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POPULAR ARTICLE

Nutritional approaches for healthy skin and coat in pet dogs

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INTRODUCTION

Dogs are more than just pet and a companion to many peoples around the world. Pet Dogs wanders freely in each and every corner of home even play with children in beds. They are treated as one of the family members and in this case, their proper vaccination for preventing transmissible diseases as well as for maintenance of health is a subject of concern for all. Now a days, skin health is also becoming a problem due to nutritional deficiencies as well as fungal, bacterial skin infections. Dogs are a pleasurable pet especially when they are blessed with healthy skin and lustrous fur. Skin is a large, metabolically active organ in the body. Scope of this article is explaining the role of nutrition for maintenance of skin health in dogs. Therefore, feeding a complete and balanced diet is critical in maintaining skin and coat health.

What is the need of healthy skin and coat in pet dogs?

- ✍ Skin and coat provide a barrier that protects a dog from external objects, chemicals, and environmental stressors.
- ✍ Skin also contains nerves and nerve endings that help a pet sense heat, cold, pressure, and pain.
- ✍ It is important part of the immune system.
- ✍ healthy coat helps keep a pet's temperature properly regulated by providing an insulating layer of fur.
- ✍ Skin also serves as a storage site for several nutrients like protein and amino acids.

Approaches for keeping dog skin and coat in healthy condition:

It is a mix of different approaches for keeping the skin and coat healthy, which may include,

1. Proper Nutrition
2. Regular Brushing
3. Grooming Dog and Bathing
4. Protect Against Sun, Sand, Sea and Chlorine
5. Prevent Fleas and Ticks

Role and importance of different nutrients in maintaining the healthy skin and coat:

Pet dog requires balanced feed to satisfy the need of nutrients like energy, protein, minerals and vitamins.

1. Protein

Hair is composed of 95% protein, which is rich in the sulfur-containing amino acids like methionine and cystine. Normal growth of hair and keratinization of the skin thus create a high demand for protein and may account for between 25 and 30% of the animal's daily protein requirement (Scott *et al.*, 1995). If failure to meet this demand results in the cutaneous manifestations of protein malnutrition including brittle, depigmented hair, which is easily shed and slow to regrow, excessive scaling and thin.

High quality protein sources like meat, eggs and milk should be provided to rectify the deficiency. As per AAFCO, crude protein requirement in the diet of dog is 22 % for adult dog.

2. Fatty acids

Requirement of fat in adult dog is 5 to 7 % as per AAFCO. Linoleic acid as essential fatty has major role in dog's skin and coat health. Without enough linoleic acid, dogs might experience a dull and dry coat, hair loss, greasy skin and increased susceptibility to skin inflammation. Also, omega-3 fatty acids have increasingly gained popularity as a means of treatment for dogs with pruritic and inflammatory skin conditions, such as atopic dogs (Saevik *et al.*, 2002). It is available in fish oils, such as salmon, mackerel, halibut, and herring. Also found in oils from some plants such as Walnuts and soybeans. Omega-6 fatty acids include Linoleic acid (LA), gamma linolenic acid (GLA), and arachidonic acid (AA). It plays a critical role in skin health by maintaining the outer most water barrier of the skin.

Omega-6 is found in safflower, sunflower, corn and evening primrose and Borage oils. It is also present in poultry and pork fat. National Research Council (NRC) recommends a ratio of 2.6:1 to 26:1 omega-6 to omega-3. Optimal ratio in the diet of dogs may reduce the incidence of some diseases, such as cancer and sudden cardiac death. (NRC, 2006).

3. Vitamins and minerals

Dog needs vitamins and minerals for a healthy skin and coat. The best way to provide these nutrients is by feeding a complete and balanced diet full of essential vitamins and minerals, rather than giving him supplements.

a) Zinc

Zinc plays a critical role in regulating many aspects of cellular metabolism. Which are concerned with the maintenance of a healthy coat and skin. Zinc is an integral component of a wide range of metalloenzymes and cofactor for RNA and DNA polymerases. It involved in rapidly dividing cells of epidermis. Zinc deficiency in dogs causes dull and rough coat and skin lesions including scaling and crusting. Black puppy patients (Labradors) with skin disease related to zinc deficiency had pronounced graying of hair (Broek and Thoday,1986).

b) Vitamin A

Vitamin A plays role in differentiation of cells of basal membrane into columnar cells and maintains the epithelial integrity. Both deficiency and excess of vitamin A can give rise to cutaneous lesions of hyperkeratinization and scaling, alopecia, poor hair coat and increased susceptibility to microbial infections (Scott *et al.*,1995). Recommended allowance of vitamin - A is 379 micro gram per day. Vitamin A-responsive dermatosis is a rare condition that is seen almost exclusively in Cocker spaniels even when fed an apparently nutritionally adequate diet (Ihrke and Goldschmidt, 1983).

c) Vitamin B

B-complex vitamins are involved as cofactors in many metabolic functions, especially energy metabolism and synthetic pathways. Because they are water soluble, they are not stored in the body. Skin lesions associated with deficiencies of B- group vitamins include dry, flaky seborrhea and alopecia. Pyridoxine deficiency may cause a dull, waxy, unkempt coat with fine scales and patchy alopecia.

d) Biotin

It is one of the B complex vitamins (along with riboflavin, thiamin and niacin). It's also known as vitamin H. Biotin plays a large role in maintaining healthy skin and hair, as well as playing an important role in growth, digestion, muscle formation and in enabling the body to use glucose as an energy source. Biotin deficiencies are rare, but there are several symptoms show like scaly skin, dry and dull hair/coat, scruffy appearance on skin. This condition may occur in the unusual circumstance of feeding large amounts of raw egg whites which contain avidin, a protein that binds biotin and prevents its gastrointestinal absorption. They are commonly combined with key ingredients such as Omega 3 for dogs which work in the skin as natural anti-inflammatory processes. Some of the most important natural sources of biotin are seed oils (hemp seed oil is a safe one) and liver. And of course, eggs. Other foods include Meat, sardines, green leafy vegetables, Cauliflower.



e) Vitamin E

It is a fat-soluble nutrient that is essential for pet’s body to develop strong and healthy muscles, and healthy circulatory and immune systems. It’s also an antioxidant, helping to protect cells from damage caused by free radicals. If dog is suffering from excessive moulting, thin or balding patches on their coat, dry or flaky skin, Poor coat condition they may benefit from a Vitamin E boost. If skin problems are localized, Vitamin E can be applied topically. If use bathtub, try adding Vitamin E oil to the water in the tub. Vitamin E is high in protein sources like eggs. Also find it naturally in vegetables and nuts like dandelion, spinach, peanuts, and sunflowerseeds(Watson, 1998).

f) Copper

It helps in iron absorption so that important part of red blood cell function. It also acts as an antioxidant, is a part of many enzymes, and is necessary for the formation of melanin, the pigment that darkens hair and skin. It is found in meat, liver, fish, whole grains, and legumes and is typically added as a supplement to commercially prepared foods. Copper deficiency is extremely unlikely if a dog eats a nutritionally balanced diet. Problems are most often associated with copper excess, not generally from an improperly formulated diet but instead due to inborn errors of metabolism that eventually cause too much copper to accumulate in the liver. At excessively high levels, copper results in oxidative stress, inflammation, and eventually to liver scarring (cirrhosis) and failure.

CONCLUSION:

Along with fungal and secondary bacterial infections, nutritional deficiencies are also a major cause of skin and coat malconditions in pet dogs. Balanced nutrition and feeding with mineral and vitamin supplement are the remedy for prevention and treatment of these malconditions.

REFERENCE

Broek, A. V. D. and Thoday, K. L. (1986). Skin disease in dogs associated with zinc deficiency: a report of five cases. *Journal of Small Animal Practice*. **27**(5): 313-323.

- Ihrke, P. J. and Goldschmidt, M. H. (1983). Vitamin A-responsive dermatosis in the dog. *Journal of the American Veterinary Medical Association*. **182**(7): 687-690.
- National Research Council. (2006). Nutrient requirements of dogs and cats. National Academies Press.
- Saevik, B. K.; Thoresen, S. I. and Taugbol, O. (2002). Fatty acid composition of serum lipids in atopic and healthy dogs. *Research in veterinary science*. **73**(2):153-158.
- Scott, D. W.; Miller, W. H. and Griffin, C. E. (1995). Nutritional skin diseases. Muller and Kirk's Small Animal Dermatology. (No. Ed. 5). WB Saunders. pp : 891-901.
- Watson, T. D. (1998). Nutrition and Disease. *Journal of Nutrition*. **128**: 2783-2789.