Using Supplements to Boost Overall Canine Health
Choosing Canine Supplements Wisely

There is no limit to the wonderful things you can add to your dog’s food – but more is not necessarily better. Our expert explains why.

By Dr. Nancy Scanlan

If you feed your dog every supplement that you ever hear about or read about, you could very well end up giving the dog 15 different things. You could also inadvertently cause as many problems as you had hoped to solve. And just because you have read an article about the wonders of a certain supplement, doesn’t mean your dog will benefit from that supplement. You have to take these things in context.

Do all dogs need supplements?
There are three main reasons to add specific nutrients to the dog’s diet. The first is to compensate for a known or suspected deficiency of the nutrient in question. Sometimes, the deficiency is discovered when a blood test is performed for the purpose of analyzing the dog’s nutritional status (although, in my opinion, there are some problems with this methodology (see “Blood Testing for Deficiencies,” next page). In other cases, a dog owner might know that the diet he feeds is deficient in a certain nutrient, and he supplements rather than changes the formulation of the diet. For example, dogs who are fed a diet based on raw meats and vegetables, but who don’t receive fresh ground bones, are more than likely to be deficient in calcium.

When a dog is deficient in a certain nutrient, and he begins to receive the optimum dosage of that nutrient, his health will markedly improve. Sometimes, correcting a deficiency of even a very small nutrient will make improvements in dogs that already seem fairly healthy. Very often you will see that the coat has a better sheen to it, a little bit of dandruff might go away, a greasy coat will turn nicer. The holistic nutritionists say this is because these little micro-minerals have been depleted from the soil, so the grains and animals that are the dog’s major food sources (cattle, sheep, chickens) don’t have them, either. It’s difficult to show deficiencies from these things, because the animals don’t die, they can still reproduce, they look pretty good, they live about the same amount of time. But they will have a little better look and have a little bit more spring to their step if you add it to their diets.

“Optimizing” nutrient levels
The second reason to supplement a dog’s diet is less compelling, but not a bad idea: to cover suspected deficiencies as insurance. Dog food

Over time, the WDJ shelves have grown full of all sorts of beneficial supplements for dogs, each of which is appropriate in some situations. But no dog should take EVERY supplement that is ‘good’ for certain dogs.
manufacturers will tell you, “We made these foods to contain everything a dog needs, so why are you giving them anything extra?” The answer is, “Because what is now called an ‘adequate’ dosage may not be the optimum dosage.”

Many people (including a growing number of veterinarians) feel that the values set forth by the National Research Council for minimum daily requirements of vitamins for dogs are inadequate. The levels for the major minerals seem to be fine.

We know that for humans the minimum daily requirement is not always the optimum daily dosage. It is simply the minimum that is required to keep signs of major deficiencies from appearing. In the human field, many nutritionists now consider the optimum dose for a lot of things, including the “micro” minerals and vitamins, to be about double the minimum daily requirement recommended by the National Research Council.

From my experience, I suspect the same is true of animals. In cats, for example, we know that for years and years we didn’t have a good number for the amino acid taurine; it takes years for signs of taurine deficiency to show up in cats, and it took years and years to prove this. The amount that is recommended now is more than twice what it was in previous years! This can occur because the studies for supplementation are often of a duration that is only long enough to raise an animal from birth to reproductive age and let them have a litter; if all of that works they consider the study sufficient. But some problems take years – or even generations – to show up.

So, in my opinion, giving a dog who eats standard commercial foods a vitamin supplement – one that contains no “mega doses” of any nutrient, and no extra calcium or other minerals – can be a good idea. All good quality commercial dog foods seem to contain sufficient quantities of the major minerals such as calcium, iron, copper, and zinc; I wouldn’t add any without a specific reason.

Therapeutic dosages

The third reason to give a dog supplements is to try to optimize the dosage of certain nutrients for therapeutic or preventive effects. Please note that I used the word optimize, not maximize. Over-supplementation can cause many problems, which I’ll discuss below.

Therapeutic supplementation would include, for instance, feeding a dog with specific health problems – allergies, say – higher doses of those...
nutrients which can help the body deal with that condition more effectively. For example, giving a dog with pollen allergies extra doses of the antioxidant vitamins C and E during the peak season for those allergens.

Preventive supplementation is an attempt to prevent the onset of disease. However, this only makes sense when the disease is expected, and when that supplement has proven capabilities to help prevent that disease. One example is the use of iodine supplements to prevent hypothyroid disease in Golden Retrievers, among whom the disease is very common.

**Problems with supplements**

Though there are many cases where intelligent and appropriate supplementation literally saved a dog’s life, unfortunately, there are many ways that people can do actual harm to their dogs with supplements. Here’s a great example: I once saw a dog who had been seen previously by another vet for kidney stones. As we’ve discussed in a previous article (“Urine Trouble,” November 1999), kidney stones can be caused by too-acid urine or too-alkaline urine. First the dog had the kind caused by overly acid urine. The vet changed the dog’s diet so the dog would have more alkaline urine. That went OK for a while, and then the dog got the kind of stones from over-alkaline urine.

Now the vet was up a creek; what can you do if you can’t shift the diet very far in either direction?

The vet was so baffled, she decided to get a second opinion and sent the owner and the dog to me. I was puzzled, too, so I started asking a lot of questions. I asked about supplements – and hit the jackpot. She was giving three different kinds of calcium supplements. All we had to do was cut out the calcium supplements and the dog never had a problem again.

**Here are the most common mistakes made when supplementing:**

1) **Over-supplementing**

One of the most dangerous ways that people can over-supplement is with minerals, especially in growing animals. People can cause all sorts of bone deformities in young dogs by feeding over-doses of calcium, for instance. Also, other minerals can actually cause mineral poisonings if they are over-dosed.

The place where you can get into the biggest trouble is with the minerals that are required in the greatest quantity: calcium, iron, copper, and zinc. Over-supplementation of calcium in the large and giant breeds can cause joints to break down; also, calcium can bind with other minerals and cause problems. I have seen studies with large and giant dogs where they decreased the calcium to where it was just below the amounts in regular pet foods, and have actually had dogs with healthier joints.

I have also seen copper toxicity and zinc toxicity. Copper binds zinc, so sometimes you won’t see copper toxicity, but you will start seeing a zinc deficiency – not because the diet is deficient in zinc, but because the copper is binding up the zinc and interfering with the zinc in the animal’s body.

With other nutrients, diarrhea may be the least of the problems you can get from over-supplementing. If you feed high enough doses of antioxidants, they can actually change from being antioxidants to pro-oxidants. Some of the anti-cancer supplements can be poisonous in high doses.

One of the most common ways that people inadvertently over-supplement is when they feed their dogs one of the “kitchen sink” supplements, one that has everything you have ever heard of in it, and then feed additional single-ingredient supplements as well. You have to read all the fine print, go over the ingredients to make sure that you are not over-supplementing.

Some nutrients do build up in the animal’s system; minerals can cause problems over time. A nice, steady, moderate dose of antioxidants is pretty safe, even for long periods of time, but if you are feeding maximum dosages for enough time, they can actually promote cancer.

2) **Imbalances**

Some nutrients have to be fed in a proper ratio
to another nutrient, or it can cause imbalances that can harm the dog. The best known example is the calcium/phosphorus ration, which should be between 1:1 and 2:1. If it’s not, it can cause rickets in young growing animals, and “rubberjaw” or osteoporosis in the older dogs.

3) Negative Interactions
Very dangerous drug interactions can result from mixing certain medicinal herbs with certain medications. To use both types of medicine safely, you have to consult someone who is familiar with both the drugs and the herbs. One example is willowbark, which interacts with aspirin and also with butazolidin and Rimadyl, and causes what is essentially an aspirin overdose, with intestinal and/or stomach bleeding. Vitamin E and Digoxin (Digitalis) also interact badly; vitamin E can cause a Digitalis overdose, even when the animal is receiving a normal dose of Digitalis.

4) Long-term effects
Artificially supplementing an animal with certain nutrients – especially if you are using the maximum recommended amounts – can cause the animal to cease its own production of the nutrient. For instance, dogs manufacture their own vitamin C. If you feed a dog a maximum dose of vitamin C daily, the dog will stop making its own vitamin C. And if you were to suddenly stop that maximal dose, you might even see a temporary case of scurvy!

Managing supplementation
To supplement intelligently, you have to understand exactly what is in each supplement you feed, and have compelling reasons to feed it. A lack of knowledge can lead to all kinds of problems. For instance, I saw a lady who had an arthritic dog. She had read about the benefits of GAG supplements, and had accordingly bought five different kinds – and was feeding all of them to the dog. An excess of glucosamine will sometimes cause an upset stomach, and sure enough, her dog’s appetite had decreased. Plus, she was wasting an awful lot of money.

When considering giving supplements to your dog, you have to ask yourself, “What is going on with this dog?” and prioritize the issues. If you have a basically healthy animal and your major concern is disease prevention, then you would take one path. If your dog has cancer, or a genetic predisposition to cancer, you would take a different supplementing path. If your dog has terrible arthritis, then concentrate on the supplements that can help with that.

Basic supplement rationale
In general, if your dog is less than six years old and seems basically healthy, there are just a couple of things I would recommend. The first is a trace sea-mineral supplement that supplies the tiny little trace minerals that are no longer present in our soils; these are not the ones that appear on anyone’s list of “required” nutrients. (There are two products I like: one is Source, the other is one I helped PetNutrition develop called “Life Energy Supplement.” See Resources.) The other types of supplements that are helpful for most dogs are digestive enzymes and probiotics like acidophilus. I think most dogs do better if they have the digestive enzymes all the time; I suggest adding probiotics occasionally.

If the dog is more than six years old, then you should start thinking about warding off degenerative conditions (arthritis and joint problems) that start happening at about that time. That’s when I tell people to consider giving a glycosaminoglycan (GAG) supplement, and vitamin C and E.

Outside of these basic suggestions, I give additional supplements only to dogs with problems. For example, if your dog has intestinal trouble, you might want to think about probiotics and/or digestive enzymes. If there is any problem involving anemia, then a B-complex would be a good thing to add. Supplements for treating cancer should be given only to dogs with cancer.

Then there are health problems that are more complex, that are related to the dog’s general level of wellness. The theme here is to do the fewest number of things that will have the most benefit. In these cases, it’s always advantageous to add antioxidants, especially vitamins C and E. Fatty acids, especially the Omega-3 fatty acids, are...
often lacking in prepared foods, and are helpful for many conditions, including any skin and heart problems, cancer prevention, circulation, and problems with the nails.

Vitamin C has numerous benefits and can help many diseases and prevent other diseases, so that’s a good one to add. But if you look at something like IP6, which has recently shown to have an anti-cancer benefit, with some other benefits suspected but not proven, then I wouldn’t add that unless your dog has cancer. Don’t add supplements unless you have a specific reason for doing so.

Say you have an older, arthritic, cancerous dog. If an animal has multiple ailments, then multiple supplements may be good. It should definitely receive more supplements than a young, healthy animal.

However, even if you have the best reasons in the world for adding a lot of things to an individual’s diet, you will run into certain problems. For example, you can make a dog refuse to eat if his meals are overly laden with all sorts of supplements. Also, you can cause digestive upset — nausea, vomiting or diarrhea — with a lot of supplements; this happens with chronically ill human patients, as well.

Again, try to at least get the things that will do the maximum good into the dog, those supplements that can help with all the dog’s symptoms. And start with the things that are research-proven, like glucosamine for joints. Address the conditions that are more likely to threaten the life of the dog. Fighting a life-threatening cancer tumor may be more important than fighting arthritis, for example. And then, if you still need more, you can gradually add them in. But give everything enough time to start working before you add the next thing in, depending on the supplement, between a week and a month.

Most importantly, I suggest working closely with your veterinarian when making decisions about supplements. If your vet is resistant to the idea of using any supplements, don’t be surprised; many veterinarians have so little experience with nutrition that they just don’t know how to deal with the concept. Find a different vet, one who has advanced education and experience in nutrition, if possible.

The use of “nutraceuticals” to influence your dog’s health can be powerfully positive or negative. Make sure you have someone who can help you best utilize this powerful tool, keep a close eye on your dog for signs that your approach is working or failing, and change it accordingly.
Shopping for Nutritional Supplements For Your Dog

What to look for when choosing a nutritional supplement for your dog.

By Shannon Wilkinson

Every two weeks I faithfully fill the pill organizers for my Boxer, Tyler. He receives a number of supplements, some for general nutrition and well-being, and some specific to his particular health challenges, including Addison’s disease. I’m not the only one performing this ritual.

According to the American Pet Products Manufacturers Association, about nine percent of all dogs receive vitamins regularly; perhaps an even greater percentage of WDJ readers give supplements to their canine companions.

The ideal place to buy supplements for your dog is an independent pet supply store. Look for a shop owned or managed by someone who has experience with the products, which have been formulated for pets by reputable companies.

The pet supplement market has erupted into a billion-dollar industry – yes, that’s billion with a B. There is a dizzying array of pet specific supplements available in stores, catalogs, and online, and the choices are growing all of the time. While this means there are more options available for your dog, it also means that you may have a more difficult time making the right choice. “This is a buyer-beware industry,” says Bill Bookout, president of the National Animal Supplement Council, based in Valley Center, California. Bookout cautions, “There are responsible producers and there are opportunistic suppliers, and there’s no easy way to tell the difference.”

The National Animal Supplement Council, formed in 2001, is attempting to help consumers identify which manufacturers are the responsible ones. The NASC’s mission is to ensure the continued availability of animal supplements and to standardize quality in the industry.

To that end, the group has established quality guidelines for supplement manufacturers and has created a seal for manufacturers to include on their labels and marketing materials to signal to consumers that the company and its products meet those guidelines. The NASC’s guidelines were developed with help and input from members of the Food and Drug Administration’s Center for Veterinary Medicine (FDA CVM) and Association of American Feed Control Officials (AAFCO).
When choosing products for your dog, the NASC is a good place to start. “With a very few exceptions, I would avoid companies that are not members of the NASC,” advises holistic veterinarian Susan Wynn, of Acworth, Georgia. She adds, “You know these companies care about elevating the standards of the industry, doing the right thing regarding adverse events, good manufacturing practices, etc.”

Paying the annual dues doesn’t guarantee a company membership in the NASC. In fact, Bookout says that some companies have been asked to leave the organization for failure to comply with its standards. The self-regulating organization has a number of stringent requirements for its members, including:

1. The company must have a quality manual in place that provides written standard operating procedures for production process control.

2. The company must have an adverse event reporting/complaint system in place to continually monitor and evaluate products, and must report monthly to the NASC any adverse events, or confirm that there were no adverse events to report.

3. The company must follow proper label guidelines for all products, avoiding the use of statements that suggest that the product diagnoses, treats, prevents, or cures any disease.

4. The company must include any specific warning and cautionary statements recommended by the FDA’s Center for Veterinary Medicine and the NASC Scientific Advisory Committee, or any other recommendations made by the NASC Scientific Advisory Committee.

5. A company representative must attend at least one NASC meeting annually to stay abreast of industry developments.

Choose animal-specific products when available
Experts agree, the best choice for your dog is a supplement formulated specifically for dogs. “In my opinion, owners should only use animal products. These products have the correct dose listed on the label and the manufacturer bears some responsibility if something happens related to administration of the product,” says Dr. Wynn.

Bookout adds, “Animal products are formulated for animal metabolisms by people who know animals.” In addition to his position in the NASC, Bookout is the founder and president of Genesis Ltd., maker of supplements for cats and dogs under the Resources brand name.

Joan Holden and her husband Frank started making supplements specifically for animals more than 10 years ago, when there weren’t many options on the market. “We tried to use people products for our Golden Retrievers, but the dosages were off, and we couldn’t find exactly what we were looking for,” she explains. The Holdens founded Merritt Naturals, which is now called Animal Essentials after its merger with herbal products developer Animals Apawthecary.

Quality ingredients
“Cheap products are cheap for a reason,” says Bookout. For example, active ingredients, such as chondroitin, are available in widely varying levels of purity; this affects the cost of the raw ingredient. While some ingredients are available for a good value, if a product is significantly less expensive than similar items, there is probably a good reason.

Conversely, higher cost doesn’t always translate to a better product. Companies have different marketing and advertising costs, as well as distribution systems, such as only through veterinarians or specific retailers, all of which may increase or decrease the price. One way to understand the real value of a product is to compare the active ingredients per dose.

Animal Essentials uses only human-grade ingredients in its products, choosing organic and natural options when available. “We don’t add any sugars, fillers, or preservatives, nothing to entice [dogs] to eat the products,” says Holden. She adds, “If you need your dictionary to know what an ingredient is, it’s probably not necessary.”

There are a number of common inert ingredients that are used to help form the active ingredients.
Supplements With the NASC Quality Seal

There are more than 120 manufacturers that are members of the National Animal Supplement Council (NASC) and agree to abide by their rigorous standards. About 50 companies have undergone an additional step and have passed an independent audit of their practices, allowing their products to display the NASC Quality Seal.

Following is a list of manufacturers of canine supplements that are approved to carry the NASC seal (as of April 2012).

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into the proper form or consistency, such as a tablet or capsule. Called excipients, these ingredients are generally considered to be safe. However, they may be the hidden cause of allergic reactions. For example, the gelatin used to make a capsule could cause a reaction in an animal highly allergic to beef. For this reason, it may be best for some animals to choose products with the fewest ingredients possible, in a natural form, such as a powder.

**Clear information on labels**
The label should be clear and easy to read. It should contain a complete listing of ingredients, including the active as well as the inactive, or inert, ingredients. It should also say how much of each active ingredient is in each unit or dose, whether it’s a scoop, tablet, or dropper. This information will help you ensure that your dog will get a therapeutic dose of the active ingredient in an easy-to-administer amount. It also allows you to compare different products with similar ingredients.

Also, look for an expiration date and a lot number on the package. “A lot number shows the company is tracking the product and has an eye toward quality. If there’s a problem, without a lot number, the company can’t do a recall,” explains Bookout.

**Reputable companies**
Contact information should be easily found on the label. If the company isn’t a member of NASC, visit the company’s Web site. Call the company and ask about its quality program, who formulated its products, and what customer support the company provides.

Avoid overzealous marketers and products that promise miracles. Manufacturers of supplements are not allowed to make claims about a product’s ability to treat or cure disease. However, statements regarding how the supplement can impact structure or function of the body are acceptable. For example, a glucosamine/chondroitin supplement can say that it contributes to healthy joints, but it cannot say that it cures osteoarthritis.

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### The Benefits of Probiotics for Your Dog

**Friendly bacteria can play a "best supporting" role in your dog's digestive health.**

By Mary Straus

Probiotics are beneficial bacteria that live in the digestive tract. There are a variety of different species belonging to genera that include Lactobacillus, Bifidobacterium, Streptococcus, and Enterococcus (often abbreviated by first initial only in names). Some species, such as Lactobacillus, live primarily in the small intestine, while others, such as Bifidobacteria, reside in the large intestine (colon).

**Benefits:** All dogs can benefit from probiotics, which aid digestion and modulate the immune system. Probiotics produce short-chain fatty acids (SCFAs), which inhibit the growth and activity of harmful bacteria, such as E. coli, Salmonella, and Clostridium perfringens, as well as providing other benefits to the intestines. Human studies have documented the effectiveness of certain strains in treating diarrhea, irritable bowel, and intestinal inflammation (fewer studies have been conducted on dogs). Probiotics may help prevent urinary tract infections, and can even reduce allergic reactions by decreasing intestinal permeability and controlling inflammation.

Species with specific strains known to benefit dogs include Enterococcus faecium (strain SF68) and *Bacillus coagulans*. *Bifidobacterium animalis* (strain AH7) has been shown to reduce the time for acute diarrhea to resolve in dogs. Certain strains of *Lactobacillus acidophilus* improve frequency and quality of stools in sensitive dogs. *Lactobacillus rhamnosus* strain GG (LGG) is effective in preventing and treating diarrhea in humans, and
may benefit dogs as well. Probiotic products may contain one or several strains.

- **CAUTIONS:** Some probiotic species require refrigeration in order to remain viable; follow label recommendations for storage. It’s questionable how many survive passage through stomach acid into the digestive tract, and whether they then colonize or must be continually replenished.

Many products, particularly those that are not refrigerated, contain fewer live organisms than their labels claim. Freeze-dried probiotics may last longer than refrigerated or other powdered products, especially if the powder is exposed to moisture (such as when the container is opened and closed). Probiotics in commercial foods may not survive processing or storage. Probiotic products should always provide an expiration date.

- **DOSE:** Probiotics are measured by colony forming units (CFUs). Few studies have been done to determine effective dosages, but these numbers are usually in the hundreds of millions or higher. If probiotics are being used to help with digestion, they should be taken with meals, but otherwise they may survive better if given between meals, particularly if taken with liquid that helps to dilute stomach acid and move them more quickly into the digestive tract (maybe give them after your dog takes a big drink). Probiotics may be given short-term or long-term.

When using products intended for dogs, follow label suggestions for dosage. When using human products, give the full dosage to dogs weighing 40 pounds or more. Reduce the dosage for smaller dogs or if you see loose stools.

- **RECOMMENDED SOURCES:** Examples of canine probiotic formulas that include strains known to benefit dogs:
  - Thorne Research’s Bacillus CoagulansVet (thorne.com)
  - Jarrow’s Pet Dophilus (jarrow.com)
  - Vetri-Science’s Vetri-Probiotic (vetriscience.com)
  - Nusentia’s Probiotic Miracle (nusentia.com)
  - Purina’s Fortiflora (fortiflora.com)

Several people whose dogs have serious digestive disorders, including small intestinal bacterial overgrowth (SIBO), have told us of success using Primal Defense with homeostatic soil organisms, made by Garden of Life (gardenoflife.com). Products made for humans can also be given to dogs. Yogurt and kefir with live cultures often contain lactobacillus acidophilus, and sometimes other species as well, but dosages are usually lower than those in supplements.
Probiotics Boost Canine Overall Health

By CJ Puotinen

Who hasn’t heard of “friendly” or “beneficial” bacteria? Even acidophilus, once a confusing tongue-twister, has become as familiar as yogurt, in which it’s the active ingredient.

One reason beneficial bacteria have worked their way into the public’s consciousness is the excellent press they have received for helping repair damage done by antibiotics. Broad-spectrum antibiotics target not one but all strains of bacteria, leaving us thoroughly disinfected. But no antibiotic kills 100 percent of the body’s bacteria. A few always survive, some harmful and some essential to good health. Often the harmful organisms thrive and reproduce, overwhelming the beneficial strains that normally keep them in check, resulting in a host of new health problems. According to the Royal Society of Medicine of Great Britain, fully 90 percent of chronic diseases are caused by an unhealthy intestinal system.

This helps explain why antibiotic drugs have long-term as well as short-term side effects. Their long-term side effects include impaired digestion, gastrointestinal discomfort, diarrhea, chronic or systemic yeast or fungal infections, lowered immunity, and the creation of drug-resistant or “super germ” bacteria that worry public health officials around the world.

Homeostasis, the body’s balancing act
Homeostasis is a Greek word meaning stable and balanced. When the body’s systems are in homeostasis, they maintain a stable body temperature, a constant blood pH, balanced blood sugar, normal blood pressure, and a healthy population of microorganisms. For the last to occur, the body needs more beneficial than harmful bacteria. In fact, most experts estimate that for optimum health, the body should contain 80 percent beneficial bacteria and no more than 20 percent harmful bacteria.

Even those who haven’t taken antibiotics may lack beneficial bacteria because of poor diet, stress, illness, prescription drugs, travel, or environmental factors. Anything that interferes with the growth and reproduction of beneficial bacteria interferes with good health.

Just as our dogs share many human health problems, they are adversely affected by the antibiotics they routinely receive from veterinarians as well as by environmental toxins and diet. Many pet foods contain ingredients that nourish harmful bacteria, such as sugars and starches, along with ingredients that damage good bacteria, such as chemical preservatives.

In both species, healthy intestinal bacteria typically consist of dozens or hundreds of different species. These bacteria produce enzymes; improve digestion; lower the risk of colitis, irritable bowel syndrome, and similar disorders; prevent diarrhea; synthesize vitamins; detoxify the body; and protect against toxins.

In dogs, conditions that coincide with bacterial imbalances include digestive disorders, flatulence, constipation, diarrhea, urinary tract infections, allergies, diabetes, arthritis, vitamin B deficiencies, chronic ear infections, skin and coat problems, susceptibility to bacterial or viral infections, bad breath, poor immune response, and, in some cases, confusion or behavioral problems.

Keeping bad bacteria in check Healthy intestinal bacteria inhibit the growth of pathogens such as viruses, fungi, parasites, and harmful bacteria.

Escherichia coli, or E. coli, is usually a harmless inhabitant of human and animal intestines, but the strain E. coli O157:H7 produces a powerful toxin that can cause severe illness. It was first identified during a 1982 outbreak of bloody diarrhea that was traced to contaminated hamburger.

Investigative journalist Jo Robinson has documented many benefits of feeding cattle on grass instead of in commercial feedlots. Among
other things, a natural grass diet provides ideal conditions for the growth of beneficial bacteria in the gut of the cattle. Recent research at Cornell University shows that grass-fed cattle have less than 1 percent of the E. coli bacteria found in feedlot cattle, while other studies show that grass-fed chickens carry significantly lower amounts of E. coli than chickens raised indoors on factory farms.

Robinson explains that because a grain diet increases the acidity of bovine digestive tracts, the E. coli that grows in feedlot cattle is less affected by hydrochloric acid in the human stomach, which would otherwise destroy it. Beneficial bacteria in the digestive tracts of dogs and people help prevent acid-resistant E. coli from proliferating when they eat beef from feedlot cattle.

The Salmonella family includes more than 2,300 types of one-celled organisms, two of which, Salmonella enteritidis and Salmonella typhimurium, are the most common. Salmonella can contaminate meat, poultry, dairy products, eggs, seafood, and some fruits and vegetables, but it is especially associated with chickens and eggs from factory farms. Beneficial bacteria help keep Salmonella bacteria in check.

Clostridium difficile is a rod-shaped bacteria that produces two toxins that interact to cause a serious, potentially fatal disease that produces diarrhea, abdominal cramping, inflammation of the colon, and meningitis-like symptoms. In June 2006, the Centers for Disease Control alarmed therapy dog organizations by publishing a report from researchers at the University of Guelph in Ontario, Canada, in which a therapy dog was shown to carry a human epidemic strain of C. difficile.

The study’s lead author, Sandra L. Lefebvre, explained, “One particular strain of C. difficile has been implicated in outbreaks of Clostridium difficile-associated disease (CDAD) in hospitals in North America and Europe and appears to be spreading internationally at an alarming rate.

We report this toxin-variant strain of C. difficile in a healthy four-year-old Toy Poodle that visits persons in hospitals and long-term care facilities in Ontario weekly. C. difficile was isolated from a fecal sample collected in the summer of 2004 as part of a cross-sectional study evaluating pathogen carriage by visitation dogs . . . CDAD cases were occurring at increased frequency in the facility around the time the dog’s fecal specimen was collected.”

While this is the first documented case of the human epidemic strain of C. difficile in a dog, the study does not prove that interspecies transmission of C. difficile occurs. “However,” it states, “that possibility exists, as is becoming apparent with other pathogens, such as methicillin-resistant Staphylococcus aureus.

The recurrent exposure of this dog to human healthcare settings suggests that the animal acquired this strain during visits to the hospital or long-term care facility, either from the healthcare environment or contaminated hands of human contacts. We recommend that future studies evaluating the dissemination of this strain and investigations of the movement of C. difficile into the community consider the role of animals.”

According to Pennsylvania State University College of Medicine professor Kelly Dowhower Karpa, PhD, in her book Bacteria for Breakfast: Probiotics for Good Health, numerous studies show that the beneficial bacteria Saccharomyces boulardii has cleared C. difficile in an encouraging number of cases.

In other studies, Dr. Karpa writes, one strain of Lactobacillus given at high doses (10 billion live bacteria daily) for as little as 7 to 10 days following conventional antibiotic therapy has cured patients experiencing relapsing C. difficile diarrhea.

Because beneficial bacteria are the body’s first line of defense against pathogens, maintaining a large and vigorous population of these friendly microbes can help prevent all types of infection as well as their transmission from people to animals and vice versa.

**Replacements to the rescue** Thanks to the growing popularity of beneficial bacteria, it isn’t
difficult to increase their population for improved health and immunity.

Several strains are grown in laboratories for use in supplements, including the familiar Lactobacillus acidophilus. Other popular bacteria include L. bulgaricus, L. rhamnosus, L. casei, L. plantarum, Streptococcus faecium, S. thermophilus, and Bifidobacterium bifidum, formerly known as L. bifidus. L. acidophilus, which resides mostly in the small intestine, is the strain most associated with animals, while B. bifidum, which resides mostly in the large intestine and colon, is most associated with humans.

Many yogurt producers have recently changed their formulas in response to consumer demand for probiotics. Stonyfield Farm, a leading maker of yogurt and organic dairy products on the East Coast, now adds six live cultures to every product: L. bulgaricus, S. thermophilus, L. acidophilus, bifidus, L. casei, and L. reuteri. As the company’s website explains, “Probiotics protect us from pathogens such as Salmonella and others by preventing their attachment to the intestinal lining. They interfere by blanketing all available surfaces, thus limiting the growth of microscopic invaders like Giardia, Candida yeast, and bacteria such as E. coli.

“Studies have shown that probiotic cultures benefit health in several ways — by suppressing pathogenic bacteria, helping control antibiotic-associated diarrhea, helping prevent traveler’s diarrhea and leaky gut syndrome, improving lactose tolerance, producing some vitamins and enzymes, decreasing toxins and mutagenic reactions, improving carbohydrate and protein usage, strengthening innate immunity, creating a barrier effect in the intestinal tract, and reducing infant food allergies and eczema.”

Beneficial bacteria have an ancient history, for people have been using them to culture and preserve foods for millennia. They are ingredients in traditionally fermented foods like sourdough bread, yogurt, kefir, sauerkraut, tempeh, miso, and amazake.

**Probiotics for your dog**
The word probiotic literally means “for life,” as opposed to antibiotic, which means “against life.” Probiotics are strains of beneficial bacteria sold as supplements for human or pet use. All health food stores and many pet supply stores carry several brands of L. acidophilus and other strains that can help improve your dog’s digestion and immune function.

Probiotic supplements are especially beneficial for newborn puppies, to increase the number of desirable organisms in their digestive tract.

They are also well-suited to help dogs of all ages cope with stress — travel, intensive training, competition, and boarding. It’s smart to use them to boost the immune system following surgery, parvovirus infections (which affect the small intestine), chronic diarrhea, and whelping. They should also be a standard prescription during and after the use of any antibiotic.

Buying a probiotic supplement and following label directions is the simplest way to introduce a new supply of live beneficial bacteria to your dog’s digestive tract. Some brands require refrigeration; others have a long shelf life at room temperature. The supplement may be sold as a powder, liquid, or in tablets or capsules, some of which are enteric-coated to survive stomach acid and break apart in the small intestine. Depending on the brand, label instructions may recommend feeding the product on an empty stomach between meals, with food, or immediately before or after eating.

Some products contain a single strain of beneficial bacteria, such as L. acidophilus, while others contain multiple strains. Experts disagree as to which approach is better. Single-strain products tend to be backed by more clinical research, but some advocates favor multiple strains because that’s what the body contains.

The newest probiotics on the market are not bacteria; they are homeostatic soil organisms, or HSOs, which literally come from dirt. Soil contains so many different microorganisms that science
has defined less than 1 percent of the estimated total. One gram of soil (about a teaspoon) can contain as many as 10,000 microbe species. Until recently, dogs, cats, and people all over the world ingested a constant supply of HSOs. That no longer happens in the U.S., where indoor lifestyles and cleanliness keep HSOs out of our mouths and food supply. Now medical researchers are linking asthma, allergies, and other common health problems to a lack of exposure to everyday dirt, germs, and HSOs, especially during early childhood. Some vets make the same connection to puppies and kittens.

The manufacturers of HSO supplements grow organisms discovered in pristine parts of the world where the number of beneficial microbes in soil is unusually high. These microbes are chosen for their ability to destroy molds, yeasts, fungi, viruses, and harmful bacteria, and are usually combined with several strains of beneficial bacteria.

**Time to heal**

How long does it take to repair the body with probiotics if your dog has taken antibiotics? Estimates from researchers and veterinarians range from several weeks or months to a year or several years.

The fastest recoveries are experienced by dogs who have a good supply of surviving native bacteria – that is, beneficial bacteria that they obtained from their mothers’ milk or from supplements within hours of birth – which are supported by a diet that feeds them instead of one that feeds their harmful competitors.

Another way to recover quickly is to be a good host for the beneficial bacteria introduced in supplements, so that the dog’s system provides what these bacteria need in order to reproduce and colonize.

Not all beneficial bacteria colonize or continue to multiply after the patient stops receiving probiotic supplements, but some will if given the right growing conditions, and even beneficial bacteria that don’t colonize can improve the digestive tract for as long as they are taken.

**Feeding beneficial bacteria**

**Probiotics are beneficial bacteria**

Prebiotics are the foods that feed them. In addition to supporting beneficial bacteria that are added to the system by probiotic supplements, prebiotics nourish whatever native bacteria survive antibiotic treatment.

In his book Cultivate Health from Within, Khem Shahani, PhD, one of the world’s leading research authorities on the role of Lactobacilli and gastrointestinal bacteria, explains the conditions for a food to be an effective prebiotic:

- It must pass through the upper gastrointestinal tract without being absorbed or hydrolyzed;
- It must be selectively fermented by a limited number of potentially beneficial bacteria in the colon;
- It must improve the composition of intestinal bacteria in favor of beneficial strains; and
- It should improve the host’s health.

Dr. Shahani lists several foods and food ingredients that satisfy these criteria and which belong to a special class of carbohydrates called oligosaccharides. Garlic, bananas, chicory, and milk are examples. Several oligosaccharides, including FOS (fructooligosaccharides) and GOS (galacto-oligosaccharides) are sometimes used as ingredients in yogurt, cultured dairy products, and other foods as well as in probiotic supplements. FOS and GOS ingredients are most popular in Europe and Japan, where they are used in more than 500 foods and nutritional supplements.

Another popular FOS prebiotic is the Jerusalem artichoke or sunchoke (it’s a member of the sunflower family), which contains inulin, a favorite food of lactobacteria. Jerusalem artichoke flour, for use in cooking, is widely sold in Japan.

Sweet whey, the part of milk that is separated out in the cheese-making process, is high in lactose, making it an ideal food for intestinal bacteria.
“In theory, prebiotics consumed alone might be able to deliver benefits, provided that the beneficial bacteria are indeed present in the GI tract in sufficient numbers,” says Dr. Shahani.

“Today many probiotic supplements available in the marketplace now contain prebiotics. Such products (where probiotics and prebiotics are combined) are called synbiotics. This approach may provide an efficient mechanism for introducing and then enriching health-promoting probiotic bacterial.”

Prebiotics such as sweet whey and FOS should be introduced gradually, however, because they ferment in the large intestine, producing gassiness, abdominal discomfort, belching, bloating, and flatulence until the body adjusts.

Foods such as sauerkraut and other lactofermented vegetables contain and feed beneficial microbes, making them both probiotics and prebiotics. Lacto-fermentation breaks down and releases gases before these foods are consumed, making them far less likely to cause adverse reactions. In fact, dogs receive far more nutrition from lactofermented vegetables than from the same untreated vegetables, even if they are pureed or juiced. This is because lactofermentation breaks down, tenderizes, and predigests vegetables, increasing their vitamin content. Many natural food markets sell raw, unpasteurized sauerkraut, kimchi (Korea’s traditional sauerkraut), and other lactofermented fare. But these foods are easy to make at home, with or without special equipment.

Another easy addition to your dog’s diet is homemade yogurt. Goat milk is often recommended for dogs because it’s easier to digest than cow’s milk, and when its lactose is broken down through fermentation, it’s far less likely to cause digestive problems than other dairy products.

Commercially produced yogurt, including “live culture” brands, lose potency as they sit in stores, even on refrigerated shelves. Making your own in an electric yogurt maker is the easiest way to insure that your dog receives the maximum number of live cultures possible. If you let yogurt ferment undisturbed for 24 hours, beneficial bacteria will break down 100 percent of its lactose for maximum digestibility.

Kefir, another fermented dairy product, is even easier to make because it doesn’t require heat. Kefir’s vigorous beneficial bacteria, which easily colonize in the digestive tract, include Lactococcus spp., Leuconostoc mesenteroides, Lactobacillus kefyr, Kluyveromyces marxianus, and Saccharomyces unisporus.

Don’t underestimate the health benefits of lactofermented foods. In 2005, researchers at Seoul National University in Korea announced that a culture fluid of Leuconostoc kimchii, a beneficial bacteria in kimchi, showed clear remedial effects for chickens suffering from bird flu, Newcastle disease, and bronchitis. Previous research showed that Pediococcus pentosaceus, another lactic ferment from kimchi, successfully prevented infection from harmful bacilli, including Helicobacter, which causes gastritis, and Listeria and Shigella sonnel, which cause food poisoning. Some research suggests that traditional European sauerkraut may help protect dogs and people from cancer.

Beneficial bacteria may be tiny microbes, but they’re big supporters of your dog’s immune system. Yours, too!

**Praise for Prebiotics**

**Special ingredients support the friendly bacteria that aid digestive health.**

By Mary Straus

Prebiotics (no, it’s not a typo) nourish probiotics, the beneficial bacteria discussed last month that support digestive health, the immune system, and more. A prebiotic is defined as “a nondigest-
ible food ingredient that beneficially affects the host by selectively stimulating the growth and/or activity of one or a limited number of bacteria in the colon and thus improves host health.”

Prebiotics are soluble, fermentable fiber, a type of nondigestible carbohydrate, also called resistant starch. Fructooligosaccharides (FOS) are the most common, but other oligosaccharides, arabino-galactans, and lactulose are also considered prebiotics. Sources include inulin (a form of FOS extracted from chicory), larch (a source of arabino-galactans), pectins, beet pulp, gums (e.g., guar gum), and wheat dextrin (Benefiber).

Prebiotics are included in many probiotic supplements (the combination is called “synbiotic,” referring to the synergy between the two). Food sources of soluble fiber include legumes (beans, lentils, peas), whole grains, fruits, vegetables, and Jerusalem artichokes (sunchokes). Some commercial dog foods have added sources of soluble fiber, such as chicory. Soluble fiber supplements are also available.

■ **BENEFITS:** Prebiotics support the growth of probiotics, which help keep bad bacteria under control in the dog’s gut. By supporting the good bacteria, prebiotics help to prevent disease, improve digestion and nutrient absorption (especially minerals), and enhance the immune system.

Dogs fed prebiotics are less likely to get diarrhea caused by the overgrowth of bad bacteria, and soluble fiber also helps to prevent or treat diarrhea by absorbing water and slowing intestinal transit. Fed to females during pregnancy and lactation, prebiotics provide enhanced immune protection to the puppies through colostrum and milk, and the puppies have an enhanced response to vaccines.

Soluble fiber is fermented by bacteria in the colon to short-chain fatty acids (SCFAs), the primary fuel for the cells of the colon. Increased concentration of SCFAs and numbers of beneficial bacteria support gastrointestinal health and the immune system.

Prebiotics may be especially beneficial for dogs with immunosuppression or digestive disorders, and for all dogs following antibiotic therapy. Studies done on rats show that prebiotics may help correct hyperlipidemia (high blood triglycerides or cholesterol) brought about by diabetes and other conditions. Human studies have shown that prebiotics may reduce the risk of colon cancer and irritable bowel disorders.

■ **CAUTIONS:** Prebiotics included in probiotic supplements are unlikely to cause any problems. Fiber supplements, however, should be used with caution. Too much soluble fiber can lead to gas and loose stools. Insoluble fiber (roughage), such as cellulose, speeds intestinal transit time (laxative effect) and reduces mineral absorption. Both types of fiber bulk up stools.

It’s important that dogs drink enough water when taking fiber supplements (especially insoluble fiber); add water to food if needed.

■ **DOSEAGE:** Probiotics and prebiotics are best given together. Follow label instructions when using products made for dogs. When using products made for humans, adjust the dosage based on the size of your dog compared to an adult human (e.g., give about half the human dose to a dog weighing 50 to 60 pounds, or one-quarter the human dose to a dog weighing 25 to 30 pounds).

If using a fiber-only supplement, start with low doses and increase gradually. Decrease the amount or switch to a different product if you see signs of gas or diarrhea.

■ **RECOMMENDED SOURCES:**

- Thorne Veterinary’s ArabinexVET, an arabino-galactan product (800-228-1966; thorne.com)
Improve Digestion

Digestive enzyme supplements provide a variety of benefits, especially for older dogs.

By Mary Straus

All dogs need digestive enzymes in order to break down their food, making the nutrients available for absorption. In most cases, the pancreas produces ample enzymes and no supplementation is required. Older dogs and dogs with digestive disorders may benefit from enzyme supplementation. Dogs with exocrine pancreatic insufficiency (EPI), where the pancreas is no longer able to produce enzymes, require prescription-strength enzymes in order to survive. Digestive enzymes might also help dogs with food allergies and intolerances.

**Benefits:** Digestive enzyme supplements can benefit dogs who are unable to produce enough of their own enzymes due to pancreatic damage linked to acute or chronic pancreatitis, EPI, or diabetes. Older dogs produce fewer enzymes as they age, and may also benefit from the addition of digestive enzyme supplements, especially if they are underweight. If your dog suffers from gas, borborygmus (rumbling noises from the gut), frequent diarrhea, soft or voluminous stools, or stools that contain a lot of mucus, digestive enzymes may help.

Enzyme supplements are derived from plant, animal, and microbial sources. Animal-source enzyme supplements contain pancreatin from the pancreas of pigs or cows. Pancreatin provides protease, lipase, and amylase, used to digest protein, fat, and carbohydrates, respectively. These supplements may work best for dogs with pancreatic damage.

Microbial and plant-derived enzymes are frequently used together. Microbial enzymes are usually synthesized from fungal sources via fermentation, and have strange-sounding names, such as various Aspergillus fermentation products, Trichoderma longibrachiatum, and Rhizopus oryzae. Plant-derived enzymes include papain (from papaya) and bromelain (from pineapple). These enzyme products often supply lactase (used to digest lactose), cellulase (cellulose), and other enzymes in addition to protease, lipase, and amylase. Microbial and plant-derived enzymes are often combined with probiotics (beneficial bacteria) for more complete digestive support, and are usually less expensive than pancreatin products.

Digestive enzyme supplements may help reduce coprophagia (eating feces), both by making the stool less attractive, and by increasing nutritional absorption so that the dog may no longer seek to eat stools.

**Cautions:** While many dogs benefit from the use of digestive enzymes, they can also cause undesirable side effects. If you give your dog a digestive enzyme product that causes loose stools, gas, vomiting, or signs of discomfort after eating, discon-
Enteric-coated products made for humans might pass through a dog’s shorter digestive tract without being utilized.

- **DOSAGE:** There are no specific dosage recommendations for digestive enzymes other than the prescription-strength enzymes needed for dogs with EPI, which are often highly concentrated (for example, 6x means it is 6 times stronger than plain pancreatin). These products should not be used for healthy dogs. Follow label instructions when using products made for dogs, or adjust the dosage of human products for the size of your dog (e.g., half the human dosage for a dog weighing 50 to 60 pounds).

- **RECOMMENDED SOURCES:** There are many different brands of digestive enzyme supplements. Here are a few examples:

  - **Animal Essentials’ Plant Enzymes and Probiotics** (888-551-0416; animalessentials.com)
  - **In Clover’s OptaGest** (877-987-7387; inclover.com)
  - **NaturVet Digestive Enzymes** (888-628-8783; naturvet.com)
  - **PetLabs360’s DigestAbleS** (888-738-7360; petlabs360.com)
  - **ProZyme’s ProZyme Original and ProZyme Plus** (800-522-5537; prozymeproducts.com)
  - **Thorne Veterinary’s DipanVET and Similase** (800-228-1966; thorne.com)

**Herbal Medicines and Nutritive Herbs**

**Dogs benefit from these medicinal foods in the winter and early spring.**

By Gregory L. Tilford

Wild dogs, researchers have observed, browse a broad variety of berries, grasses, flower blossoms, seeds, and even a few roots in their continuous search for food. Many of the plants they eat are quite tasty, even to us humans, while others are not palatable at all. In fact, some of the plants wild animals nibble upon may even be regarded by humans as potentially toxic. So why do they consume such plants? Because maybe they are not looking for food. Perhaps they are seeking medicine.

Unlike human herbalists, wild dogs do not need a stack of herb books and years of study to effectively utilize herbal medicines. Instead they rely...
on a much more time-honored system of herbal wisdom – one that is based from an intuitive sense of knowing what, when, and how much plant medicine is needed to fulfill a specific need or to correct an imbalance.

However, domestic dogs have lost much of their intuitive abilities to seek and select the herbal medicines they need, and this problem is further exacerbated during winter months or in urban environments – where access to fresh, clean grass and other weedy medicine may be limited or out of their reach. Unlike his wild ancestors, the family dog relies on you – his caregiver – to provide him with the herbal diversity he needs.

**The need for nutritive herbs**

Although the canine appetite is generally focused on fresh meat and vegetables, dogs sometimes will have a craving for plants that are not part of their usual diet. From the perspective of a holistic veterinary herbalist, this urge comes from an instinctive drive to fulfill special requirements that cannot be addressed by diet alone.

For example, in winter and early spring, dogs may be particularly attracted to sprigs of common quackgrass (Elytrigia repens), a persistent weed that has earned an alternate common name of “Dog Grass.” Why the craving for dog grass? Because in winter months, when wild greens are less abundant, dogs have an increased need for things that help support digestion, hair growth, and digestion. Each blade of dog grass contains silicon for strong joints and connective tissues, essential fatty acids for vibrant skin and coat, enzymes for good digestion, chlorophyll for antioxidant support, and soap-like saponin constituents that combine with stringy fibers to help cleanse the digestive tract and keep parasites in check.

The roots of this persistent weed are medicinal too, with anti-inflammatory and tonic properties that help strengthen mucous membranes, maintain urine pH, and safely reduce inflammation in the urinary tract – a condition that is sometimes unseen but nevertheless present as a result of low-grade infection or poor waste elimination. Likewise, dogs will occasionally chew on berries, seeds, nuts, leaves, flowers, even tree and shrub bark, all of which may contain healing properties that their bodies need to stave off illness. The red or purple fruits of raspberry, rose bushes, and hawthorn (Crataegus oxycantha), for instance, all contain flavonoid constituents that are beneficial to the cardiovascular system. The oils contained in the raw seeds of flax, currants, wheat and other grains, pumpkins, and squashes may be relished on certain occasions, when extra measures of essential fatty acids, vitamins, and minerals are needed for hair growth health.

Garlic bulbs, the green tops of onions, and all other edible members of the Allium family might also be the target of selective nibbling, as they possess antioxidant and immunostimulant activities that help boost the body’s resistance against bacterial, viral, or parasitic infection during periods of increased susceptibility or exposure.

Even certain types of algae (the stuff we often refer to as “pond scum”) contains a cornucopia of nutrients and disease-fighting chemicals that wild dogs may seek in times of need. But how do we choose these things for the “mighty wolves” that live amongst us? When do they need these things, and in what amounts?

**Just add green foods**

Fortunately, these questions are easily answered. By providing a daily helping of nutritive herbs and “green foods” at mealtime, your dog will be provided with added measures of nutritional and systemic support that his body can freely access and utilize. Several high quality choices are available in the marketplace, and although their ingredients may vary, they all share a similar purpose – to fill in the edges of a balanced, natural diet.

Products such as Ark Natural’s “Nu-Pet Granular Greens,” Animal Essentials’ “All-Organic Green Alternatives” (which I had a hand in formulating), and others will help bridge the gap between what your best friend receives from his diet and what his body needs from time to time for special systemic support. In other words, green food supplements put extra building blocks of health maintenance into place for your dog, in a way that replicates much of the botanical diversity
that is used by dogs in the wild. Similarly, you can provide a green food supplement simply by providing your dog with a planter of fresh, live wheat or barley grass, a tablespoon or two of alfalfa sprouts, a sprinkling of spirulina, or a variety of dried herbs mixed with his food.

However, before you “go for the green” on behalf of your companion, it is important to realize that green food supplements can only serve to round out a good diet; they cannot be expected to replace the nutritional elements that may be missing from poor quality food. Therefore, if you insist on feeding bargain basement kibble, don’t waste your money on a green food supplement.

With that said, the following is a descriptive list of some safe and nutritious green foods that may serve as healthful additions to your dog’s diet. Many of them are used as ingredients in widely available, premium quality green food supplements.

- **Flaxseed** contains Omega-3 essential fatty acids (EFAs), which are very important in the development and maintenance of a healthy brain, liver, heart, and immune system. In fact, these acids are so important, an animal (or human, for that matter) cannot survive without them. Several studies have confirmed that Omega-3 fatty acids are essential factors in the brain development of young animals, and may even help protect the brain against certain types of neurotoxins. Numerous studies have also shown that daily supplementation with EFAs may dramatically improve the skin, coat, and nails in animals who receive them as a supplement to a good diet. Flaxseed also contains fiber and various other constituents that play important roles in maintaining a healthy digestive tract.

- **Spirulina** is one of nature’s greatest super foods. This blue-green micro algae is a rich source of vitamins, including beta-carotene (vitamin A), niacin, biotin, pantothenic acid, choline, inositol, folic acid, vitamins C, B1, B2, B6, and a huge amount of vitamin B12.

  Just as impressive is spirulina’s array of minerals and trace minerals. Up to 15 percent of its chemical structure includes calcium, iron, potassium, magnesium, phosphorus, iodine, zinc, titanium, copper, cobalt, and manganese, to name just a few! Spirulina is also a very rich source of chlorophyll, a substance that is believed to possess powerful antioxidant qualities. To top all of this off, spirulina contains up to 70 percent bioavailable protein.

  Perhaps the best feature of spirulina is the way it offers its nutrients in a concentrated yet fully bioavailable form. Have you ever wondered why your urine is dark-colored after taking a B-complex capsule? This is because the body (whether it is animal or human) can assimilate only a limited amount of the vitamins at one time. Whatever the body cannot use must be eliminated via the liver and urinary system. Unlike many nutritional supplements that contain unnatural megadoses of vitamins and minerals that cannot be fully absorbed by the body, spirulina offers its nutritional wealth to the body as a food that the body can use without added strain upon the liver and kidneys.

Commercial supplements containing green foods can be a boon to dogs in winter and early spring. "Author Greg Tilford helps formulate the Animal Essentials supplements."
In fact, instead of causing added strain to body systems, spirulina supports liver function by helping with the elimination of waste and protecting liver cells against damage from various toxins and pathogens. Spirulina also helps feed the intestinal flora, thus aiding in digestion and boosting the bioavailability of nutrients contained in an animal’s diet. People who feed spirulina to their pets typically report increased energy levels, healthier coat, stronger disease resistance, and even improved behavior.

• **Garlic** is well known for its qualities as an immune-stimulant, antioxidant, antiparasitic, and blood tonic. Scientific studies have shown that various compounds in garlic stimulate immune functions in the bloodstream at levels of activity that are unparalleled by any other herb – yes, even echinacea! Perhaps the most intriguing of these actions is garlic’s effect on the body’s natural killer cells – those that seek out and destroy cancer cells and invading microbes. In a study conducted with human subjects who had AIDS, garlic was found to increase killer cell activity three-fold. Similar animal studies have been conducted with similar results.

A 1988 study found that diallyl sulfide, a garlic constituent, prevented tumor formation in rats, and several other studies have shown that garlic inhibits various forms of cancer growth in the body. This may be attributable to the liver-strengthening actions of at least six garlic constituents. In this capacity, garlic gently enhances overall liver function, and triggers enzyme responses to help break down waste materials before they go into the bloodstream. In other words, garlic helps the liver cleanse the body, and thus helps prevent toxic accumulations that may lead to cancerous growths.

• **Dandelion root** gently strengthens liver and gallbladder function, thus improving digestion and serving as a functional aid in the systemic elimination of toxins and waste products from the body. This in turn helps prevent chronic disorders such as arthritis, eczema, and psoriasis.

The liver is the primary filtering organ of the body, responsible for removing toxins and excesses from the blood for elimination via the kidneys. The liver also plays critical roles in digestion through its production of bile, bilirubin, and various enzymes. If bile ducts in the liver or gall bladder become congested, blocked, or otherwise diseased to the point of dysfunction, the body will invariably suffer one or more toxicity related imbalances. Such imbalances may be characterized by symptoms such as jaundice, rheumatoid conditions, or chronic constipation.

Dandelion root has a well-validated ability to stimulate bile production and circulation throughout the liver. In one study involving dogs, researchers observed a three to four times increase in bile production after administration of dandelion root. The gallbladder (which stores bile from the liver) is also stimulated, causing this small, hollow organ to contract and release bile into the digestive tract, thus aiding in digestion and acting as a gentle laxative to promote the elimination of solid waste.

• **Pumpkin seeds** taste good and provide Omega-6 fatty acids and vitamin E for healthy muscles, nervous system, and strong skin and coat. Fresh ground pumpkin seeds also contain cucurbitin, a compound that is believed to combat and prevent overpopulation of intestinal parasites, especially tapeworms.

• **Kelp** is a great source of iron, iodine, zinc, boron, chromium, selenium, and several other trace minerals. It is especially rich with vitamin B12, and is often used by herbalists to help strengthen thyroid function in animals that suffer hypothyroidism but do not exhibit symptoms of thyroïd tumor.

• **Nettle** is a nutritive herb that lends mild astrigent and antihistamine qualities to its long list of nutritional attributes. It is considered a tonic to the reproductive system, kidneys, and urinary tract.

Nettle is a perfect example of a food-medicine. One hundred grams of dried, pre-flowering nettle plant contain up to 30.4g (30 percent by weight) of crude protein, 2,970 mg of calcium, 680 mg of phosphorus, 32.2 mg of iron, 650 mg of magnesium, 20.2 mg of beta-carotene, and 3,450 mg of potassium; along with vitamins A, C, D, and B-
Nettle offers potent health benefits, even in small doses.

complex. All of this is contained in a highly palatable form that can be effectively assimilated into the body without adding excess stress upon the liver, kidneys, or digestive tract. This makes nettle an excellent food additive for animals who need extra trace minerals and vitamins in their diet, but not necessarily in huge, multi-vitamin doses.

• Alfalfa contains a broad spectrum of nutrients, including considerable quantities of protein (up to 50 percent), trace minerals, dietary fiber, and vitamins A, B1, B12, C, D, E, and K. It is also very high in chlorophyll, which serves as an antioxidant.

In addition to being highly nutritive, alfalfa is traditionally known as one of the best herbal treatments for arthritis, rheumatism, and gout. Clinical research of the aforementioned diseases have shown that at least 10 to 20 percent of human subjects will experience dramatic reduction of painful symptoms with the use of this herb. Traditional uses in animals have commonly led to similar results. This is likely attributable to alfalfa’s impressive chemical array of saponins, beta-sitosterol, stigmasterol, alpha-spinasterol, flavonoids, coumarin, alkaloids, beta-carotene, chlorophyll, octacosanol, and amino acids.

For arthritis and other inflammatory diseases of the joints, alfalfa can bring long-term relief to dogs, cats, rodents, horses, and various other herbivores who receive it as a daily food supplement.

In the urinary tract, alfalfa has an alkalizing effect, thus it may help to balance urine pH and prevent overly acidic urine.

Alfalfa also possesses cancer preventative qualities. It is believed that alfalfa induces complex cellular activities, and its considerable vitamin K content has been shown to be beneficial in remediing bleeding disorders that may result from long-term antibiotic therapies, anticoagulants, aspirin, and anticonvulsant drugs.

This nutritional plant also helps to stimulate appetite and is useful in helping an animal adjust to a new diet.

• Yucca is known for its ability to stimulate appetite and increase absorption of vital nutrients in the small intestine. It has been shown to stimulate weight gain and increase metabolic efficiency in virtually every type of animal.

Yucca contains saponin compounds known as sarsasapogenin and smithagenin. These phytosterol constituents are believed to be useful for relieving inflamed joints in animals with arthritis and other rheumatoid diseases. More importantly, these and other compounds are thought to aid in the assimilation of important minerals and vitamins by promoting increased passage of critical nutrients through the intestinal walls. This optimizes the nutritional value of the food to which it is added.

It is important to note, however, that only a very small amount of the powdered root (perhaps a pinch or two) is needed to achieve the result of improved nutrient absorption. Too much of this herb, fed continuously, may actually have a reverse effect, causing nausea and irritation of mild intestinal mucosa, which in turn can actually
block absorption of nutrients. With this in mind, I feel that it is not necessary – and may be counterproductive – to feed supplements that contain any more than 10 percent yucca root on a long-term basis, at least if your only goal is to provide nutritional support.

**How to feed green foods**

Regardless of whether you choose to provide your companion with dried herbs from the bulk bins at your local herb retailer or opt to buy a commercial formula like Granular Greens or Green Alternative, daily feeding is easy, economical, and safe. If you are the do-it-yourself type, nettle leaf, dandelion leaf, ground flaxseed, ground pumpkin seed, and spirulina all represent good, easy to find choices. In fact, all can be combined to make an excellent home-prepared formula that can be fed once per day at a rate of teaspoon per 20 pounds of your dog’s body weight. Simply mix the formula into wet food.

Likewise, a tray of fresh green wheat grass or barley grass can be left by the water dish at all times for occasional nibbling. However, if you intend to leave live grass in the kitchen for your dog, expect that sometimes he may want to eat it ravenously – for the purpose of digestive cleansing and/or regurgitation (yes, that means vomiting and then eating it again). This is normal behavior that has been passed down through hundreds of canine generations, from the mighty wolf of the wild north, to the homes of modern urbania. Just beware – if the occasional nibble turns into full-fledged grazing, it’s time for a walk!

Greg Tilford is a well-known veterinary herbalist, lecturer, and author. He serves as a consultant and formulator to hundreds of holistic veterinarians throughout the world, and is CEO of Animal’s Apawthecary, a company that develops herbal products specifically for use in animals. He is author of four books on herbs, including *All You Ever Wanted to Know About Herbs for Pets* (Bowtie, 1999), which he co-authored with his Ex-wife, Mary.

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**WHAT YOU CAN DO . . .**

Grow your own fresh herbs or wheat grass. Allow your dog to graze on the plants at will, or snip off a leaf or two at a time, sprinkling them on his food.

Alternatively, you can purchase dried herbs (chosen from our list), mixing small amounts in your dog’s food.

Or, buy a commercial canine supplement that includes several of the green foods mentioned in the text.

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