

Study shows that zinc deficiency may contribute to chronic inflammation by causing improper immune cell activation and dysregulation of a protein that affects inflammation in the cell.

Zinc deficiency may alter how the immune system responds to inflammation

Zinc is an essential mineral in human health required as a cofactor in numerous biological processes including DNA and protein synthesis, cell division, normal growth and development, neurological function and immunity, and wound healing. It is also required for normal taste perception and smell.

Zinc is naturally available in a wide variety of foods with higher amounts found in protein-rich foods including meat, poultry and seafood. Regular intake is necessary to maintain a steady state because it is not stored. Zinc deficiency most often occurs when intake is inadequate or poorly absorbed, when there are increased losses of zinc from the body, or when the requirement for zinc increases. Evidence from NHANES III data show that zinc intakes among older adults might be marginal, increasing the risk of a zinc deficiency.

Zinc deficiency is thought to contribute to the development of chronic diseases that involve inflammation and often show up in older adults who have a higher risk for zinc deficiency. In a new study published in the journal *Molecular Nutrition & Food Research* researchers examined how the immune system responds to zinc deficiency resulting in mechanisms that promote inflammation. Using in vitro cell culture and the aging mouse model, researchers found that zinc deficiency can induce an increase in the inflammatory response in cells by causing improper immune cell activation and dysregulation of cytokine IL-6, a protein that affects inflammation in the cell. When comparing zinc levels in both young and older living mice, the older mice with low zinc levels had a corresponding increase in chronic inflammation and decreased IL-6 methylation, an epigenetic mechanism that is used by cells to control gene expression.

The results of this study provide evidence of a potential link between zinc deficiency and increased risk of chronic inflammation, especially in aging adults.

Wong CP, Rinaldi NA, Ho E. Zinc deficiency enhanced inflammatory response by increasing immune cell activation and inducing IL6 promoter demethylation. *Mol Nutr Food Res*. 2015 Feb 5.