

Your Partner In Reproductive Science



The Royal Canin philosophy, Knowledge is to be Shared, has been made possible in part through our partnership with you – the professional dog breeder. In an effort to return the favor, we'd like to share science-based reproduction and best kennel practices education.

Skin Health and Allergies In Dogs

While skin may seem like a simple structure, it is actually quite complex and contains eight different layers. The skin is referred to as the integumentary system and is the largest of all the bodily systems.

Without healthy skin a beautiful hair coat is not possible; and for those dogs that are hairless, having skin in optimum condition is even more important. Aside from appearance, healthy skin is vital for the overall health of your dog. It is the body's first line of defense against many or-

ganisms (bacteria, viruses, fungi, etc.) that could cause harm. The skin also helps to prevent water loss from the body. The integrity of the skin can become compromised for a number of reasons and when that happens, those organisms that are always present on skin begin to multiply which may cause infection, itching, and pain.



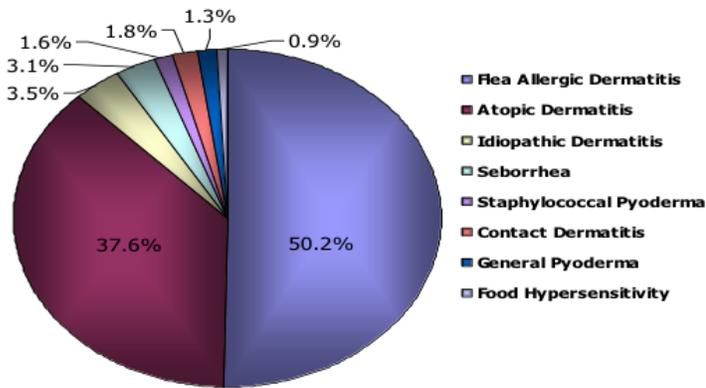
A number of factors can contribute to skin disease, including external parasites (fleas, ticks, mange mites, lice), fungal organisms (ringworm), self-trauma secondary to chewing and scratching,

c h e m i c a l s , genetics, and poor nutrition. Allergies, a particularly extensive cause of skin problems, are the focus of this article. An allergy is the result of the body's immune system reacting to a foreign substance. The most common response is itching, and most of the skin diseases caused by

allergies in dogs can be contributed to one of the following:

1. Flea saliva
2. Atopy
3. Contact
4. Food

Dermatitis in Canines by Type



Nagata & Sakai, 1999

Flea Allergy

Fleas are a common external parasite and just one bite can cause a severe reaction in the dog that is allergic. It is actually the flea's saliva that triggers the immune response. The most common symptoms are almost constant chewing and scratching, which results in self-mutilation and bacterial infection of the skin. This results in more itching and pain. Hair loss, scabs, scratches, and irritated skin are the outcome, with the most common area being at the base of the tail. These dogs are truly miserable and may not be able to eat, sleep, or groom themselves. In addition to the effects on the skin, fleas carry tapeworms. When the dog swallows fleas while chewing on the skin, it may become infected with tapeworms. In addition to removing fleas from the dog and the environment, veterinary attention will be necessary to treat skin infections and tapeworms.



Seasonal atopic dermatitis

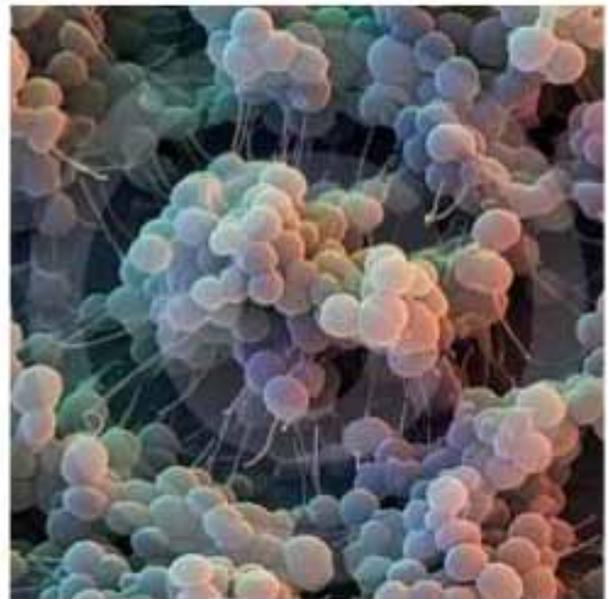
Atopy

Atopy is defined as allergic reactions to environmental and/or inhaled substances such as pollen, dust, etc. The most typical reaction involves the skin although there may be a respiratory response as well. The dog will show signs of itching, i.e. scratching, licking and chewing at the skin, rubbing on objects, etc. These actions result in hair loss with skin irritation, bumps, crusting, and

scabs developing. These lesions are usually seen on the face, ears, neck, back, abdomen, tail, legs, and feet. Atopy can be seasonal or non-seasonal. Age of onset is between one and five years, but can occur outside this range. Purebred dogs may be more at risk for developing atopy. It is important to rule out other causes of skin disease (external parasites, yeast organisms, food allergy, etc.) in the process of diagnosing atopy. Serologic (blood) tests may be used by a veterinarian as a tool to diagnose atopy. However, if clinical signs persist, a veterinary dermatologist can perform intradermal skin testing and might recommend desensitization therapy, depending on the results of the test. While most cases of atopy may not be cured, a veterinarian can prescribe treatment to help alleviate the symptoms.

Contact

Signs of contact allergies are scratching, irritated skin with bumps and/or pustules, hair loss, and thickening of the skin. These lesions are usually seen in areas where the dog's hair is thin, and most commonly include the chin, ears, toes, and abdomen. In hairless breeds, signs can be seen anywhere on the body. This type of allergy develops after repeated exposure to the same substance. Examples of these are flea collars, dyes in carpet fibers, some topical medications, and plastic food and water bowls. Certainly, elimination of the offending object(s) is important, but veterinary treatment will most likely be necessary to treat skin lesions and infections.



Electron microphotograph of Staphylococcus sp. bacteria.

Food

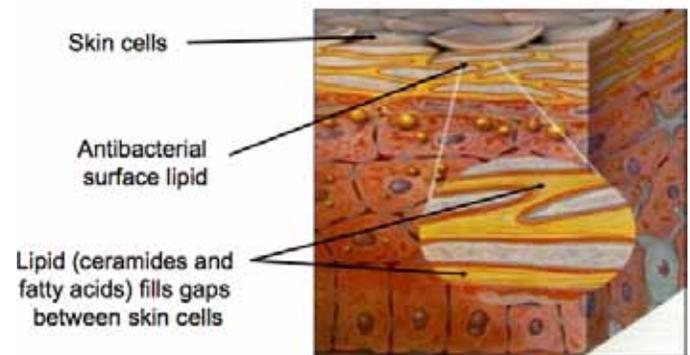
While allergies to food (particularly corn and wheat) are thought to be very common, in actuality they are the least likely to occur. They can be very difficult to diagnose and may be missed altogether, or misdiagnosed. In fact, it is estimated that of all dogs showing signs of an allergy, only one percent of them are actually allergic to a dietary ingredient!

Dermatologic clinical signs include itching which usually involves the whole body, scratching, hair loss, and ear, skin, and anal gland infections. Vomiting and diarrhea are common gastrointestinal signs. These signs develop over time after repeated exposure to the substance the body does not recognize. These allergies are non-seasonal. They also do not respond well to traditional treatments such as antibiotic and corticosteroid therapy. Food allergies occur due to the abnormal response of the immune system to undigested proteins in the food. The determination that the dog's symptoms are food-related is based on a strict elimination trial which can take several months to achieve results. However, this is the "gold standard" for diagnosing or ruling out food allergy. The dog is usually placed

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on a prescription diet with one novel source each for protein and starch (example: duck and green pea). This diet is fed exclusively, with no other supplements or treats, for a minimum of 8 weeks with an ideal trial lasting 12 weeks (unless the dog's condition seems to be worsening). After the elimination trial, the dog is fed its previous diet. If clinical signs recur, it is concluded that the dog's symptoms are related to a dietary ingredient, most likely a protein source. It is important to stress that serologic testing for food allergy is not reliable. In addition, dogs that are allergic to food tend to have other allergies, as well.

Example of Canine Skin Barrier Structure



Nutrition for Healthy Skin

Research has scientifically proven that nutrition plays a tremendous part in skin and coat condition. Pantothenic acid, inositol, niacin, choline, and histidine work together to help the skin maintain its protective barrier. This not only helps with allergic conditions but will aid in preventing other types of skin problems. Anti-inflammatory omega-3 fatty acids such as EPA and DHA, and an antioxidant complex of vitamins E and C, along with lutein and taurine, protect the skin and intestinal tract. Mannan-oligosaccharides (MOS) and fructo-oligosaccharides (FOS) are prebiotics that promote the health of the intestinal tract which might prevent undigested nutrients like protein to cross into the blood stream, thus triggering an immune response. In addition to specific nutrients, the manufacturing process itself is important. Very fine grinding of all ingredients to the consistency of all-purpose flour makes the ingredients more available to the digestive enzymes, thus limiting the possibility that undigested substances which might trigger an allergic response, particularly proteins, will reach the blood stream.

Together, you and your veterinarian can formulate the appropriate plan to diagnose and treat your allergic dog, thus making for a more comfortable quality of life.

References available upon request.

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