*Dynamic Chiropractic* – January 1, 1997, Vol. 15, Issue 01

# Zinc Lozenges and the Common Cold

By G. Douglas Andersen, DC, DACBSP, CCN

When I started practicing in 1986, one of the first things I learned to recommend was zinc lozenges to my patients who had colds. This was based on a 1984 study that showed a significant reduction of the symptoms and duration of the common cold when compared to placebo.[1] These findings were confirmed in another study in 1987.[2] In both of these studies 23 mg dextrose-free zinc lozenges were used (when dextrose is combined with zinc gluconate the mixture can become bitter over time).

Additional studies were performed with other types of zinc lozenges: zinc gluconate-citrate;[3] 11.5 mg zinc gluconate;[4] zinc acetate;[5] and 4.5 mg zinc gluconate.[6] Although total daily zinc intake in follow-up studies was similar to levels consumed in the two positive studies, none of these studies showed significant reduction in duration or symptomatology of colds. With four negative studies and two positive studies, I was confused about the ability of zinc lozenges to treat a common cold. I no longer recommended zinc lozenges.

Last summer zinc made the news when a study using 13.3 mg of the zinc gluconate-glycinate lozenges every two hours or placebo lozenges were given to 100 people within 24 hours of onset of cold-like symptoms. The total daily zinc gluconate-glycinate intakes ranged from 52 to 104 mg per day. The zinc group's symptoms lasted an average of 4.4 days with the placebo group suffering for 7.6 days[7] (see Table I for breakdown). This study reinforced the findings of the 1984 Eby and 1987 Al-Nakib studies that revealed oral zinc in lozenge form reduced the duration and symptoms of a person's suffering from the common cold.

The question remained. Why are some zinc lozenge studies positive and others negative? The answer may lie in the theoretical mechanism of the action of zinc lozenges.

It is well known that a total body zinc deficiency can lead to immune dysfunction and that oral zinc can restore a zinc-deficient immune system by stimulating the thymus and T-lymphocytes to function at their normal strength.

Why couldn't one just to take a 100 mg zinc pill instead of sucking on zinc lozenges all day? The answer to this question also ties into the theory of why zinc lozenges work. In studies where zinc lozenges failed to help cold symptoms, supplementation did raise serum zinc levels. It appears that when patients suck on zinc lozenges that contain positively charged zinc ions, the zinc can bind to capillary walls, zinc-binding proteins, mucous membranes, and rhinoviruses. Neutral and negatively charged zinc ions do not bind to these structures. The high (100 mg or more in divided doses) amount needed to suppress a cold is because zinc ions are first bound to capillary walls and only when these binding sites are full can zinc then get to other structures, including viruses. When positive zinc ions bind to the rhinovirus surface, the virus is then unable to attach to respiratory epithelium.

How can you tell if your zinc lozenge is bioactive? George Eby, a pioneer in zinc lozenge research, has devised a formula to determine the strength of zinc lozenges. It is called zinc ion availability (ZIA).[8] I am hopeful that manufacturers will soon list zinc ion availability on their product (the ZIA of the lozenges used in the 1996 study was 70). The downside of zinc lozenge supplementation in last summer's study was the high amount of side effects in the zinc group (see Table II). Eby states that zinc acetate USP lozenges may have greater ion availability without the negative effects of gluconate. As for other side effects of zinc supplementation, long-term use of high levels in some people (100 mg plus for many months) can cause toxicity, which includes depressed copper absorption, immune depression, anemia, and gastrointestinal irritation.[9] Sucking on zinc lozenges that total 100-150 mg a day of zinc for a week when infected by a cold virus will not result in a stemic zinc overload.

**Conclusion**

For zinc lozenges to work, you must (1) use a type with a high percentage of positive ions, and (2) let them dissolve in your mouth every hour or two all day, every day, until you feel better.

**Table I: Symptoms in Days**

| SYMPTOMS | ZINC | PLACEBO |
|---|---|---|
| Cough | 2.4 | 4.5 |
| Headache | 2.0 | 3.0 |
| Hoarseness | 2.0 | 3.0 |
| Nasal Congestion | 4.0 | 6.0 |
| Nasal Drainage | 4.0 | 7.0 |
| Sore Throat | 1.0 | 3.0 |

**Table II: Side Effects of Zinc Gluconate-Glycinate Lozenge Supplementation**

| SYMPTOMS | ZINC | PLACEBO |
|---|---|---|
| Nausea | 20% | 4% |
| Bad Taste Reaction | 80% | 30% |

**Zinc Facts**[9]

RDA

Infants - 3 mg

Children age 1-10 - 10 mg

Adults - 12-15 mg

**Top dietary sources of zinc (based on 3.5 ounce serving)**[9]:

Oysters, liver, beef, lamb, and turkey. Wheat germ, wheat bran, cheddar cheese, sesame seeds, and poppy seeds.

Zinc deficiency may be associated with acne, alopecia, anorexia, brittle nails, delayed sexual maturity, depression, diarrhea, eczema, fatigue, growth impairment, impotence, infections, infertility, memory impairment, night blindness, slow wound healing, sterility, and white spots on nails.[10]

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Click here for more information about G. Douglas Andersen, DC, DACBSP, CCN.

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