



The Role of Dietary Interventions in Non-Food-Induced Canine Atopic Dermatitis

Frane Banovic, DVM, PhD, DECVD, and Staci Cannon, DVM, MPH, DACVPM, DABVP
(Shelter Medicine Practice)

University of Georgia College of Veterinary Medicine, Athens, Georgia

Abstract

Although diets that avoid food allergens are indicated for the management of food-induced canine atopic dermatitis, their role in the management of environment-induced atopic dermatitis is less clear. Evidence supports specialized diets only as adjunctive therapy to systemic and/or topical anti-inflammatory/antipruritic medications for the management of canine environment-induced atopic dermatitis. In addition, studies have indicated that for some dogs, nutraceuticals combined with other therapies may be helpful; however, study variability precludes making definitive statements about a specific nutraceutical for optimal results.

Take-Home Points

- For the management of food-induced canine atopic dermatitis, evidence is strong that diets without food allergen triggers are very useful.
- For the management of environment-induced canine atopic dermatitis, specialized diets may play a role; however, evidence supports their use only as adjunctive therapy to systemic and/or topical anti-inflammatory/antipruritic medications.
- Also for management of environment-induced canine atopic dermatitis, there is weak evidence that for some dogs, combinations of nutraceuticals with other therapies may be useful.

Among dogs, atopic dermatitis (AD) is the most common and chronic inflammatory skin disease with frequent relapses. Recently, the International Committee on Allergic Diseases of Animals proposed the following definition: Canine AD is a hereditary, typically pruritic, and predominantly T-cell-driven inflammatory skin disease involving interplay between skin barrier abnormalities, allergen sensitization, and microbial dysbiosis.^{1,2} The new definition replaces the previous definition, which involved an association of canine AD with immunoglobulin E, most commonly directed against environmental allergens.^{1,2}

The pathogenesis of canine AD is multifactorial, perplexing, and not fully understood. Its initiation and progression are influenced by complex interactions among exogenous factors (e.g., environmental allergens, food allergens), genetic factors, impaired epithelial barrier integrity, immune dysfunction, induction of the itch-scratch cycle, and a disturbed cutaneous microbiome.^{1,2} The prevalence of adverse food reactions (AFRs) among dogs with AD (so-called food-induced or food-triggered canine AD) is unknown and varies widely according to the variable protocols followed during dietary restriction-provocation challenges (i.e., elimination diet trials).³ Because there are no major clinical differences that can be used to differentiate between environment- and/or food-induced atopy in dogs, the current recommendation is that every dog with AD that exhibits nonseasonal (i.e., perennial) clinical signs should undergo 1 or more elimination diet trials to determine, and then eliminate, any dietary allergens that might be causing AD flares.^{1,2} Clinicians should be aware that some dogs could have both environment- and food-induced flares affecting their AD phenotype, and diagnostic investigation will be crucial to identify the involved flare factors and the clinical relevance of AFRs for these dogs. If elimination diet trials demonstrate that an atopic dog has AFRs to specific food allergens, avoidance of those ingredients represents the key to successful long-term AD management.^{1,3}

For dogs with environment- and food-induced AD, gastrointestinal (GI) signs (e.g., diarrhea, vomiting, borborygmus, flatulence) have been reported.⁴⁻⁷ The exact causality between canine atopy and GI signs remains uncertain; GI tract dysbiosis could lead to GI inflammation and worsening of clinical signs of AD and/or cutaneous atopy-induced inflammation; barrier

impairment could lead to food sensitization, triggering GI inflammation and gut dysbiosis with clinical signs.⁷ Of note, some dermatologic diets used for elimination diet trials reduce GI signs in dogs with AD and dogs with chronic enteropathy, regardless of whether the dogs have food ingredient-induced allergic responses.⁸

Specialized Diet Interventions for Environment-Induced Atopy

The features playing a pivotal role in environment-induced AD disease pathogenesis are pruritus, cutaneous inflammation, and barrier dysfunction. The skin barrier is composed of corneocytes (i.e., anucleated keratinocytes) embedded in a lipid matrix, described metaphorically as a “bricks and mortar” structure.

Several studies have evaluated the clinical efficacy of specialized diets (e.g., Royal Canin Skintopic, Hill's Prescription Diet Derm Complete) for supporting the treatment of environment-induced atopy in dogs without AFRs ruled out by elimination diet trials.⁹⁻¹¹ The specialized diets are enriched with various ingredients (e.g., lipid supplements such as eicosapentaenoic acid, docosahexaenoic acid, and linoleic acid; antioxidants vitamin E and lutein; anti-inflammatory compounds such as turmeric); however, the individual value for improving AD-associated inflammation and barrier dysregulation of each of these ingredients is unknown.⁹⁻¹¹ Use of specialized diets in clinical trials is always supported by systemic and topical anti-inflammatory/antipruritic medications, with the goal of the diet providing a drug-sparing effect in dogs with AD over a longer period. Bias in any clinical AD trials may result from variability in adjunctive systemic and topical anti-inflammatory/antipruritic medications, differences in the dietary test products, and the long-term study design (i.e., potential placebo effect from environmental allergen changes). Therefore, it remains unknown whether specialized diets fed as monotherapies can cause a similar clinical effect.

In 2 blinded, randomized, placebo-controlled studies, researchers noted significant improvement over 6 to 9 months in pruritus, clinical lesions, and medication scores in dogs with AD fed the Royal Canin Skintopic diet compared with placebo.^{9,10} They also noted that the incidence rate of otitis externa was significantly lower

in the Royal Canin Skintopic diet group than in the control group.¹⁰ According to clinical lesion scoring, most dogs with AD enrolled in Royal Canin Skintopic diet trials were classified as having mild AD; therefore, the effect of the diet among dogs with moderate to severe AD still needs to be addressed.^{9,10}

In a double-blinded, randomized, placebo-controlled AD study over 60 days, both Hill's Prescription Diet Derm Defense and a placebo diet induced significantly lower owner-reported pruritus and skin lesion scores. Hill's Derm Complete led to greater reduction in scores; however, only dogs with mild AD based on clinical lesion scoring were included and all dogs were allowed to receive oral oclacitinib during the trial, potentially confounding the true effect of the tested diets.¹¹ The Hill's Prescription Diet Derm Defense diet has been replaced with Hill's Prescription Diet Derm Complete Rice & Egg Recipe, which, in addition to Derm Defense nutritional support, incorporates the features of Hill's Prescription Diet i/d Sensitive.

Nutraceutical Interventions for Environment-Induced Atopy

Over the years, several nutraceuticals, defined as “any substance considered a food or part of a food that provides medical or health benefits, including the prevention and treatment of disease” (e.g., vitamins A, D, and E; essential fatty acids; palmitoylethanolamide; probiotics), have attracted interest for treatment of canine AD.¹² Recent evidence-based reviews showed only minor evidence for the beneficial effects of nutraceuticals in treatment of canine AD; no major supportive evidence was derived from randomized, placebo-controlled, double-blinded clinical trials with large numbers of dogs.^{12,13} For some dogs with AD, the nutraceuticals mentioned above may improve clinical signs or reduce the required dose of concurrent medication (i.e., drug-sparing effect).^{12,13} However, given the inclusion of dogs with mild AD, the heterogeneity of study designs, the wide range of products tested, and the lack of diet standardization, no definitive statement can be made about a specific nutraceutical to achieve optimal results.^{12,13}

Summary

Diagnosing and managing canine allergic skin disease can be protracted and frustrating for veterinarians and

clients. Specialized diets may play a role in the management of canine environment-induced AD; however, the evidence supports diets only as adjunctive therapy to systemic and/or topical anti-inflammatory/antipruritic medications. For some dogs with AD, nutraceuticals may improve clinical signs or provide drug-sparing effects of concurrent medications. **TVP**

References

- Olivry T, DeBoer DJ, Favrot C, et al. Treatment of canine atopic dermatitis: 2010 clinical practice guidelines from the International Task Force on Canine Atopic Dermatitis. *Vet Dermatol*. 2010;21(3):233-248. doi:10.1111/j.1365-3164.2010.00889.x
- Eisenschenk MC, Hensel P, Saridomichelakis MN, Tamamoto-Mochizuki C, Pucheu-Haston CM, Santoro D. Introduction to the ICADA 2023 canine atopic dermatitis pathogenesis review articles and updated definition. *Vet Dermatol*. 2024;35(1):3-4. doi:10.1111/vde.13183.
- Sofou EI, Aleksandrova S, Chatzis M, Samuel Badulescu E, Saridomichelakis MN. Establishment of clinical criteria for the diagnosis of adverse food reactions in dogs with atopic dermatitis. *Vet Dermatol*. 2024;35(4):418-431. doi:10.1111/vde.13247
- Mueller RS, Olivry T. Critically appraised topic on adverse food reactions of companion animals (6): prevalence of noncutaneous manifestations of adverse food reactions in dogs and cats. *BMC Vet Res*. 2018;14(1):341. doi:10.1186/s12917-018-1656-0
- Favrot C, Fischer N, Olivry T, Zwickl L, Audergon S, Rostaher A. Atopic dermatitis in West Highland white terriers - part I: natural history of atopic dermatitis in the first three years of life. *Vet Dermatol*. 2020;31(2):106-110. doi:10.1111/vde.12801
- Tinsley J, Griffin C, Sheinberg G, et al. An open-label clinical trial to evaluate the efficacy of an elemental diet for the diagnosis of adverse food reactions in dogs. *Vet Dermatol*. 2023;35(1):40-50. doi:10.1111/vde.13198
- Eisenschenk MNC. The role of diet, nutrition, and supplements in canine atopic dermatitis. *Vet Clin North Am Small Anim Pract*. 2025;55(2):189-198. doi:10.1016/j.cvsm.2024.11.003
- Manchester AC, Dow S, Chow L, Gagne J, Lappin MR. Efficacy of an elemental diet in achieving clinical remission in dogs with chronic enteropathy. *J Vet Intern Med*. 2023;37(6):2322-2333. doi:10.1111/jvim.16846
- Watson A, Rostaher A, Fischer NM, et al. A novel therapeutic diet can significantly reduce the medication score and pruritus of dogs with atopic dermatitis during a nine-month controlled study. *Vet Dermatol*. 2021;33(1):55-e18. doi:10.1111/vde.13020
- Watson A, Laxalde J, Martini F, Fischer N, Maina E, Favrot C. Incidence rate of otitis externa episodes in atopic dogs is reduced by a therapeutic diet in a 6-month randomised, blinded, controlled, clinical trial. *Vet Dermatol*. 2026;37(1):89-102. doi:10.1111/vde.70017
- Weemhoff JL, MacLeay JM, Brejda J, Schiefelbein H, Wernimont SM, Gross KL. Successful nutritional control of scratching and clinical signs associated with adverse food reaction: a randomized controlled COSCAD'18 adherent clinical trial in dogs in the United States. *J Vet Intern Med*. 2021;35(4):1884-1892. doi:10.1111/jvim.16193
- van Amersfort K, van der Lee A, Hagen-Plantinga E. Evidence-base for the beneficial effect of nutraceuticals in canine dermatological immune-mediated inflammatory diseases - a literature review. *Vet Dermatol*. 2023;34(4):266-283. doi:10.1111/vde.13152

13. Pacheco RCF, Lins LF, DE Brito LP, DE Andrade Calaça PR, Porto ALF, Cavalcanti MTH. Probiotics as an adjunct in the treatment of canine atopic dermatitis: a systematic review and meta-analysis of in vivo studies in dogs. *J Vet Med Sci.* 2025;87(9):1068-1077. doi:10.1292/jvms.24-0471

Authors



Frane Banovic

Dr. Banovic graduated from veterinary school in Zagreb, Croatia, and received his PhD in veterinary microbiology from the University of Zagreb. He finished a 1-year rotational internship at the Veterinary School in Munich, Germany, before completing a 3-year dermatology residency at North Carolina State University; afterward, he enrolled in a postdoctoral fellowship in investigative dermatology with a primary research focus on itch in atopic dermatitis and staphylococcal pyoderma. Dr. Banovic favors interdisciplinary approaches to biologic questions and



Staci Cannon

Dr. Cannon is a clinical assistant professor of shelter medicine at the University of Georgia, where she also earned her DVM degree. Dr. Cannon completed an internship in small animal medicine and surgery at VCA South Shore Animal Hospital in Weymouth, Massachusetts, and a shelter medicine residency at the University of Florida, where she also earned her MPH degree. She served on the Association of Shelter Veterinarians (ASV) task force to help publish the second edition of the ASV's Guidelines for Standards of Care in Animal Shelters. She has a special interest in shelter animal health and wellbeing.



FREE OPHTHALMOLOGY WEBINAR

Earn 1 RACE-Approved CE Credit Hour!

Practical Feline Ophthalmology: What's Different About Cats

Wednesday, May 13, 2026 | 8 PM ET

Presented by **Tanja Nuhsbaum,**
DVM, MS, Diplomate ACVO



Scan to
Register

FREE CE WEBINAR



Can't attend on May 13? View all upcoming webinars at epicurpharma.com/webinars