

Zinc

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Zinc is an essential trace element required by every cell, tissue, organ and fluid in the human body. One can reduce the known physiological functions of zinc in humans down to the following list¹

- Cell growth
- Cell replication
- Sexual maturation
- Fertility and reproduction
- Night vision
- Immune defense
- Taste and appetite

There is increasing need for zinc following psychological or physiological stress or any type of physical trauma, such as a cut or burn. Whenever the immune system is involved and there exists a state of zinc deficiency, you may also find

- Decreased white cell activity
- Impaired T-lymphocyte function
- Decreased resistance to infections

Zinc is necessary for protein synthesis and carbohydrate metabolism, two metabolic activities important to anyone active in sports or recreational activities. Zinc is a component in over 200 enzyme reactions including enzymes that metabolize alcohol (alcohol dehydrogenase) or reduce lactic acid build up during or following exercise (lactic dehydrogenase)².

The highest concentrations of zinc are found in tissues such as the cochlea of the middle ear (hearing and balance), the eyes (vision), the male prostate (production of sperm), and all epithelial tissue, namely, our skin, which includes the entire lining of our digestive tract, from the mouth to the anal canal. Without zinc, we would not be able to survive or protect ourselves from the many potentially lethal pathogens found in our environment.

Since zinc is found throughout the human body, evidence of zinc deficiency can cause a wide range of signs and symptoms that affect virtually every organ or tissue in the human body. Clinical manifestations of human zinc deficiency include: alopecia, skin lesions, immune deficiencies, behavioral disturbances, night blindness, impaired taste (hypoesthesia), wound healing, eating disorders, and in children and adolescents, growth retardation and delayed sexual maturation, respectively. Zinc is also important in

arthroses (rheumatoid and osteoarthritis) and connective tissue disorders because of its role in collagen synthesis. And zinc deficiency can cause a decrease in insulin response and impaired glucose metabolism and regulation, both factors important to diabetics or in the prevention of adult-onset diabetes (Type II).

Zinc also is an important component of a zinc-copper superoxide dimutase complex (Zn-Cu SOD) that serves as an important antioxidant needed by the body to control damage by oxygen free radicals. For example, Zn-Cu SOD protects certain regions of the brain that otherwise without adequate Zn-Cu SOD could result in motor neuron diseases such as Parkinson's Disease, an affliction that affects one out of every hundred Americans.

The current recommended dietary allowance (RDA) for zinc for healthy individuals consuming a mixed North American diet is:

Children	10 mg.
Males (11-18)	15 mg.
Males (adults)	15 mg.
Females	15 mg.
Pregnant	15 mg.
Lactating (1st 6 mos.)	19 mg.

Zinc References

1. Shils, M.E. and Young, V.R. Modern Nutrition in Health and Disease, 7th Edition. Lea & Febiger: Philadelphia, 1988.
2. Schauss, A.G. Minerals, Trace Elements and Human Health. Life Sciences Press: Tacoma, (WA), 1996.
3. Recommended Dietary Allowances, 10th Edition. National Research Council. National Academy Press: Washington, D.C. 1989.