Zinc

An essential trace mineral sold as capsules, tablets, lozenges and liquids, and found in many multivitamins and cold remedies.

Zinc is an essential trace mineral involved in catalytic, structural, and regulatory functions within the body. Zinc supports immune function serves as an essential cofactor for over 300 enzymatic reactions, driving immune cell activation, cellular repair, DNA synthesis, and endocrine regulation (Wessels et al., 2017).

Key compounds and forms: Zinc gluconate and zinc acetate (the forms used in most cold lozenges), plus zinc citrate, picolinate, bisglycinate and oxide. Labels should state elemental zinc, which is only a fraction of the compound's weight (zinc gluconate is about 14% elemental zinc).

Research summary: *Moderate to strong evidence* that zinc lozenges delivering about 75 mg/day or more of ionic zinc can shorten the duration of a common cold. *Limited* for other uses.

Key Benefits:

Immune Function & Viral Defense

Immune Cell Maturation: Zinc is vital for the development and function of neutrophils, natural killer (NK) cells, and T-lymphocytes. Deficiencies disrupt cell-mediated immunity (Wessels et al., 2017).

Common Cold Duration: Clinical trials and systematic reviews demonstrate that administering zinc acetate or gluconate lozenges (delivering ≥75 mg/day of ionic zinc) at the immediate onset of cold symptoms significantly reduces the duration of the common cold (Hemilä, 2017).

A meta-analysis of seven randomized, double-blind, placebo-controlled trials found zinc acetate and zinc gluconate lozenges shortened colds by about 33% on average.[1] An earlier review found benefit only at total daily doses above 75 mg, with no effect at lower doses; side effects in the trials were mostly minor, such as bad taste.[2]

Wound Healing & Tissue Repair

Epithelial Integrity: Zinc accelerates skin barrier repair, collagen synthesis, and membrane stabilization, making it a mainstay in clinical treatment for severe burns and chronic ulcers.

Endocrine & Testicular Health

Testosterone Support: Zinc supplementation restores normal circulating testosterone levels in men with baseline zinc deficiencies or exercise-induced suppression, though it offers marginal hormonal increases in zinc-replete individuals.

How Much Should You Take?

Always check the label for elemental zinc content rather than total compound mass.

Recommended Daily Allowance (RDA):

Men: 11 mg/day of elemental zinc.

Women: 8 mg/day of elemental zinc (11–12 mg/day during pregnancy/lactation).

Acute Cold Lozenges: 75–90 mg/day of elemental zinc split into small doses throughout the day for no longer than 5–7 days.

Tolerable Upper Intake Level (UL): 40 mg/day of elemental zinc for adults. Do not exceed this threshold long-term without physician oversight and co-supplementation of copper (typically at a 10:1 to 15:1 zinc-to-copper ratio).

Good to know: The evidence is for lozenges started early in a cold and used briefly, not daily capsules. These doses are high, so they are not for long-term use. Follow the label and ask a pharmacist if unsure.

Clinical Caveat: Zinc and iron can compete for intestinal absorption if taken simultaneously in high doses; staggering them or taking iron with Vitamin C enhances uptake.

References

1. Hemilä H. (2017). Zinc lozenges and the common cold: a meta-analysis comparing zinc acetate and zinc gluconate, and the role of zinc dosage. JRSM open, 8(5), 2054270417694291. https://doi.org/10.1177/2054270417694291

2. Hemilä H. (2011). Zinc lozenges may shorten the duration of colds: a systematic review. The open respiratory medicine journal, 5, 51–58. https://doi.org/10.2174/1874306401105010051

3. Wessels, I., Maywald, M., & Rink, L. (2017). Zinc as a Gatekeeper of Human Immune Function. Nutrients, 9(12), 1286. https://doi.org/10.3390/nu9121286Focus: A comprehensive review detailing the molecular and cellular mechanisms of zinc in human immune cell signaling, T-cell function, and systemic inflammation.