product helps to restore the mucosal lining and tight barrier junctions in the gut, creating a beneficial shift in the bacteria making up the microbiome.

THE LINK BETWEEN TAURINE DEFICIENCY AND LENTILS

There has been much discussion regarding the recent media release linking grain-free dog food to heart disease (specifically DCM or Dilated Cardiomyopathy), which is associated with taurine deficiency.

Taurine is not normally a requirement in canine diets, as dogs are generally able to synthesize taurine from other amino acids found in animal proteins within meat, poultry, fish and eggs. It appears, however, that certain breeds may be more prone to taurine deficiency issues.

A recent report, *Dilated Cardiomyopathy and Diet in Dogs*, compiled by experts in holistic veterinary medicine and canine nutrition, explains that these issues are likely a multifactorial problem related to the change in the bacterial flora of the gut, perhaps from high percentages of legumes in the diet, which can change taurine absorption and alter digestibility and bioavailability. Additionally, the writers state that problems may be related to manufacturing processes of the protein sources. As discussed above, the thermal (high heat) processing of proteins causes altered digestion, creates pro-inflammatory mediators, and leads to a shift in microbiome bacteria. This type of shift can promote an intestinal environment that favors increased numbers of taurine-degrading bacteria.

It’s important to note that taurine is found naturally in animal-based proteins but is not found in plant-based protein sources.

Therefore, diets that include high quality animal proteins that are not heat damaged, should have adequate taurine. Conversely, low quality proteins or excessively heat-treated foods will be poorly digested, thereby reducing the availability of taurine.

The same report offers sensible recommendations in making food choices for your dog:

- Choose a food that contains plenty of animal-based protein like meat, fish and eggs as the top ingredients.
- Choose pet foods that don’t use legumes or potatoes as their primary ingredients.
- When using whole food ingredients like legumes and lentils in a home-prepared diet, soak or sprout them first for best nutrition and digestibility.
- Choose foods that are minimally processed to preserve the naturally occurring nutrients such as taurine and many other amino acids, vitamins and minerals. 🐾



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secret garden



Ginkgo

Common Name: Maidenhair

Botanical Name: Ginkgo Biloba

Family: Ginkgoaceae

Parts Used: Leaf

Ginkgo biloba is native to China and is commonly planted as an ornamental tree throughout the United States. It was made extinct during the ice age everywhere but the central part of China. Fossils of the tree that are over 200 million years old have been found. Ginkgo has a strong resistance to weather and water pollution as well as insects and most diseases. The tree itself has been noted to live up to 1,000 years and can reach heights of 100 feet. Its leaves look like a beautiful fan and are a rich, dark green in warmer months then turn bright gold in the fall. This is when the medicine of the leaf is said to be the richest; referred to as *Fall Gold*.

The shape of the leaf with its many fan segments is the *doctrine of signatures* representing the vessels of the circulatory system to maximize circulation. The nuts from the ginkgo tree are neurotoxins and can cause seizures, so we only want to use the leaf.

The properties of ginkgo are bitter, circulatory stimulant, antioxidant, peripheral vasodilator.

Ginkgo is very high in chromium, calcium, niacin, phosphorus, selenium and zinc. It also has a substantial amount of vitamin A, thiamine, potassium, dietary and crude fiber and iron.

Ginkgo has neuroprotective properties (protects the central nervous system) and has proven to lessen seizure activity as well as reverse peripheral nerve damage. It significantly increases the circulation in the skin and liver, which is especially helpful with older pets. It’s highly effective for increasing peripheral blood flow, treating cerebral and vascular stagnation, has anti-aging effects and provides increased energy.

As an antioxidant, ginkgo protects the body from free radicals that can cause damage to tissues as well as organs. This protection comes from the proanthocyanidins and flavonoids that are contained within the leaf.

What we all know and have read about ginkgo is that it helps to retain memory and can slow memory loss. It’s a highly respected herb and is widely used in Europe for all peripheral circulatory actions. It’s used in many forms including powder, standardized extracts in both capsule and tablet form, in liquid form, both tea and tincture, and is quite easy to find without being too costly.

With all the goodness this plant brings for improved health and circulation, there are also several warnings and cautions that we should know before we use it with our pups. Using ginkgo with other herbs in a synergistic formula is best for supporting

the circulatory system, whether cerebral or peripheral, so as not to overdo the dose of the constituents that work to thin the blood, but balance the action, such as bacopa, eleuthero root and perhaps a good quality wild omega-3 oil. I would suggest giving it five days on, two days off if you’re using as a single herb, as it may cause nausea, vomiting and possible headaches.

If using a powder of the leaf, I would recommend the dose of ¼ teaspoon per 30 lbs of body weight once daily in food. For a liquid extract 1:3, 1 drop per 2 lbs body weight once daily.

Cautions: Ginkgo is not safe for use with pregnant or lactating animals. It is contraindicated with anti-platelet as well as anti-coagulating medications. May not be indicated for long term use. 🐾



Joyce Belcher is an herbalist and formulator of pet supplements and herbal medicinals for veterinarians and is the founder of Herbs for Life Inc and Sustenance Herbs. She lives in Kittery, Maine with her husband, Aja the Poodle and two cats; they are all rescues. Visit Joyce at sustenanceherbs.com