Recognizing & Managing Canine Allergic Dermatitis

The most common signs of allergic disease in dogs are those associated with atopic dermatitis or allergic skin disease. They include:

- Pruritus, or itching
- Erythema, or redness
- Self-inflicted skin damage due to scratching
- Conjunctivitis, or redness of the eyes
- Rhinitis, or congested nose

One of the first steps in managing canine atopic dermatitis is to reduce exposure to allergens. This includes:

- Removal of offending environmental substances, if possible
- Reduction of exposure to allergens, such as mold, dust mites or pollen
- Frequent bathing with hypoallergenic shampoos
- Change in diet in dogs likely suffering from a concurrent food allergy
- Use of flea preventive product since chronic atopic dermatitis appears to predispose dogs to developing hypersensitivity to flea salivary allergens.

A researcher aims to develop effective atopic dermatitis treatment. When Karen Moriello bought 3-year-old "Lefty," a male yellow Labrador Retriever, she hoped to provide a loving home in Brooklyn, Wis., for a dog who could no longer compete in field trials due to exercise-induced hyperthermia. Lefty enjoyed hunting recreationally with Moriello and her husband, but a year after moving to Wisconsin, the dog developed an irritating skin disease.

"When he was 4-years-old, Lefty began suffering from pruritus, or itchy skin," Moriello says. "He began scratching his ears, licking his paws and rubbing his face. He also had skin infections from the constant scratching. He rolled on his back a lot and used furniture and walls as back scratchers. By the time he was 5-years-old, he had severe pruritus year-round."

Moriello ultimately diagnosed Lefty with canine atopic dermatitis. Atopy is one of three major causes of allergic skin disease. The other causes are flea and food allergies. An allergic immune reaction is a normal defense mechanism gone awry, Moriello says.

"An allergic reaction is the body's way to stop, remove or isolate foreign proteins, called antigens," Moriello explains. "Allergic reactions become problematic when the body overreacts to the antigen, and the allergic reaction does more harm than good."

When a dog has an allergic skin disease, the body's mast cells release immunoglobulin IgE, which attacks the allergen as a foreign particle, causing the allergic reaction. The most common signs of atopic dermatitis are pruritus and erythma, or redness of the skin, as Lefty experienced. Scratching often causes self-injury, which can lead to open sores and infection, particularly around the ears, forelimbs and groin.

"Pruritus may be manifested by scratching or behaviors not necessarily recognized as itching," Moriello says. "These include face rubbing, ear flapping, foot licking, biting of nails, rolling on the back, or scooting."

Avoiding Skin Disease

Disease management for atopic dermatitis involves treating pruritus and inflammation. A two-year, $84,881 study of canine allergies focuses on developing an effective treatment to help prevent the allergic reaction.

Funded by the AKC Canine Health Foundation, the study is sponsored by the American Sealyham Terrier Club, Bichon Frise Club of America, French Bulldog Club of America, Great Pyrenees Club of America, Versatility in Poodles and Welsh Terrier Club of America.

"Atopic dermatitis is the No. 1 health issue in our breed," says Vickie Halstead, research coordinator for the health committee of the Bichon Frise Club of America. "Our most recent breed health survey indicated that 23 percent of Bichons suffered from skin problems due to canine allergies. We are excited that this research may help ease the suffering of Bichons and their owners."

Led by Bruce Hammerberg, D.V.M., Ph.D., professor in the department of population health and pathobiology at North Carolina State University, the research is based on a breakthrough in human allergy management. A longtime canine allergy researcher, Hammerberg has spent the past decade studying the function of mast cells and IgE in canine allergic disease.

The new human treatment uses a monoclonal antibody, produced by a single group of identical cells, that specifically binds and neutralizes the IgE responsible for activating inflammation-producing cells. The new product, called Xolair®, has been used safely by millions of allergy patients for more than five years.

"The genetic and physiological risk factors for dogs with allergic diseases are highly complex," Hammerberg says. "Different combinations of genetic backgrounds and environmental and individual physiological conditions can increase the risk for allergic disease when a dog is exposed to allergens."

Though there is no way to predict if or when a dog will develop allergies, certain breeds are more prone to allergic diseases. Among them are the Australian Terrier, Belgian Terwure, Bichon Frise, Chinese Shar-Pei, Clumber Spaniel, French Bulldog, Norfolk Terrier, Norwich Terrier, Pharaoh Hound, Rhodesian Ridgeback, Sealyham Terrier, Staffordshire Bull Terrier, and West Highland White Terrier. Between 10 and 15 percent of dogs seen by veterinarians are
Atopic Dermatitis Treatment

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estimated to be affected by allergic diseases, Hammerberg says.

Treatment for canine allergic disease typically includes desensitization injections, which can be effective in some dogs. However, most cases are not resolved by desensitization and require a combination of allergen avoidance and anti-inflammatory drugs. Unfortunately, prolonged use of drugs such as corticosteroids can result in severe side effects, such as increased thirst, appetite and urination, behavioral changes, weight gain and/or predisposition to develop diabetes. Moriello suspected that Lefty’s pruritus was atopic dermatitis caused by allergies to environmental allergens. She began food testing to rule out food allergies and be certain that environ-

mental allergies were the only cause of the itching. “There are several different diet approaches to ruling out a food allergy in dogs, and I used all of them to be certain food was not causing Lefty’s itching,” she says.

Nothing alleviated the itching. “After three months of food testing, we performed an intradermal skin test and determined that Lefty was allergic to grass, weeds and house dust mites,” Moriello says. Though Moriello began Lefty on a desensitization injection treatment, it was nearly a year before she saw results.

“Lefty needed a lot of supportive care to control his itching during that time,” Moriello says. “We administered steroid ear drops when his ears became inflamed, used a steroid spray on his thinly-haired areas and paws, and bathed him frequently to remove dandruff and pollen from his coat. The supportive treatment provided comfort while awaiting the outcome of the allergy treatment.

“Lefty responded well to therapy. Today, for 10 months of the year, he needs only the allergen injections, but when he is challenged due to exposure to environmental allergens, such as during intense hunting periods, he needs a topical steroid therapy and occasionally oral prednisone. Overall, the quality of his life is much better than prior to treatment.”

Lefty, now 10 years old, drinks and urinates more frequently when he receives oral prednisone. He also overeats on numerous occasions, as the steroid increases a dog’s appetite. While Lefty benefits from this treatment, it needs to be used with care only on a short-term basis, Moriello says.

“Because contributing causes are so complex, response to treatment can vary greatly,” Hammerberg says. “Identifying food or environmental allergens to avoid requires a major investment in time and money.”

Adapting Human Allergy Treatment

The breakthrough in the human allergy treatment Xolair led Hammerberg to consider a similar treatment for canine allergic dermatitis. Hammerberg and his research team hope to develop an anti-IgE peptide treatment for canines, which he predicts will help dogs suffering from any type of allergy.

“IgE is the common feature in mammalian classic allergic disease,” Hammerberg explains. “This role is independent of the complexity of the factors leading up to allergic disease. Being able to neutralize IgE has been demonstrated in humans as an effective therapy for individuals with different genetic and environmental risk factors.”

Hammerberg believes the anti-IgE treatment will provide a more rapid treatment for dogs suffering from a variety of allergy responses. Rather than repetitive testing to determine the offending allergen, inhibiting the IgE will potentially prevent reaction to all allergens.

“Anti-IgE therapy is different from current treatment in that it does not suppress an individual’s immune system as corticosteroids and cyclosporine do, yet it is safe and highly effective in treating allergic diseases. As a result, identification of individual allergens in food or the environment potentially is not necessary,” Hammerberg says.

The study has two objectives. The first is to isolate and modify a mouse monoclonal antibody that binds canine IgE. “The mouse antibody we are using will be modified so that only a small part of the protein that actually binds canine IgE will be included,” Hammerberg says. “This will minimize the individual dog’s potential to recognize an allergen as foreign.

“The process involves identifying the small part of the monoclonal antibody involved with binding IgE and isolating the DNA sequence from the mouse monoclonal cells that represents this part of the antibody. We then can create a recombinant peptide, which includes only the antibody’s binding sites.”

This peptide will be injected subcutaneously and will prevent IgE from attaching to the binding sites on mast cells and producing an inflammatory reaction. “Neutralizing IgE prevents mast cells from causing the clinical signs of allergies, such as itching and redness,” Hammerberg says. “Our proposed IgE-binding peptide specifically binds IgE just as the Xolair antibody does in humans.”

The second objective is to create a cost-effective way to produce the anti-IgE antibody using plants. “The cost of generating proteins from cell culture is very high,” Hammerberg says. “Plant leaves are susceptible to viruses and bacterial infections that naturally change the proteins they produce. This is how viruses develop in plants and spread from plant to plant in natural infection processes.”

Using plants to reproduce proteins is an established technique used to produce human insulin. The DNA encoding the monoclonal antibody is injected into the plant leaf, which begins to produce the protein encoded by the injected DNA. Once enough has been produced, it is extracted from the plant leaf.

“The IgE-binding peptide will be purified to remove plant proteins, and this purified peptide will be injected into a dog suffering from allergic disease,” Hammerberg says. “We anticipate that the injections will be given once or twice a month, depending on the severity of the disease. The peptide injection will avoid the side effects associated with chronic use of corticosteroids and hopefully greatly improve the quality of life for dogs suffering from allergic diseases.”

Moriello welcomes the development of a peptide injection and wishes one had been available six years ago when she began dealing with Lefty’s allergies. “This research has the potential for adding great value in helping owners whose dogs suffer from atopic dermatitis,” she says. “It took us a long time to determine the exact causes of Lefty’s pruritus and then decide the best treatment. We would have been on the road to recovery a couple of years sooner.”

Send Us Your Questions

Have questions about your Purina Points or how to redeem weight circles for rewards and rebate checks? Contact Purina Pro Club at 877-767-2542, between 7 a.m. and 5 p.m. Central time Monday through Friday. You also may visit www.purina proclub.com to review and redeem Purina Points.

Want to Reach the Editor?

Have comments about Purina Pro Club Update? Send them to us at: Purina Pro Club Update, c/o Editor, Nestlé Purina PetCare, 27 Checkerboard Square, St. Louis, MO 63164 or via e-mail at today’sbreeder@purina.com.
2011 Pro Plan Champions Cup Winner Will Receive Original Oil Painting & Cash Prize

Among the awards the winner of the 2011 Pro Plan Champions Cup will receive are a $10,000 cash prize and an original oil painting of the winning dog. Cash prizes also will be awarded to the second-, third- and fourth-place finishers.

“The Pro Plan Champions Cup represents excellence in the sport of purebred dogs through conformation dog shows,” says Ann Viklund, Purina Director of Breeder-Enthusiast Marketing. “We began this award 11 years ago to honor those who promote the highest standards and to support the dog fancy.”

The yearlong award program includes over 200 Purina-sponsored all-breed dog shows. At the end of 2011, points will be tabulated based on:

- Best in Show, 5 points
- Group First, 4 points
- Group Second, 3 points
- Group Third, 2 points
- Group Fourth, 1 point.

The dog earning the most points will be named the Pro Plan Champions Cup winner. In addition to the $10,000 cash prize and the original oil painting by dog portraitist Linda Draper, the winner receives a keepsake Pro Plan Champions Cup trophy. A permanent Pro Plan Champions Cup is displayed at the Purina Event Center in Gray Summit, Mo., along with a plaque engraved with the winners’ names.

Cash prizes will be awarded to the top-placing dogs as follows:
- Second place, $5,000
- Third place, $2,500
- Fourth place, $1,250.

More information about the 2011 Pro Plan Champions Cup, a running tabulation of individual dogs’ points and a complete list of qualifying shows will be available on the Purina Pro Club website at www.purinaproclub.com. See the Purina-Sponsored Dog Shows calendar below for upcoming events that are part of the competition.

The Pro Plan Champions Cup is sponsored by Purina Pro Plan brand dog food.

Malachy’ Wins 2010 Pro Plan Champions Cup

A 2-year-old Pekingese, GCH Palacegarden Malachy, handled by owner David Fitzpatrick, stood out with his friendly, graceful ways to win the 2010 Pro Plan Champions Cup. The No. 2 all-breed dog and No. 1 Toy dog, “Malachy” finished the year more than 100 points ahead of the second-place finisher.

The award is based on points received for Best in Show and Group placements at more than 200 Purina-sponsored all-breed dog shows throughout the year. Among the 2010 Purina-sponsored shows that Malachy won were the International Kennel Club of Chicago Dog Show in February and the Atlanta Kennel Club Dog Show in April. Malachy is co-owned by Iris Love and Sandra Middlebrooks.

The top-placing dogs were:
- Second place, CH J’Cobe Kemosabe Vigilante Justice, a Smooth Fox Terrier co-owned by Howard and Sandra Hoffen and Phil and Amy Booth and handled by Amy Booth.
- Third place, CH Casablanca’s Thrilling Seduction, a Black Cocker Spaniel owned by breeder Linda Moore and handled by Linda Pitts.
- Fourth place, GCH Dawin Spitfire, a Standard Poodle owned by breeder Linda Campbell and handled by Sarah Riedl.

David Fitzpatrick and “Malachy”

Purina-Sponsored Dog Shows* February to March 2011

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* This table lists some, but not all, upcoming Purina-sponsored dog shows.
A new super-premium brand, Purina ONE BeyOnd, recently introduced two natural dry dog foods plus vitamins and minerals, both made with nutritious whole grains and real meat as the No. 1 ingredient.

The new Purina ONE BeyOnd dog foods are: Chicken & Whole Oat Meal Recipe containing real white meat chicken as the No. 1 ingredient, accented with carrots, tomatoes and apples; and Lamb & Whole Barley Recipe containing real lamb as the No. 1 ingredient, accented with blueberries, sweet potatoes and spinach. Both have a 26-percent protein to 17-percent fat ratio. The foods contain no corn or wheat, added fillers or artificial preservatives. Both offer complete and balanced nutrition for adult dogs.

The Purina ONE BeyOnd brand celebrates nature and advances sustainability through its packaging, made with at least 92 percent renewable materials from sustainable forests and printed with soy-based inks. The package front reflects the brand’s philosophy with a prominent “Circle of Life” logo showing scenes from nature and farms.

Purina ONE BeyOnd is part of the Purina Pro Club weight circle redemption program. During the first year, until Dec. 31, 2011, UPC codes, rather than weight circles, may be redeemed. Subsequently, weight circles will be required for Purina Point credit. Purina ONE BeyOnd has a point value of 11 cents a pound, the same as other Purina ONE products. Purina ONE BeyOnd dog food comes in 3.5- and 15-pound package sizes. A 26-pound package will be available later this year.

Purina ONE BeyOnd is sold at pet specialty, grocery and mass retail stores. For information, visit www.purinabeyond.com. To talk to a pet adviser, call 1-866-PURINA (1-866-787-4621) from 7 a.m. to 7 p.m. Central time Monday through Friday.

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### Purina-Sponsored Sporting Events* February to March 2011

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<td>National Open Shooting Dog Championship</td>
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*This table lists some, but not all, upcoming sporting events sponsored by Purina.