

NUTRITIONAL DISEASES WITH CUTANEOUS MANIFESTATIONS IN DOGS

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Abstract

The frequency of skin diseases in dogs show presents a relatively large casuistry veterinary offices. The cutaneous manifestations in terms of etiology DeVeDe presents a great diversity. Within this diversity an important part of dealing with illnesses caused by nutritional imbalances or some animal sensitivity or intolerance to one or more of the components of food offered.

Key words: dermatosis, nutrition, cutaneous.

The skin is an important organ because of both its surface (1m² for a dog of 35 kg), and due to her roles. An imbalance in the intake of amino acids, fatty acids, vitamins and trace elements disrupts the barrier function (Table 2) and immune protection provided by the skin: the dog becomes more susceptible to infections, allergic reactions grow faster. Leather and fur are so the first reflex of the dog's health and quality of its food: the basic nutritional dermatoses are very diverse and common in dogs (Pibot P., 2006).

Table2

Nutrients that can influence skin barrier function (Pibot P., 2006)

Polyunsaturated fatty acids (PUFA)	Included in sebaceous gland lipids produced by glands that form the surface film hydrolipidic.
Proteins	Sufficient intake of all indispensable amino acids required for maturation of keratinocytes.
Vitamin A	Essential for the differentiation of keratinocytes and corneal layer formation.
Biotin	Metabolism essential for PUFA.
Vitamin C	Also play a key role in lipid corneal layer film.
Zinc	A zinc supplement reduces fluid loss and zinc deficiency causes abnormal formation of the cornea.
Nicotinamide	Increase the concentration of ceramide and free fatty acids in the corneal layer.
Water-soluble Vitamins	Participate in the metabolism of polyunsaturated fatty acids.
Vitamin E	Secreted by the sebaceous glands, allows limiting fatty acid oxidation.

In canine dermatology, nutrition play a special role, not only as an essential element of preventing skin diseases, but also as a therapeutic tool of allergic dermatitis, metabolic and keratoseborrheic (Crăiniceanu E., et al., 2006). Development risks based nutritional dermatoses are related to: food quality, factors related to the animal's own age, physiological state, hair or wool type, such a metabolic or allergic predisposition to certain diseases (Table 3).

Table 3

Racial predisposition to nutritional dermatoses (Pibot P., 2006)	
Intake or assimilation gaps	
Zinc-related dermatoses	Nordic breeds, large dogs
Dermatosis related to vitamin A	Cocker Spaniel
Food Hypersensitivity	
Predisposition or representation	Labrador retriever
Linked to a predisposition to atopic status	Bull terrier, Beagle, Berger allemand, Boxer, Bulldog, Dalmatien, Fox terrier, Bull terrier, Labrador Retriever, Pekingese, Shar-Pei, English Setter, Shih Tzu, West Highland White Terrier
Predisposition linked to malassimilation	Berger allemand, Irish Setter, Shar-Pei, Soft Coated Wheaten terrier

Food Balance is an important factor in the occurrence of skin diseases in dogs. Inadequate dietary intakes can generate enormous imbalances dermatological consequences. The most common are those due to low fat foods generic abuse and mineral supplements, excess zinc inhibits the absorption of calcium. (Table 4).

Table 4

Supply imbalances main consequences on the quality skin and hair (Pibot P., 2006)			
Type of food	Features	Follow nutrition	Follow Dermatological
Generic Food	Less digestible protein	Protein deficiency	Cutaneous xerosis – keratoseborrheic status
	Low fat	Insufficient energy intake, deficiency in essential fatty acids (EFA)	-
	Excess mineral materials (calcium and phytates)	Deficiency in Zinc (Zn)	Generic dog food disease
Domestic unsupplied ration	Deficiency in PUFA	Deficiency in EFAs	Cutaneous xerosis – keratoseborrheic status
	Deficiency in oligoelements	Deficiency in zinc, vitamin E, water soluble vitamins	-
Vegetarian diet	Limited protein intake	Deficiency in sulfur amino acids	Dull and brittle hair.
	Deficiency in PUFA	Deficiency in EFAs	Cutaneous xerosis – keratoseborrheic status
Unfair distribution of mineral supplements	Calcium excess	Deficiency in Zinc (Zn)	Generic dog food disease

Nutritional dermatoses

Nutritional dermatoses of origin may be specific nutritional origin (deficiency identified in a nutrient or nutrient group of individuals) or non-specific: a link to general malnutrition, a lack of food digestibility or absorption problem that concerns even the dog body. Nutritional deficiencies are unusual today. They can be seen, however, in dogs fed a diet of poor quality, industrial or domestic unbalanced diet. After Moř T. et al. (1998), excessive or exclusive dog food with meat, bone, cooked with special spices cause more generalized itching, followed by the appearance of skin rash, eczema respectively.

Vitamin deficiencies

Vitamin A

Retinol, fat-soluble vitamin, is essential differentiating epithelial cells. Therefore, while there is a shortage of intake overall keratinization disorder with squamosis. These disorders are associated with visual impairment and digestive disorders.

Vitamin E

Vitamin E is a generic term that covers two classes of liposoluble molecules: tocopherols (alpha, beta, gamma, delta) and tocotrienols. Vitamin E deficiencies are rare and are mainly due to food whose fat is not stabilized. An experimental failure in dogs trigger a dry seborrhea, a diffuse alopecia, a erythroderma, a pyoderma and immune system abnormalities (Gueck T., et al., 2002).

B group Vitamins

B group vitamins are water soluble and acts as coenzyme for specific cellular enzymes involved in energy metabolism and tissue synthesis. They are provided food and digestive flora. Shortcomings are exceptional.

After Wolter A. et al. (1978) dermatological manifestations of these vitamin deficiencies vary according to the question:

- deficiency of riboflavin (vitamin B2), sensitive to light: in the periorbital skin xerosis and abdomen;
- deficiency of niacin (nicotinamide or vitamin PP), may occur because of nutrient poor diets of animal origin: pruritic dermatitis of the abdomen and hindquarters;
- biotin deficiency (B8 or vitamin H), essentially as described in animals fed excess egg white. Egg whites contain avidin, a molecule that prevents intestinal absorption of biotin: erythema, alopecia of the face and periorbital area, squamosis generalized leukotrichia, dull and brittle hair.

Oligoelements deficiency

Trace elements are operating at very low concentrations in the body. The trace elements most directly related to the beauty of hair are iron, zinc and copper.

Zinc

Deficiencies of zinc intake are caused mainly by food stuffs that removes zinc. It is particularly poor quality foods rich in whole grains and containing more bran. This deficiency also contributed to observed excessive calcium supplementation during the races that have a disorder of zinc absorption.

Zinc deficiency causes immune disorders and keratinization, squamosis, spread harsh, epidermal and follicular parakeratosis.

Copper

Copper falls in numerous enzymes or carrier proteins. Deficiency is observed especially in puppies fed with diet rich in domestic unsupplied or zinc, calcium and iron. Copper deficiency has been reported to cause hypopigmentation and a dry, rough coat resulting from faulty keratinization of the hair and skin (Buffington, T. et. al., 2004).

Iodine

If deficiency in iodine can theoretically disrupt thyroid hormones, these phenomena are extremely rare in dogs and especially without clinical sequelae. Iodine daily needs for a Beagle is the order of 140 mg. A total tyrosinemia decrease is observed only in 20 to 50 mg / day, but no signs of hypothyroidism . Cutaneous symptoms that may occur in case of iodine deficiency are: dry scaly skin, rough and reduced hair or wool (Jones TC, et. al., 1997).

The percentage of absorption of trace elements is often lower than 30% (23). If oligoelements are chelated to organic form with amino acids, their absorption is much improved. For example, in the presence of excess calcium in the ration that inhibit zinc absorption, fecal zinc losses are increasing. However, the chelated form, assimilation does not change (24). Efficiency of absorption of trace elements usually varies between 5 and 30%. If trace elements are chelated, the yield may be less than 60%. (Prelaud P., 1999).

Deficiency in Essential Fatty Acids (EFA)

Essential fatty acids are called such because they are not synthesized by the body. As with most vitamins, they must be assured of food. Mainly are precursors of the two families of polyunsaturated fatty acids, omega-6 fatty acids and omega-3 fatty acids.

Essential fatty acids are important for epidermal barrier function, as components of cell membranes, and as the precursors of inflammatory mediators. (Mueller R.S., 2000).

EFA shortcomings are observed only in animals or those suffering from fed poor quality food or food heated excessively. Xerosis, dull coat and status keratoseborrheic are the main signs of skin visible. Responding to a supplement of PUFA is rapid.

Protein deficiency

Food of poor quality or overripe have a low digestibility. Given the growth of hair and skin renewal that mobilize about 30% of protein intake, such disorders entail failure and diffuse alopecia keratinization fur dull and dry. Protein deficiencies are common in dogs with a chronic debilitating disease or bitches at the end of pregnancy or lactation, when dietary intake is inadequate.

Specific gaps amino acids

Aromatic amino acids (tyrosine, tryptophan) are essential for the synthesis of melanin responsible for hair pigmentation: pheomelanin (red, brown) and eumelanin (black). Intake deficiency causes a lightening or redness, black hair.

Sulfur amino acids (methionine, cystine) are indispensable for hair growth, because it participates in the formation of keratin. These amino acids that are found in abundance in animal sources such as proteins rarely missing dog food, except unsupplied vegetarian regimes.

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