

# Allergic Skin Disease

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Dogs and cats manifest allergies in a number of ways (itchy skin, hair loss, puffy eyes or diarrhea), but they most commonly exhibit allergies through the skin. Skin becomes itchy and red; bumps, flaky circular lesions and pus may form, and hair loss may occur.

The most common causes of allergic skin disease are inhalants (such as pollens, molds and house dust), foods and fleas. Inhalant allergies (called "atopy") and food allergies most commonly affect the face, ears, front of the forelegs, webbing between the toes of the front paws, belly, groin and armpits. About 25% of dogs with allergic skin disease manifest the problem only as recurrent external ear infection/inflammation. Flea allergy most commonly involves the area surrounding the base of the tail. Allergic cats may also develop eosinophilic granuloma complex: areas of hair loss and skin irritation on the upper lip, head or linear regions along the front or hind limbs.

Allergic skin disease occurs when the body's immune system over-reacts to some offending substance. Substances to which animals are allergic ("allergens") produce additive effects, so the severity of the itchy skin lesions is a result of the summation of each allergen's effect. Thus, an animal who is only slightly allergic to house dust and to the pollen of a Spring-blooming plant may manifest allergic skin disease only in the Spring when both allergens occur, raising the immune system's response over the threshold at which clinical signs are seen.

Other factors which can exacerbate allergic skin disease include overly dry skin (for example, secondary to hypothyroidism), sub-optimal diet, flea infestation and skin infections (for example, infected skin folds in heavily wrinkled dogs). Other causes of skin diseases, including parasites (e.g., mites), fungi (e.g., ringworm), autoimmune reactions and endocrine disorders, should be treated.

Allergic skin disease occurs more frequently in certain dog breeds (including West Highland White Terriers, Golden Retrievers and Labrador Retrievers). Since allergy may be inherited, affected animals should not be bred.

Contact dermatitis is a related but relatively uncommon disorder in which areas of skin (usually non-haired) in direct contact with some offending substance become inflamed. Contact dermatitis is best treated by eliminating the causative substance from the pet's environment, if possible.

## Inhalant Allergies (Atopy)

Inhalant allergies generally appear when the animal is young (between 1 and 3 years), and they usually persist throughout the pet's lifetime. While pollen allergies typically begin with a seasonal pattern, after several years the skin disease may persist year 'round in severely affected animals. Allergies to molds are typically more severe during wet

weather when molds flourish, while allergies to house dust, cotton and wool tend to be year 'round.

Diagnosis requires skin testing or a blood test. Skin testing, the more reliable method, is done by a veterinary dermatologist. One side of the pet's chest/abdomen is clipped free of hair, and small amounts of many allergens are injected into the skin. A substance to which the pet is allergic will produce a red bump, the size of which indicates the degree of sensitivity to the specific allergen. The characteristic red bump may not form (or a smaller bump may form) if the pet has recently been treated with steroids or antihistamines, or is in heat or was in heat within the previous two months. To obtain an accurate diagnosis, antihistamines should be discontinued at least 10 days prior to skin testing; short-acting steroids (such as prednisone) should be discontinued at least 5 weeks prior to skin testing; and long-acting injectible steroids should not have been given within at least 2-3 months before testing. Antibiotics, topical medications and therapeutic shampoos should be discontinued at least 7 days before skin testing. Thyroid medication should not be discontinued.

If the skin is so inflamed that a skin test cannot be done, a blood test can be performed. However, the blood test does not identify allergens to which the pet's skin is reactive as accurately as the skin test.

Treatment options include avoidance of substances to which the pet is allergic, medication, hypo-sensitization ("allergy shots") and acupuncture. Avoidance, while ideal, may be impractical if the allergens (such as pollens and house dust) are commonplace in the environment. Medications which decrease the body's hypersensitive response to allergens include steroids (such as prednisone) and antihistamines. Steroids are quite effective but can only be used for short periods of time due to their side effects. Antihistamines are much safer and can be used continuously, but several antihistamines must sometimes be tried before an effective one can be identified. Hypo-sensitization, the injection of small amounts of the specific allergens to which the pet is allergic, is 75-85% effective in reducing the allergic response. Acupuncture treatments are also about 75- 85% effective.

## **Food Allergies**

Food allergies may develop at any age but typically begin early (before 1 year of age) or later in life (after age 6 or 7). Skin itchiness usually shows a year-round pattern if the offending food is eaten throughout the year, and the itchiness is not generally relieved by oral steroid medications.

No foods are inherently hypoallergenic. The common misconception that lamb and rice are hypoallergenic evolved from their successful use in dogs allergic to beef, chicken, corn or wheat, the most common protein and carbohydrate sources in commercial dog foods made in the United States. (In England, where dog foods commonly contain lamb, one of the most common food allergies is to lamb. These dogs, not surprisingly, do well when their diets are changed to beef, to which they have not been exposed.)

Food allergies are best diagnosed by a food elimination trial; a blood test (though much less accurate) is also available. The food elimination trial is a diagnostic test in which the pet is fed specific foods for 2-3 months. The foods chosen for the trial must be food ingredients the pet has never eaten before and therefore has not developed an allergy to. (The brand of food is irrelevant; what is important is the ingredient. For example, if the pet has eaten pet foods and table scraps consisting of chicken, beef, lamb, rice, wheat and corn, the food elimination trial would consist of a protein and a carbohydrate other than these, such as venison and potato.) No other food ingredients can be eaten, so pet treats, rawhide chews and flavored vitamin-mineral supplements cannot be given during the trial. Once itchiness (scratching, licking or chewing) has decreased substantially (usually within 1-3 months after elimination of the offending ingredient), one food ingredient is added at a time until the reaction re-appears, allowing identification of the ingredient responsible for the allergic skin disease.

Treatment consists of feeding a balanced diet free of those ingredients to which the pet is allergic. Usually a commercially available diet can be identified.

## **Flea Allergy**

Hypersensitivity to flea saliva produces skin disease ("flea allergy dermatitis") that usually corresponds to flea season (late summer and fall). The diagnosis is usually made on the basis of the pattern of skin involvement (around the base of the tail, low back and thighs), though definitive diagnosis requires skin testing. (See the discussion of skin testing under "Inhalant Allergies" above.)

Treatment is difficult because even one flea bite may produce overwhelming itchiness. Antihistamines or steroids will diminish the itchiness, but it is essential that fleas be discouraged from biting the pet in the first place. They can be repelled and killed with sprays or other topical products (e.g., Advantage® or Frontline®); and household infestations can be prevented with an oral medication given monthly (i.e., Program®), borax products applied to the carpets (e.g., Flea Busters® Rx for Fleas®), nematode yard sprays or chemical yard/house sprays.

## **How to Conduct a Food-Elimination Trial**

The purpose of the food elimination trial is to confirm a suspected diagnosis of food allergy and to identify the food components that cause the pet's allergic reaction. The trial lasts at least 2-3 months, after which the pet can usually be fed a commercially-prepared diet free of the ingredients that cause the allergy. Dogs fed EXclude®, a new veterinary exclusion diet consisting of low-molecular-weight proteins, generally respond more quickly, usually within only 1-2 months.

The trial diet consists of a protein source and a carbohydrate source which the pet has not eaten in the past. To determine the foods to be included in the trial, the owner should make a list of the ingredients in all dry and canned food the pet has ever eaten, all table scraps and pet treats to which the pet has had access, all chewable toys such as rawhide

chews, and any other foodstuffs the pet may have eaten. Any protein and carbohydrate not on the list may be used for the food elimination trial.

The most common protein source used in a food elimination trial is white fish, venison or lamb. The most common carbohydrate source is potatoes or rice. Fish or meat may be fresh or frozen, but not canned, chopped or ground because these products often have residues of other meats or ingredients which interfere with the food elimination trial. Rice may be white or brown, and short- or long-grain, but converted rice and fast-cooking rice such as Minute Rice® may not be used because chemicals used in processing such products may interfere with the trial.

The food elimination trial produces the most reliable outcome when a home-cooked diet is used. If home cooking is not feasible, a commercially-prepared diet will sometimes produce a reliable diagnosis.

Food is prepared using the amounts on the chart below. Visible fat and bone are trimmed from meat, and fish or meat is cut into bite-size pieces. Amounts are weighed on a kitchen scale. The easiest way to prepare the diet is to place 1 part potatoes or rice into 2 parts boiling water; cover and simmer 20 minutes; add fish or meat; cover and simmer an additional 20 minutes. Food may be prepared ahead and stored in premeasured bags in the refrigerator or freezer.

Pet's Weight (Pounds)	Protein Source (Ounces of fish, venison or lamb)	Carbohydrate Source (Cups of potatoes or raw rice)
2	1	1/8
5	2	1/4
7.5	3	1/4
10	3.5	1/3
15	5	3/8
20	6	1/2
25	7	2/3
30	8	2/3
40	10	7/8
50	12	1
60	14	1 1/8
70	15	1 1/3
80	18	1 2/3
100	20	1 3/4
120	23	2

If the pet is hungry or loses weight, more of the diet can be fed. Treats, table scraps, rawhide bones or any chewable medications must be withheld during the food elimination trial.

When itchiness (manifested by scratching, licking or chewing) decreases substantially (i.e., by at least 50%), one food ingredient is added to the feeding regimen once weekly to determine which ingredients are responsible for the itchiness. (For example, if chicken is added to the diet and itchiness does not increase in one week, another ingredient can be added. If beef is then added to the diet and the pet starts to itch again, remove beef from the diet and, after itchiness has decreased, add another ingredient.)

If the pet has been on the diet for 3-4 months and has experienced no decrease in itchiness, all circumstances surrounding the trial should be carefully reviewed to ensure that only the trial food has been eaten. (For example, has a misguided neighbor been giving occasional dog treats?) If the trial has been conducted properly and itchiness has not decreased over a period of 5-6 months, it is unlikely that the pet's itchiness is entirely related to food sensitivity. Combination allergies, such as inhalant allergy plus food allergy, often occur and can make diagnosis challenging.