An itching dog is a common client complaint and can be a challenge for the veterinary healthcare team (VHCT). Medication and environmental modification play important roles in the control of pruritic disease in dogs. However, the benefit of nutritional modification often is overlooked, beyond its role in the management of adverse food reactions. Here we will focus on the role of nutrition and how Prescription Diet Derm Defense Canine can help improve the quality of life of dogs with atopic dermatitis.

**HELPS HEAL THE SKIN FROM WITHIN**

- High-quality, highly digestible protein to regrow the epidermis and hair
- Essential fatty acids provide cell structure and regulate epithelial proliferation
- Antioxidants decrease oxidative damage
- Vitamins and minerals for the healing process

**HELPS RESTORE THE SKIN BARRIER**

- Linoleic acid helps maintain the skin barrier and control transepidermal water loss
- Alpha linolenic acid for maintenance of the skin barrier
- Zinc and linoleic acid have a synergistic effect on transepidermal water loss and coat gloss

**HELPS REDUCE INFLAMMATION**

- Omega-3 fatty acids attenuate proinflammatory eicosanoid production in cell membranes
- Antioxidants combat reactive oxygen species
- Polyphenols bind allergens, inhibit cytokine and IgE production, and inhibit degranulation and histamine release by mast cells
- Egg has antioxidant and anti-inflammatory properties

**HELPS SUPPORT A HEALTHY IMMUNE SYSTEM**

- Carotenoids and vitamin A help regulate the immune response
- Antioxidants combat free radical suppression of the immune response
- Zinc modulates the immune response

**NUTRITIONAL EVIDENCE SUMMARY**

Prescription Diet® Derm Defense™ contains scientifically proven nutrition to help manage dogs with atopic dermatitis.

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**INTRODUCTION**

Canine atopic dermatitis (CAD) has a vicious cycle of inflammation, pruritus and excoriation, leading to repeated skin damage. The skin of dogs with CAD is in a state of continuous repair, resulting in a major demand on the body. Proteins play an essential role in the repair and maintenance of the skin, providing the building blocks for new skin tissue.

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integral role in the structure and regeneration of the epidermis in response to injury. In fact, normal hair growth and keratinization of the skin alone are thought to make up 25-30% of an animal’s daily protein requirement. Essential fatty acids, particularly omega-6 fatty acids, play a vital role in superficial skin lipids, which influence cell membrane structure and regulation of epithelial proliferation for healing. Vitamin A supports wound healing and hair regrowth. B-complex vitamins help promote healthy skin and shiny coat. Antioxidants and several minerals, including zinc and copper, play a crucial role in epidermal healing, highlighting the importance of feeding a complete and balanced diet, such as Derm Defense, to dogs with CAD.

HELPS RESTORE THE SKIN BARRIER

Dogs with CAD suffer from a permeability barrier defect in the skin. Linoleic acid [LA], an omega-6 fatty acid, plays a pivotal role in maintaining the skin barrier and controlling transepidermal water loss (TEWL). TEWL may lead to skin dehydration, disrupting the equilibrium between keratin and water that is so necessary for skin health. The International Committee on Allergic Diseases of Animals (ICADA) 2015 updated guidelines for the treatment of CAD states, “in general EFA-enriched diets provide higher amounts of EFAs than oral administration of EFA supplements.” The combination of LA supplementation with zinc supplementation has a synergistic effect on TEWL and coat gloss. Supplementation with ALA, found in flaxseed, also may be beneficial in the maintenance of the skin barrier.

HELPS REDUCE INFLAMMATION

Controlling clinical signs in dogs with CAD is imperative, as complete avoidance of contributing allergens is rarely possible. Supraphysiologic supplementation with the omega-3 fatty acid eicosapentaenoic (EPA) from fish oil attenuates proinflammatory eicosanoid production in cell membranes in the skin. Clinical trials have demonstrated a significant decrease in pruritus in dogs following supplementation with omega-3 fatty acids.

Oxidative stress from reactive oxygen species contributes to the pathogenesis of CAD. Studies in human and canine atopy have shown elevated oxidation levels and a reduction in antioxidants, including vitamins E and C, as compared to healthy controls. Dietary antioxidant supplementation reduces the markers of oxidative stress. Since the skin is rich in lipids, lipophilic antioxidants such as vitamin E play a critical role in protecting the skin from oxidative damage. In a recent study, vitamin E supplementation was found to significantly reduce clinical signs in atopic dermatitis affected dogs compared to placebo. Many antioxidants, including vitamins E and C, play complimentary roles in combating reactive oxygen species. Alpha-lipoic acid helps reduce histamine release to dampen the body’s response to environmental allergens.

- Polyphenols, including quercetin, act on allergic immune responses in two areas. First, they bind with potentially allergenic proteins forming insoluble complexes that render the proteins unrecognizable to the immune system. Certain polyphenols inhibit cytokine and IgE production by T cells and B cells.
- Quercetin inhibits degranulation and histamine release by mast cells.
- Egg has antioxidant and anti-inflammatory properties. One study showed that dogs sensitized to an allergen and eating a food containing egg had significantly dampened wheal and flare responses compared to sensitized dogs fed the same food without egg.

HELPS SUPPORT A HEALTHY IMMUNE SYSTEM

Dogs with atopic dermatitis have a defective skin barrier allowing allergens to reach antigen-presenting cells triggering an inflammatory response. Inhibition of this response helps to control clinical signs. Carotenoids and vitamin A play a key role in the function of the immune system through their roles in the regulation of both the innate and cell-mediated immunity and humoral antibody response. Oxidative stress caused by free radicals is immunosuppressive and therefore, antioxidants such as vitamins C and E help ensure the immune response is optimized. In addition to vitamins C and E and carotenoids, Derm Defense contains polyphenols that are potent antioxidants.

Zinc influences both innate and humoral immunity through modulation of the immune response. Zinc positively impacts survival, proliferation and differentiation of the cells of the immune system.

Prescription Diet® Derm Defense™ is an integral part of the multimodal management of canine atopic dermatitis through its comprehensive package of nutrients that have been proven to help support skin healing, skin barrier restoration, reduction of inflammation, and a healthy immune system.
How allergens affect your dog

How Derm Defense™ works

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Nutritional Evidence Summary

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