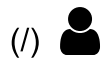


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## LIFE EXTENSION MAGAZINE

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May 2003

### Life Extension Animals Case Studies By Terri Mitchell

x) It was five long days until the results came back. By then, Jack was barely hanging on. The report showed that Jack's kidneys were inflamed for no apparent reason. Little grains created by the immune system were filling up his kidneys, blocking the delicate filtering system. Something was needed that could counteract the inflammatory process. The vet decided that Jack needed an intensive program starting with N-acetylcysteine (NAC).

NAC is a form of the amino acid, cysteine, with multiple kidney-protective actions. The research on what NAC can do for the kidney (and the liver) is scientifically well-documented. In one recent study, researchers in Italy demonstrated that NAC normalizes creatinine levels in rodents with kidney failure. It reverses inflammation and restores filtration. Similar findings are reported by French researchers when NAC is given as a pretreatment before experimental kidney damage in rats. Without NAC, there is a 68% reduction in the ability of the kidneys to do their job. With it, the loss of kidney function is only 29%. A third study confirms that an infusion of NAC before and after experimental kidney damage doubles the kidney filtration rate. NAC is strong medicine for the kidneys. It has no adverse side effects, even when small animals like cats are given a human dose.



The dog with arthritis



The veterinarian started Jack on 100 mg of NAC twice a day, plus a new diet of raw beef and chicken and 100 mg of DHEA (dehydroepiandrosterone). DHEA is critical for an important kidney enzyme known as sulfotransferase. People with kidney disease have depleted levels of DHEA. Research shows that DHEA and NAC probably work synergistically, which is why they were given together.

Within 24 hours of receiving NAC and DHEA, Jack began eating like a normal cat. He continued to vomit for several days (a side effect of kidney failure), but two weeks from the date of surgery, his BUN had dropped from 152mg/dl to 45.6mg/dl and he was up and around. At that point, the supplements were cut in half. A month later, Jack's blood tests were normal. That was over a year ago and Jack is still doing great. He is maintained on a high-protein diet along with 50 mg of NAC and 25 mg of DHEA a day.

## Zoe, the hairless dog

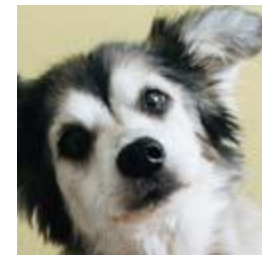
Zoe was beginning to look more like a chihuahua than a Yorkshire terrier. The little dog belonging to Lynne and Frank Burger scratched at her back constantly, but nothing they did seemed to help. She was going bald. And not only that, she never wanted to play with her buddy, "Mr. Pug," anymore. She seemed to have nervous energy but no real energy. Smallest in a household of ten dogs, Zoe had a special treat added to her dry food: a "gourmet" food from the grocery store.

"Flea allergy" or "food allergy" is a common diagnosis for animals losing their hair. It's a quick, eye-ball diagnosis rarely accompanied by laboratory tests. The cure is usually steroids plus one of the new pesticides that is put on the back of the animal and absorbed through the skin. The problem is that fleas are only one of many things that can cause hair loss, which is usually accompanied by some sort of skin disorder.

Researchers from Hungary recently reported that 17 dogs treated with pesticides, "restricted diets," steroids, antibiotics and other medications did not respond because they were infected with microorganisms that are not usually regarded as a problem. Yet when the bugs were eradicated with the proper drugs, the dogs got well. This points out the importance of finding the root cause of a persistent problem.



Gigi was limping when caretakers, Bill and Charlene Baird, took her to the vet. She was also



losing her hair. After examining the little terrier mix, the vet gave his diagnosis: arthritis. Gigi was only five, but already she was getting the signs of old age. The veterinarian recommended a new diet and some products he was selling, but Bill and Charlene opted to try Life Extension products. Bill was a fan, having been able to throw out half of his heart medications after switching to heart-enhancing supplements from Life Extension. They immediately put Gigi on Life Extension Dog Mix (two scoops), MSM (500 mg/day) and glucosamine/chondroitin (900 mg/day).

Within a week, Gigi stopped limping, and Bill no longer had to help her into the car. "She's doing great," said Charlene. "She plays tug-of-war, chases balls, constantly wants to play and runs circles around the rocking chairs." The limping is long-



Another cause of hair loss is poor nutrition. There is considerable evidence that the nutritional requirements for dogs depends on the breed. It appears that dogs prone to certain disorders also require certain dietary needs. English setters, for example, can inherit a terrible disease called Batten disease which causes the brain to shrink. It is accompanied by abnormally low levels of polyunsaturated fatty acids and the amino acid, carnitine. Researchers at Indiana University wanted to see if it would help to supplement the animals diets' with carnitine, fish and corn oil. It did. Carnitine greatly reduced cognitive decline, and the combination reduced brain atrophy and extended lifespan 10%.

gone, the hair-loss has stopped and Gigi hasn't been back to the vet since.

In 1988, veterinarians at the University of California at Davis reported on 13 dogs that had been eating a generic dry, corn and wheat-based dog food. The dogs were depressed and lethargic. They had swollen lymph nodes and, worst of all, they had scaly, crusting areas where their fur was falling out. The dog food the owners were feeding did not state that it met minimum nutritional requirements (AAFCO). When the animals were put on a higher-quality dog food, the animals began to get better within days.



A Weimareiner in Florida is living proof of what a supplement known as lipoic acid can do for blood sugar.

Harley was adopted out of a shelter when he was a puppy. Everything seemed fine until the day the dog passed out. His worried owners, Mimi and Jesse McClellan, soon learned that Harley had diabetes. His blood sugar was so high that he had to be given 30 mg of insulin twice a day. His diet was changed in the hopes he might do better. But despite changing from a rice-and-lamb dog food from the grocery to a higher-grade dry food product, Harley's symptoms did not improve. His blood sugar was on a roller-coaster ride, soaring then falling. His frustrated owners had to come home at lunch to feed him. Things were not looking good for Harley.

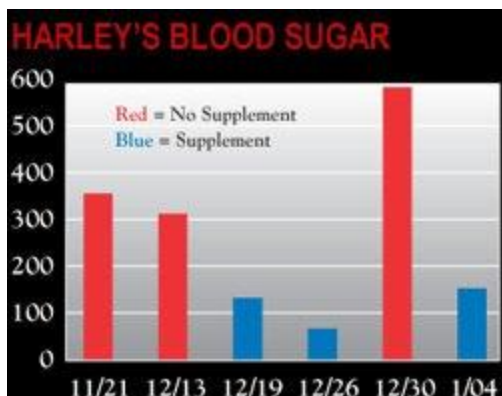
By chance, Mimi McClelland met a person familiar with Life Extension products. She recommended that Harley be put on Life Extension Dog Mix (3 scoops), lipoic acid (500 mg/day), L-carnitine (1500 mg/day) and DHEA (100 mg). Mimi immediately agreed to try the supplements on Harley. Within days of getting them, Harley was bouncing around, wanting to play. It was the first time in months Harley had "acted like a dog." His blood sugar dropped from 300 to 130.



However, two weeks later, Harley's blood sugar again soared when his owners were away. This time, Mimi added the new, high-protein, low-carbohydrate diet to the supplements (Wysong All-Meat, cottage cheese, whole cooked oats and vegetables). Within days, Harley stabilized and his blood sugar dropped, and he stopped carrying his food bowl around. To date, he has been doing great, "He's on top of the world. Today we played Frisbee," says Mimi.

Lipoic acid is a powerful antioxidant. In Germany it is prescribed as a drug to people with diabetes. Here in the U.S., it's available as a supplement. One of its actions is to alleviate neuropathy, a painful degeneration of nerves caused by free radical damage. Researchers in Scotland have documented the extraordinary ability of lipoic acid to keep diabetic nerves working properly. It enhances "nerve conduction velocity" and blood flow, and reverses blood vessel constriction. In another report, researchers found that lipoic acid actually restores critical nerve factors that are lost in diabetes.

Another important action of lipoic acid is that it lowers blood sugar by stimulating glucose uptake, lowering production, and enhancing sensitivity to insulin. It works much better when it's injected, but oral lipoic acid can drop blood sugar as well. Under laboratory conditions, it can drop the blood sugar of rodents by as much as 30%. In Harley's case, the lipoic acid supplement was used in combination with L-carnitine, Life Extension Mix, DHEA and a high-protein, human-grade diet. His blood sugar dropped about 70%.



One of the benefits of lowering blood sugar is that it reduces the risk of heart attack. Researchers at the University of Iowa have shown that when lipoic acid is added to cells from the aorta, it prevents the activation of NFkB, an inflammatory factor that makes blood cells stick together. This research was confirmed in other studies where lipoic acid supplementation reduced similar blood factors that promote heart attacks.

## Aging and dementia in dogs

Elderly dogs can act like elderly people who aren't quite "with it." The "not with it" part is caused by damage to brain cells—damage that accumulates over time. A small percentage of dogs can go on to develop an Alzheimer's-like condition. (Although under the microscope, doggie AD does not have all of the same features as human AD.) Symptoms of brain aging in dogs include sleep disorders, forgetting house-training, lethargy, disinterest, confusion about going in or out of doors, hiding and getting lost.



There are various supplements an owner can give their animals to protect them from degenerative diseases. DHEA (dehydroepiandrosterone), for example, is a hormone secreted by the adrenal glands that declines drastically with age. In a study from Purdue University, 100 mg/kg of DHEA a day given as a supplement for seven months to elderly dogs reduced the percentage of brain cells with extensive DNA damage by 42%. This shows that even an elderly animal can benefit from anti-aging interventions. In the same study, damage to the dogs' immune cells was cut in half. This is good health news for pet owners. Note that both types of cells (immune and brain) are extensively damaged in people with Alzheimer's disease. Its antioxidant action may account for DHEA's ability to protect these vital cells.

There are other methods to protect the brain as well. When the Science Diet® people went looking for a supplement that could help aging dogs stay alert, they focused on two important aspects of brain aging: energy and free radical damage.

The brain's energy is generated by sub-cellular structures called "mitochondria." When mitochondria make energy, free radicals are created. Free radicals, in turn, damage mitochondrial DNA. Damaged DNA, in turn, prevents the little power plants from producing energy efficiently. The vicious cycle is accelerated by age.

The brain is very susceptible to free radical damage because of its high fat content and high demand for energy. One of the most powerful brain antioxidants is alpha lipoic acid, also known as lipoic, or thioctic acid. Lipoic acid has multiple actions. On one level, it restores and maintains other antioxidants including vitamins C and E, and the natural antioxidant, glutathione, which is diminished in the brains of elderly dogs. Lipoic acid also enhances the level of coenzyme Q10, an energy-related enzyme, and restores arachidonic acid in brain cells to youthful levels. Arachidonic acid is absolutely critical for learning and remembering. Researchers have demonstrated that restoring arachidonic acid to youthful levels through supplements increases the ability of neurons to respond. In other words, arachidonic acid may be the key to teaching an old dog new tricks.

Additionally, lipoic acid can chelate iron and other metals, keeping them from fueling free radical chain reactions. By itself, lipoic acid is highly protective of brain cells, but there is another element that can be combined with it that makes it even more powerful: carnitine

## Scientifically-proven anti-aging combination



Carnitine is an amino acid that has a special role in energy production. It transports fuel into mitochondria for conversion to energy-ATP. Carnitine levels decline with age, and so does transport. By supplementing with carnitine, studies show that old mitochondria can have energy production of young mitochondria. In a stunning report that was published in the

### The Anxious Basset Hound

Cleo was scared. Scared of noise, scared of sudden movements, scared to go outside. She was given an herbal sedative which did not help. Her caretaker noticed that Cleo was hypersensitive to sound and light.

Cleo began to have seizures, and was put on phenobarbital. Normally, this drug has a sedative effect. In Cleo's case, it did stop the seizures, but did not stop the anxiety. When her caretaker brought her in for vaccine





Proceedings of the National Academy of Science, researchers at the University of California at Berkeley showed that elderly rats given L-carnitine doubled their activity to a level approaching that of young rats. (Young rats given L-carnitine were like five year-olds on jet fuel). Researchers were able to correlate increased activity with increased energy production in the animals' mitochondria.

As great as it was to get the old mice up and going again, their increased energy came with a price: a 30% increase in free radicals. This is where lipoic acid comes into the picture. When the same researchers added lipoic acid to the L-carnitine supplements, oxidative stress was reduced to the level of youngsters and physical activity was even greater than that achieved with lipoic acid alone. Memory was enhanced, and when the researchers looked at the hippocampus—a brain structure having to do with memory—they found that the combination of L-carnitine and lipoic acid actually kept the mitochondria from aging.



For years nobody paid much attention to the diets of their cats and dogs. They got the scraps off the table, or the mice from the barn and that was about it. But when these animals began being used in laboratories, it became imperative to know their nutritional requirements. "Complete and balanced nutrition" pet food is a billion dollar offshoot of "lab chows." The industry has contributed substantially to understanding the nutritional requirements of our "best friends." But science is moving on now, beyond what it takes to keep an animal on its feet, to what it takes to keep an animal healthy in the long run. New research shows that cats and dogs respond positively to some of the same supplements we take. Lower vet bills and happier animals is our reward for optimal nutrition.

### Resources

To view which brands of dog food contained detectable levels of pentobarbital in the FDA study, see <http://www.fda.gov/cvm/efoi/DFchart.pdf>. For a brief report of the study, see <http://www.fda.gov/cvm> (<http://www.fda.gov/cvm>).

For more on the American Association of Feed Control Officers (AAFCO), see <http://www.AAFCO.org> (<http://www.AAFCO.org>). The FDA can be accessed at <http://www.fda.gov/cvm> (<http://www.fda.gov/cvm>).



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boosters, the vet suggested they not be done (annual vaccinations are controversial and in many cases may be unnecessary.) Instead, he focused on Cleo's anxiety, and put her on a new supplement known as L-theanine.

**Theanine is a unique amino acid extracted from tea that has an anti-anxiety effect. Japanese researchers have obtained a patent on it for the treatment of anxiety and behavioral problems in cats and dogs. It works for several things, including persistent barking, general phobias, unsocial behavior, spraying (cats) and abnormal vocalizing. Cleo was sent home with a dose of 100 mg twice a day. Her caretaker called four days later, saying that not only was the dog cured, but that her husband was going to try theanine for his sleep problems. Cleo has taken L-theanine for over a year.**



Earth Island Institute has done several reports on commercial pet food and rendering plants, including "The Dark Side of Recycling", fall 1990; "Food Not Fit for A Pet", summer 1996. "Look Inside" a Rendering Plant, summer 1996. See [www.earthisland.org](http://www.earthisland.org) (<http://www.earthisland.org>).

**She no longer takes phenobarbital and has not had any further seizures.**

Cats are strict carnivores. Their requirement for meat protein is three times higher than omnivores like dogs. They must have meat protein to maintain health. Meat should be the first ingredient in a cat's diet. Commercial pet food made with human-grade meat is available online. Brands include Wysong, Wellness, PetGuard and Active Life.

## Books

Ann Martin looked into the pet food industry after her own dog almost died from contaminated commercial dog food. An updated version of her book, *Food Pets Die For* is now available for \$13.95. Call, toll-free, 877-695-2211 or visit [www.newsagepress.com](http://www.newsagepress.com) (<http://www.newsagepress.com>). The book is also available through bookstores online.

Martin Goldstein is a Cornell-educated veterinarian who practices holistic vet care. *The Nature of Animal Healing*. (Knopf 1999).

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