

Other Vitamins and Minerals

Platinum Performance™ Canine Wellness and Performance formula also contains other vitamins and minerals that can have a positive impact on the occurrence or severity of various canine skin and allergic problems. For example, vitamin E is a natural, potent, fat-soluble antioxidant that stabilizes cell membranes and protects against oxidative damage. B vitamins help prevent dull and waxy coats, hair loss, ulcers around the mouth, and certain pruritic conditions.²² In tissues with rapidly dividing cells, such as the skin, zinc has a critical role, in part, because it acts as a cofactor in DNA synthesis, and also because it participates in all skin functions: growth, repair, and protection.²³ Zinc also has been reported to have anti-inflammatory and immune-enhancing activities.²⁴

Summary

Allergic reactions are characterized by an immune-mediated inflammatory response to an often-benign stressor. Among dogs, various types of allergies are commonly reported, such as contact, food, flea, bacteria, and atopic. Allergen exposure is rather ubiquitous, and allergic reactions can be more than just a nuisance to the dog. A balanced diet is critical, especially as the skin regenerates rapidly and provides the “first line” defense against environmental factors. Additional supplementation with omega-3 fatty acids, antioxidants, vitamins, trace minerals and immune-enhancing nutrients can provide further protection for the health and well-being of the dog.

Putting it Into Practice

- As a preventive measure against skin and other allergic problems, supplement canine diets with omega-3 FAs, trace minerals, vitamins and antioxidant such as those provided in Platinum Performance™ Canine Wellness and Performance Formula.
- During times of high allergen exposure or allergic breakouts/reactions, supplement with Platinum Vet™ Skin & Allergy Formula to provide additional DHA and the immune-enhancing nutrients, purified calf thymus extract and quercetin.

- Reduce dog foods with an imbalance of omega-3 to omega-6 FAs.

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Supplementation for Healthy Skin and Coat

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The skin is the largest organ in the body with a high metabolic activity and, thus, has a large energy requirement. Even slight deviations in nutrient intake can have significant, and very obvious, deleterious effects on the skin. In addition to maintaining a balanced diet, supplementation with various nutrients can positively impact the overall health of the skin and prevent common disorders such as skin allergies and immune-related reactions. Platinum Performance™ Canine Wellness and Performance and Platinum Vet Skin & Allergy formulas are designed to address skin inflammation and other allergic responses, such as asthma, through the provision of essential fatty acids, antioxidants, and trace minerals and vitamins, as well as other immune-boosting ingredients.

Omega-3 and Omega-6 Fatty Acids

Fatty acids are major constituents of lipid membranes and nervous tissues and are also essential for normal skin structure and function. While there are several different classes of fatty acids, currently there is much interest in the omega-6 and omega-3 families. Omega-6 fatty acids induce pro-inflammatory responses, which have been linked to various chronic disorders. In contrast, omega-3 fatty acids act as anti-inflammatory or “low inflammatory” agents and purportedly protect against inflammatory diseases. Although fatty acid deficiencies in dogs are rare, they can result from poorly formulated diets or from the consumption of foods subjected to excessive oxidative damage and having a high level of rancidity. A dull, dry coat and hair loss are common signs of fatty acid deficiencies. Not only can

these problems be avoided by inclusion of fatty acids in the diet, but supplementation with omega-3 fatty acids also can be an important component of treatment of some skin and other allergic conditions in dogs, especially those conditions due to hypersensitivity. Omega-3 fatty acids, such as eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), moderate the immune and inflammatory state of animals.¹ DHA, for example, inhibits the lipoxygenase enzyme that synthesizes pro-inflammatory and immune-suppressing leukotrienes, such as LTB4 – a key player

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in skin allergic reactions² and bronchial asthma.^{3,4} Furthermore, EPA competes with the pro-inflammatory omega-6 fatty acid, arachidonic acid, as a substrate for lipoxygenase, resulting in the production of the anti-inflammatory and immune-enhancing leukotriene, LTB₅. Indeed, a significant decrease in LTB₄ and a corresponding increase in LTB₅ were detected in dogs supplemented with flaxseed, a plant-based source of omega-3 fatty acids and precursor to DHA and EPA, when compared to dogs supplemented with beef tallow or safflower oil.⁵ Interestingly, similar effects occur in dogs when the overall dietary ratio of omega-6 to omega-3 fatty acids is reduced.^{6,7}

In addition to control of leukotriene synthesis, fatty acids control the synthesis and activities of inflammatory-modulating proteins, or cytokines. Ingestion of omega-6 fatty acids increases pro-inflammatory cytokines; whereas, ingestion of omega-3 fatty acids reduces pro-inflammatory cytokines and increases low- and anti-inflammatory cytokines. Researchers at the University of California at Davis supplemented dogs for 6 months with Platinum Performance™ Canine plus Platinum Antioxidant™ on top of their regular chow diet and compared cytokine expression to non-supplemented, control dogs.

Supplemented dogs had a 71% lower expression of the pro-inflammatory cytokine, IL-1beta, than non-supplemented dogs (Figure 1). In addition, there was a 40% increase in the anti-inflammatory cytokine, IL-10 (Figure 2). Both these changes in cytokine expression could have an impact on inflammatory and immune-related conditions, further supporting the benefits of short and long chain omega-3 fatty acids, such as those supplied in the Platinum Performance™ Canine Wellness and Performance and Platinum Vet™ Skin & Allergy formulas.

Thymus Extract

The Platinum Vet™ Skin and Allergy Formula also contains an extract purified from the calf thymus gland, an organ that plays a major role in activating the immune system. This extract promotes the maturation and subsequent functioning of specific immune cells that help control allergic responses, infections and certain cancers,⁸⁻¹⁰ and has clinically beneficial effects in patients with allergic rhinitis and bronchial asthma.^{9,11,12} Atopic dermatitis, a disease characterized by uncontrollable itching, scratching and infected skin lesions, is suggested to be on the rise in the canine population. Although atopic dermatitis classically is considered to be a genetic disease, many new cases are

Figure 1. IL-1 beta Gene Expression Among Dogs Supplemented with Platinum Performance™ and Non-Supplemented Dogs

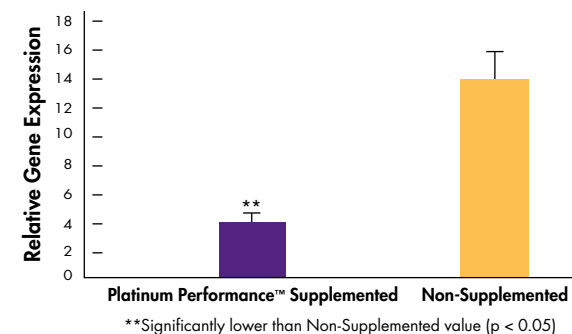
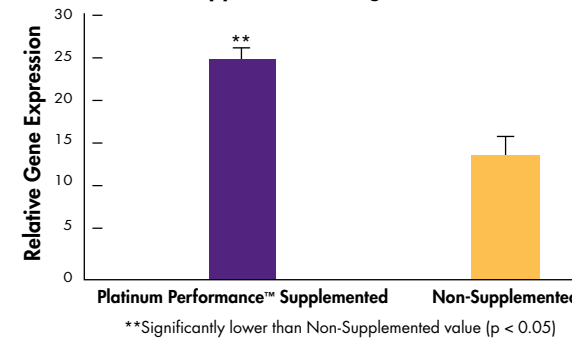


Figure 2. Gene Expression Among Dogs Supplemented with Platinum Performance™ and Non-Supplemented Dogs



presumed to be the result of environmental stimuli.¹³ The finding that atopic dermatitis responds to treatment with thymus extracts¹⁴⁻¹⁶ could be because concentrations of IgE, an immunoglobulin associated

with allergic reactions, decrease while concentrations of IgA, an immunoglobulin that helps prevent recurrent infections and allergies, increase in response to supplementation with this extract.¹⁷ Therefore, supplementation with purified calf thymus extract, such as that provided in the Platinum Vet™ Skin & Allergy Formula, may improve the dog's immune response to various allergens and help prevent unwanted allergic responses.

Quercetin

Quercetin is a naturally-occurring polyphenolic plant compound widely used for its antioxidant and anti-inflammatory properties. Quercetin not only inhibits activity of lipoxygenase,¹⁸ but it also inhibits cyclooxygenase,¹⁸ the enzyme that converts arachidonic acid into the pro-inflammatory hormone-like substance, PGE₂. Quercetin's benefits are demonstrated by its strong antioxidant activity, the prevention of cell membrane lipid oxidation, the stabilization of cell membranes and prevention of the production of histamine,¹⁹⁻²¹ which makes it a strong complement to the other ingredients in the Platinum Vet™ Skin & Allergy formula.