ZINC'S ROLE IN HEALTH & DISEASE

1. Zinc is needed for all tissue growth and repair because of its role in metabolic enzymes: (Zinc is the mineral-activator in about 100 enzymes).

2. Zinc has been shown to protect against heart damage after a heart attack. [1]

3. Zinc has been shown to protect against plaque formation. [2]

4. Zinc is needed in greater amounts when a person is under any form of stress, in order to assist in the increased metabolic processes induced by stress. **Note: When zinc is deficient during times of stress, we have less stress handling ability and are more open to physical degenerative processes in the body tissues.**

5. Adequate zinc (relative to copper) helps protect against hypertension. [3] **Note: The kidney is rich in zinc containing enzymes and zinc therefore, plays important roles in kidney function. This is one place that zinc may exert its blood pressure controlling effect.**

6. Zinc protects against cadmium toxicity. Cadmium is linked to hypertension, extreme fatigue, atherosclerosis, stroke and kidney damage. Cadmium is absorbed in the presence of zinc deficiency and conversely, adequate zinc protects against cadmium (also helps eliminate cadmium). When zinc is deficient, cadmium is incorporated into many zinc enzymes, where it then causes malfunction to some degree.

Common sources of cadmium are:

- Cigarettes and marijuana
- Refined foods (white flour, white sugar, etc.)
- Tap water
- Some cola drinks
- Margarine
- Canned fruits and beverages
- Petro chemical pollution
- Fish and shellfish

7. Zinc is the mineral-activator of insulin. Zinc is needed for insulin's formation, potency, release from the pancreas and to sustain its activity. Therefore, zinc deficiency plays a role in Insulin Resistance, Syndrome X and Diabetes. (All of these conditions cause cardiovascular disease.)

8. Zinc plays a role with copper (and vitamin C) in the cross-linking of the protein structure of collagen and elastin, which is necessary for proper strength and elasticity of blood vessels, especially arteries.

Other Functions of Zinc

1. Zinc plays important roles in immunity and protecting against auto immune diseases. It is required for antibody production. All forms of infection will dramatically lower zinc and its supplementation is therefore important when fighting infection.

2. Zinc is needed to metabolize carbohydrates and alcohol.

3. Zinc is required to form HCl in the stomach, to regenerate and protect gastric mucosa and to form protein digesting pancreatic enzymes.

4. Zinc plays vital roles in male sexual development and function.
   - Required for testosterone function and for potency.
   - Needed for proper development and size of male genitalia.
   - Is found in the largest amounts in the prostate gland.
   - Protects against prostate enlargement, infection and cancer.
   - Is lost through the ejaculate fluid.

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[1] Singal, P.K. et al, Lab. Invest., (1981), 44(5): p426-433
[2] Bulletin on Sinai Hospital of Detroit, (1975), 23:81
[3] Pfeiffer, Carl C., Zinc and Other Micro-Nutrients, Keats Publishing, (1978), p17

Note:

- The lag in male growth relative to females at the onset of puberty is related to inadequate levels of zinc. [4]
- Large amounts of zinc are needed for sexual maturation, development and testosterone function.
- Zinc, being diverted to reproductive organs is not sufficiently available for its role in the growth of all body tissues.
- The increased appetite legendary to teenage boys is, in part, a quest for adequate zinc.
- Zinc is depleted from eating sugar and other refined foods, from stress and is lost in the ejaculate fluid.
- Acne is a common result of zinc deficiency and responds quickly to Zinc Liver Chelate, Cataplex ACP and Cataplex G (or B6 Niacinamide).

5. Zinc is needed for progesterone production and function. Its deficiency is part of Estrogen Dominance syndromes.

6. Zinc plays a role in neurotransmitter function, especially in the brain. (Its effect is to calm and focus brain activity.)

7. Stretch marks or striae are the result of the skin breaking because of zinc deficiency.

8. Zinc, along with copper and manganese, form the enzyme superoxide dismutase which has an anti-inflammatory effect in joint tissue.

9. Zinc is also needed:
   - To harden bones and teeth.
   - For skin, hair, nail health and strength.
   - For proper growth in children.
   - For taste, smell and normal appetite.
   - To activate vitamin A.
   - For normal vision and especially night vision (along with vitamin A). **Note: The retina and prostate contain the highest levels of zinc.**
   - Protects against or eliminates acne.
   - For eliminating eczema, psoriasis, boils and other skin problems.

10. Studies have demonstrated that zinc:
    - Decreases healing time in gastric ulcers (up to 40%) and leg ulcers [5]
    - Has been effective in decreasing the swelling and stiffness in Rheumatoid Arthritis. [6]
    - Decreases the pain of sickle cell anemia. [7]
    - May help protect against senile dementia. [8]
    - Deficiency in pregnancy is associated with babies with learning and behavior problems, underdeveloped genitalia, increased birth defects, allergies, scoliosis, impaired immune function and Down's Syndrome. [9] [10] [11]
    - Deficiency is involved in some forms of schizophrenia and other forms of psychoses. [12]

11. Zinc deficiency:
    - Is caused by birth control pills and injections (along with B6 and other nutrients).
    - Is part of the cause of PMS and depression.
    - Can cause painful knees and hips in teenager ("growing pains").
    - Can cause nausea in pregnancy (because zinc and B6 are needed in larger amounts for tissue growth of any kind).
    - Is caused by eating sugar and other refined carbohydrates.
    - Can be caused by chronic stress and/or infections.
    - Can be induced by excessive copper intake.

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[4] Ibid, p16
[5] Frommer, D.J., November 22, 1975, Med. J. Australia
[6] Simkin, P.S., September 11, 1976 Lancet
[7] Passwater, R.A., Ph.D., Cranton, E.M., M.D., Trace Elements, Hair Analysis and Nutrition, Keats Publishing, (1983), p137
[8] Ibid, p137
[9] Hambridge, K.M., et al, Pediat. Res., (1972), p868-874
[10] Hurley, L.S. and Swenerton, H., Proc. Soc. Exp. Biol. Med., (1966), 123:692-696
[11] Halstead, J.A. and Smith, J.C., Lancet, (1970), 1:322
[12] Pfeiffer, Carl, C., Zinc and Other Micro-Nutrients, Keats Publishing, (1978), p40-41