Zinc Requirements in Dogs

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Zinc is one of the essential minerals that are supplemented in today's commercial diets for dogs and cats. There are several different factors that effect the absorption of zinc from the diet. Zinc deficiencies do occur, most commonly as zinc responsive dermatosis particularly in the northern breeds including malamutes and huskies. Zinc toxicity rarely occurs but overdosing can lead to problems with calcium absorption. Some young puppies and pregnant dogs, as well as performance dogs, or animals with skin problems, may require more supplemental zinc than is being fed in the diet.

Zinc requirements

The Association of Feed Control Officials (AAFCO) sets guidelines for the minimum daily requirements of all nutrients for dogs and puppies. There have been several studies done on zinc and the racing Alaskan Huskies and those numbers are listed as a comparison.

Growth stage	Minimum recommended daily amount of zinc in mg/kg of food consumed	Maximum mg that should be fed
Growing puppy	120	1000
Adult dog	120	1000
Racing sled dogs	150 (Optimum)	300

Absorption and sources of zinc

Zinc is not considered to be highly absorbable. Studies show that between 5% and 40% of ingested zinc is actually absorbed. There are several factors that influence the absorption of zinc. One of them is genetics. Certain dogs of several of the northern breeds, including Siberian Huskies and Alaskan Malamutes, may have a genetic inability to adequately absorb zinc. Many dogs of these breeds must be fed a diet that is higher in zinc to prevent zinc deficiency associated skin problems. Plants contain a product called phytate, which binds zinc and reduces its absorption. Fiber has a similar effect. Therefore, animals that are fed a diet high in plant material may have an increased risk of developing zinc deficiencies. Calcium also binds zinc, and zinc deficiencies can be produced when excess amounts of calcium are fed. Dogs or cats with inflammatory bowel disease may develop zinc deficiency because of lack of absorption.

Zinc is found in higher concentrations in meat and bone than it is in plant sources.

Ingredient	Zinc in mg/kg
Barley	44.4
Corn	13
Oats	39.2
Rice	24.4
Wheat	20
Soybean meal	57.9
Fish meal	157

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Meat and bone meal	101

Zinc deficiency

Zinc deficiency in the dog most commonly occurs as a skin condition that is called 'zinc responsive dermatosis.' The disease is divided into two different syndromes. One affects huskies and malamutes and the other affects puppies on zinc-deficient diets or diets that are over-supplemented with calcium. Malamutes and huskies have a difficult time absorbing zinc, and if they are stressed or fed a diet high in plant sources or high in calcium they may develop this condition. The usual symptoms are hair loss, and scaling and crusting of the skin around the face, head, and legs. Lesions often encircle the mouth, chin, eyes, and ears. The foot pads may be scaly and the haircoat is dull and dry. Puppies fed a deficient diet may also show these symptoms but may also be lethargic, anorexic, and be prone to secondary infections. Diagnosis is usually made by history, physical exam, and response to zinc supplementation. Treatment with a zinc supplement usually resolves these symptoms within several weeks.

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Zinc toxicity

Toxicities to zinc due to oversupplementation are very rare. If animals are fed large amounts of zinc supplements, they may be prone to developing copper and iron deficiencies. However, this condition can usually only be created experimentally. Zinc toxicities can occur, however, if an animal would swallow pennies minted since 1982, zinc hardware on transport cages, zinc ointment, or eat or drink from galvanized containers.

Zinc supplementation

Many products that are used to help improve the quality of the skin coat and hair contain supplemental zinc. It is found in all good vitamin supplements and many fatty acid supplements also contain extra zinc. There is no evidence to show that increased zinc levels improve the immune system or athletic performance, but the benefits to the skin and coat are well-documented. Most healthy animals do just fine on the zinc that is supplied in a balanced commercial pet food. If your dog suffers from a skin disorder such as hair loss and excessive shedding, particularly if it is a northern breed, a puppy, or under a lot of stress, a supplement containing extra zinc may be very beneficial, especially if combined with a fatty acid supplement.

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