

**Dermatological Disorders**

ZINC-RESPONSIVE DERMATOSIS IN DOGS



Zinc functions as a cofactor of many enzymes. It plays a vital role in metabolic pathways and thus is crucial to rapidly dividing cells, such as those in the skin.

Zinc is supplied in the diet and is not stored in appreciable levels in the body. Low levels of zinc in the diet may result in a skin condition known as zinc-responsive dermatosis in dogs.

Two syndromes of zinc-responsive dermatosis exist. Syndrome 1 has a hereditary basis and is typically seen in young Arctic breeds such as Alaskan Malamutes and Siberian Huskies. Zinc absorption from the intestinal tract is impaired in affected dogs. Syndrome 2 is usually reported in rapidly growing large and giant breed puppies fed a diet that is either deficient in zinc or one containing high levels of ingredients that interfere with zinc absorption, such as plant phytates or minerals, especially calcium (the syndrome may also occur when rapidly growing large and giant breed puppies fed a complete and balanced diet are given a calcium supplement).

A change to a complete and balanced diet and/or supplementation with zinc usually leads to resolution of dermatological signs.

Key Messages

- Clinical signs of zinc-responsive dermatosis include alopecia, erythema, scaling, crusting, and lichenification, and are often symmetrical in distribution. Lesions are typically seen around the eyes, nose, mouth, and ears, and may be found at pressure points, e.g., elbows, and footpads. The haircoat is often dull and dry. Dogs may be pruritic and have secondary bacterial or yeast infections.
- In addition to appropriate treatment of infection, if present:
 - Dogs with syndrome 1 zinc-responsive dermatosis should be supplemented with oral zinc (e.g., zinc sulfate, zinc methionine).
 - For a dog with syndrome 2 zinc-responsive dermatosis, the diet should be changed to one with sufficient levels of zinc or one without excessive levels of plant phytates, calcium (or calcium supplement should be discontinued), or other minerals. Response may be faster if a zinc supplement is also given for a few weeks.

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Key Messages (continued)

- Signs will usually improve within 4–6 weeks. However, if a dog does not respond:
 - The dose or form of zinc should be changed.
 - Consider supplementation with linoleic acid, an omega-6 fatty acid.
 - The combination of zinc and linoleic acid has not been studied in canine zinc-responsive dermatosis. However, a study in healthy dogs showed that zinc and linoleic acid improved hair and coat quality. Coats were significantly glossier, and coat scale and transepidermal water loss significantly decreased.

Additional Resources

Colombini, S. (1999). Canine zinc-responsive dermatosis. *Veterinary Clinics of North America: Small Animal Practice*, 29(6), 1373–1383.

Marsh, K. A., Ruedisueli, F. L., Coe, S. L., & Watson, T. G. D. (2000). Effects of zinc and linoleic acid supplementation on the skin and coat quality of dogs receiving a complete and balanced diet. *Veterinary Dermatology*, 11(4), 277–284.

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