



HOW I TREAT CANINE ATOPIC DERMATITIS WITH DIET AND SUPPLEMENTS

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MINIMUM: A COMPLETE FOOD

Impaired skin barrier function can be both a contributing cause and a consequence (of inflammation and trauma) of canine atopic dermatitis (CAD)¹. The role of the skin barrier is to protect the body from external aggressions and, on the other hand, to prevent the loss of body water. Disruptions in lipid metabolism and dysfunction of certain proteins in the stratum corneum of the skin have been associated with CAD. An abnormal composition of ceramides in the stratum corneum is associated with a loss of skin continuity and thickness⁽²⁾, compromising its integrity, which can increase skin dryness and worsen pruritus, as well as allowing greater penetration of external irritants and allergens, which can trigger inflammation.

The skin is the largest organ in the body (not counting the microbiota), with a high rate of cell replacement, requiring a high percentage of nutrients and energy for its functioning, including its barrier function. As expected, deficiencies in a variety of nutrients manifest themselves in the skin including deficiencies in protein and certain amino acids, vitamins (such as vitamin A, riboflavin, niacin, biotin), minerals (such as copper, zinc, and iodine), and essential omega-6 fatty acids (linoleic acid). Specifically, linoleic deficiency has a marked effect on skin barrier function and manifests as pruritus, oily skin, and scaling.

Therefore, in all patients with CAD, it is important to take a complete dietary history to assess whether the current diet is complete and balanced for the life stage. Attention should be paid to low-fat foods, especially if the dog consumes fewer calories (and therefore fewer grams of food) than average, which may result in marginal intakes of certain nutrients. Patients fed a homemade diet should be evaluated in more detail, especially if the recipe has not been obtained from a veterinary nutrition specialist, such as those found in books or on the internet⁽⁴⁾.

NUTRIENTS AND NUTRACEUTICALS

The most studied nutrients in DIC are essential fatty acids, especially those of the omega-3 family, although the role of linoleic acid (omega-6) is also important⁵. There is some evidence of the positive effect of omega-3 fatty acid supplementation on clinical disease indices⁽⁶⁻⁸⁾. Although omega-3 fatty acids have no known effect on skin barrier function (unlike linoleic acid), they may have an anti-inflammatory effect. Among omega-3 fatty acids, EPA and DHA (20 and 22 carbons) are estimated to be more effective than alpha-linolenic acid (18 carbons) because they are more bioactive and the conversion of alpha-linolenic acid to EPA and DHA is inefficient. However, a reduced ratio of omega-3 to omega-6 (including all omega-3 fatty acids) also has the benefit of reducing pro-inflammatory eicosanoids. The recommended dose for CAD is 125 mg of EPA and DHA/kg of metabolic weight⁽⁹⁾.

Since their use is potentially beneficial and they are quite safe when used correctly, these fatty acids may be considered for use in CAD, either as a supplement or through a diet that already includes them. Products that provide essential fatty acids should be evaluated, as some provide mainly omega-3, but others combine omega-3 and omega-6, making the relative concentrations highly variable. If used as a supplement (rather than in a diet that already includes them), the calorie content should be considered, as they are highly energetic (8 kcal/mL) and this limits the amount that can be used. The use of oils low in essential fatty acids should be avoided (e.g., coconut or olive).

Certain micronutrients have received attention, such as vitamin E (an antioxidant) and certain nutrients involved in barrier function (such as histidine and niacin), although evidence for their use as supplements is limited¹⁰.

DIETS FOR THE SKIN



Several studies have evaluated the effect of diets enriched with combinations of nutrients important for the skin barrier and omega-3 fatty acids in healthy dogs ¹¹ or with CAD ^{12–15}, which, in combination with other CAD treatments, may help manage the disease and potentially reduce the amount of medication needed. The use of these diets, which already incorporate the nutrients of interest, saves on supplements while feeding the patient, and it is worth trying them on a case-by-case basis unless there is a contraindication for their use.

In patients where a food allergy component is suspected, the use of elimination diets with limited novel ingredients or based on hydrolyzed protein is recommended (and depending on the product, they may also incorporate nutrient cocktails to fortify the skin barrier).

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