

# Zinc: role in immunity, oxidative stress and chronic inflammation

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## Abstract

**Purpose of review:** Zinc is essential for multiple cellular functions including immunity. Many investigators have used zinc supplementation in an attempt to affect the outcome of various diseases. These efforts were aimed at either supporting immunity by zinc administration or correcting the zinc dependent immune functions in zinc deficient individuals.

**Recent findings:** In this review, recent findings of zinc supplementation in various diseases have been presented. Beneficial therapeutic response of zinc supplementation has been observed in the diarrhea of children, chronic hepatitis C, shigellosis, leprosy, tuberculosis, pneumonia, acute lower respiratory tract infection, common cold, and leishmaniasis. Zinc supplementation was effective in decreasing incidences of infections in the elderly, in patients with sickle cell disease (SCD) and decreasing incidences of respiratory tract infections in children. Zinc supplementation has prevented blindness in 25% of the elderly individuals with dry type of AMD. Zinc supplementation was effective in decreasing oxidative stress and generation of inflammatory cytokines such as TNF-alpha and IL-1beta in elderly individuals and patients with SCD.

**Summary:** Zinc supplementation has been successfully used as a therapeutic and preventive agent for many conditions. Zinc functions as an intracellular signal molecule for immune cells.

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Bao B, Prasad AS, Beck FW, Snell D, Suneja A, Sarkar FH, Doshi N, Fitzgerald JT, Swerdlow P. *Transl Res.* 2008 Aug;152(2):67-80. doi: 10.1016/j.trsl.2008.06.001. Epub 2008 Jul 11. PMID: 18674741 Clinical Trial.

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- [Impact of the discovery of human zinc deficiency on health.](#)

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