

Ingredient Spotlight: Zinc Ascorbate

What is Zinc Ascorbate?

Zinc is an essential mineral nutrient that plays a key role in many biological actions including enzyme activation, immune support and a healthy recovery. Zinc ascorbate is primarily absorbed in the duodenum and when in serum, it's highly protein bound and resistant to diffusion.

Elemental zinc forms many salts and other compounds, both organic and inorganic. [Zinc ascorbate](#) is an organic compound that is also known as L-ascorbic acid, zinc salt. (1) Zinc and ascorbic acid are the basic building blocks of the zinc ascorbate and both facilitate tissue regeneration and support oral health.

What is the Mechanism of Action?

- **Oxidization:** As with other elemental metals, Zinc has been shown to have oxidizing activity. Research shows that metal ions disrupt bacterial energy production in the cell membrane of the organism. It has also been shown to slow growth and proliferation of oral bacteria. *Porphyromonas gingivalis*, a bacterium commonly associated with oral health conditions, has demonstrated decreased tissue attachment in the presence of zinc. By not settling in the gingival sulcus, it is flushed out with saliva thus diminishing periodontal contact. (2)

Clinical studies have shown that zinc formulations significantly [reduce populations of oral pathogens](#) (3) that tooth brushing alone cannot accomplish. Zinc inhibits glucosyl transferase enzymes in bacteria which also helps to decrease colonization. These latter bacterial products contribute to halitosis and increase the permeability of the tissues to bacterial toxins. Decreases anaerobic pathogens

- **Immune support:** Zinc is necessary for the function of normal immune cells such as neutrophils and macrophages. Along with Vitamin C, Zinc supports T-lymphocyte and the production of interferons and antibodies. Zinc ascorbate may help to [improve the immune strength of gingival tissue](#). (4)
- **Tissue Defense:** Topical application of zinc has been shown to [facilitate collagen formation and may enhance re-epithelialization](#). (5) Ascorbic acid has also been shown to assist in collagen alignment and healing of gingival tissues. Healthy, strong gingival tissue is more resistant to colonization by bacteria which find it easier to colonize unhealthy tissue.
- **Antioxidant:** Oxidative stress contributes to chronic conditions not only in the body but also the oral cavity. There is a close relationship between oral health and antioxidants levels. (6) Low antioxidant levels may contribute to the destruction of periodontal tissue. Zinc stabilizes membranes and has been shown to reduce the production of toxic agents like

hydrogen peroxide. By diminishing the production of reactive oxygen species, zinc helps to support the gingival tissue.

- **Anti-plaque:** Zinc has been shown to help [decrease plaque formation](#) (7) and may also help to break up formed plaque. In an Australian study, an oral gel of zinc ascorbate was found to significantly decrease plaque and anaerobic periodontal pathogens in cats. Zinc ascorbate's effectiveness may be linked to its ability to persist and remain effective in the oral environment for several hours after it has been applied. A benefit for the use of zinc on oral preparations is its ability to remain active in the oral cavity at high enough concentrations for an extended time. This permits its activity to be ongoing. Zinc can persist in the mouth for many hours in both saliva and plaque. Plaque is penetrated and oxidized by zinc thus inhibiting its buildup
- **Enamel support:** Zinc has also been shown to [decrease enamel demineralization](#) (8) as the zinc ion can substitute for calcium in the crystalline hydroxyapatite enamel structure. Zinc can both reduce enamel demineralization and modify remineralization. The integrity of the enamel is also maintained due to zinc inhibiting the conversion of bacteria's sugar production into erosive acids.
- **Synergistic with Taurine:** Zinc and taurine help bind volatile fatty acids and sulfur moieties. (9) These substances contribute to the impact of bacterial toxins on the gingiva's structural defenses. Reduction of these substances may also contribute to a decrease in odor.

Adverse effects: Primarily GI disturbances, but these are generally seen when higher doses are taken orally for therapeutic indications.

Potential drug interactions: Rare. Well-tolerated and very safe for pets.

Products that utilize this ingredient include: Perio Support Pro, Perio Support, Perio Plus Stix

References:

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