

Zinc As A Micronutrient In Humans

Posted on September 22, 2018

Zinc is a micronutrient found in foods that we consume. The nutrient has many benefits to the human body, and it is essential for us to consume foods that are rich in zinc for proper body growth. The mineral was first established to be essential to the body of humans in 1961. This paper will focus on how zinc is essential to the body and what benefits it brings to the body through growth and development.

Metabolism And Absorption Of Zinc

The intake of zinc is part of the small intestines. The mineral gets converted into ions. The ions are then bound to ligands in the body before being transported to the duodenum. Proteins in the body facilitate the passage of zinc into cell membranes. The body only absorbs about thirty-three per cent of zinc in food, and the rest goes to the excretion system. The liver is the primary organ that facilitates the transport of zinc to other organs in the body. Zinc gets bound to aluminium, and thus, cells in the body have an altering effect on the zinc levels present in the bloodstream.

Serum zinc is lowly concentrated and makes about 0.1% essential to the body. The body only absorbs the amount of zinc it requires, and thus, consumption of high amounts of zinc is discouraged because a significant portion goes to waste. The amount consumed depends mainly on the age of the person (Kambe, 2014). Lactating mothers and children require about 11 milligrams of zinc in their diet to enable the child to develop healthily. Teenagers also need a higher amount of zinc in their diet. Adequate zinc intake is especially important for children because even mild zinc deficiency can impede growth, increase the risk of infection, and increase the risk of diarrhoea and respiratory disease.

Sources Of Zinc

Zinc is found in most protein-based foods such as meat, nuts, fish, dairy products, and whole-grain cereals. People who consume vegetables require twice the amount of zinc an average person needs because plants contain fewer zinc minerals. Most breakfast cereals contain a high amount of zinc and, hence, are highly recommended by health professionals. Pacific oyster contains the highest amount of zinc elements at more than 11 milligrams per ounce of food. Over the years, pharmaceutical companies have developed capsules that are consumed as supplements to increase the amount of zinc minerals in the body. However, it is highly recommended that one consumes foods rich in zinc and only use supplements as a secondary source of zinc in the body.

Benefits Of Zinc In The Human Body

The following are the main benefits of zinc in the human body

Skincare

Zinc is among the most important minerals that help regulate the nature and health of the skin in people. Zinc can adjust the amount of testosterone in the body, which has been found to cause acne in people. Zinc facilitates the synthesis of collagen in the body. The syntheses of collagen affect the production of oil in the body that maintains the health of the skin. Sores on the skin are prone to bacterial and viral infections, and zinc stimulates the increase in white blood cells within the human body, thus reducing infections.

Continued consumption of zinc enables increased production of white blood cells that enable increased healing of skin infections such as acne, burns, and surgical incisions. Zinc helps reduce such infections and repair the skin in case of injury.

Healing of Eczema

Eczema is a skin condition that occurs on the skin due to a lack of enough zinc in the body. The diseases irritate the skin and are mainly seen through red sores. Zinc is essential because it helps heal the skin, and its consumption ensures that the body can rebalance its zinc content. The condition is also known as acute dermatitis (Holmes, 2016)

Combating Prostate disorders

Prostate disorder occurs in many forms, such as urinary infections and cancer. Zinc deficiency causes the enlargement of prostate glands, making it easier for an individual to contract cancer. The doctor recommends that people suffering from prostate disorders consume about fifteen milligrams of zinc. Studies conducted have shown that zinc helps reduce the growth of cancerous cells within the body.

Improves Cognitive Function

Zinc helps increase an individual's mental capability. The mineral combines with vitamin B to ensure that neurotransmitters in the body function efficiently. The hippocampus section in the brain is mainly composed of a high level of Zinc. The main function of the hippocampus is to control a person's thoughts and memory. The consumption of fish products, especially by infants, has been proven to be instrumental and proven to bolster academic performance. For people who have suffered an injury, zinc maintains proper brain functioning, and it is distributed to parts that need healing within the

body (Abdali, 2015).

Improves Senses of Taste & Smell

Zinc has been found to affect the sense of smell and taste in the human body. The sensory organs rely heavily on zinc for proper functioning. Zinc contributes to the growth of the organ and improves its functionality. Increased consumption of foods rich in zinc ensures that the organs are kept healthy and function efficiently.

Treats Cold

The use of zinc supplements helps reduce the severity of colds and other mild illnesses. The mineral regulates the number of cytokines, which are inflammatory viruses that occur due to cold. The mineral stimulates white blood cell activity, making it easier for the body to deal with such mild infections. The mineral also helps in protecting the body from fungal infections such as conjunctivitis and pneumonia.

Weight Loss

Zinc plays an important role in weight reduction for obese individuals. Various studies have attributed the mineral to decreasing an individual's appetite. The mineral does this by manipulating the ghrelin hormone that is associated with affecting a person's eating ability. An individual who seeks to reduce weight is encouraged to consume foods that are rich in zinc to aid in the process of weight reduction.

Boosts Reproductive Health

Zinc also contributes heavily to the development of DNA cells. Health professionals encourage pregnant and lactating mothers to consume zinc foods for the proper growth of the child. The mineral contributes to the rapid growth of cells within the infant and a developing fetus. On the other hand, aids in the healthy development of sperm in males. The mineral is instrumental in assisting in spermatogenesis. Sperm stores energy and the reproductive DNA in the sperm is well protected by the mineral. The stored energy makes sure that the sperm can swim at a very high speed to the ovary once it enters the female reproductive system. Zinc also ensures that the sperm can release enzymes that break down the ovarian layer for easier penetration of sperm.

Stimulates Protein Synthesis

Zinc plays a significant role in the body's synthesis of protein. Zinc acts as an antioxidant and is involved in some of the biochemically decisive reactions in the body, including enzymatic function,

protein synthesis, and carbohydrate metabolism.

Prevents Cancer

Zinc is instrumental in maintaining the prostate gland and prevents the damage or strain that can lead to problems like cancer. The MINERALS antioxidants mean that it actively seek out free radicals, the hazardous by-products of cell metabolism that can cause some diseases. Free radicals can morph into healthy ones.

Relieves Chronic Fatigue

Health professionals recommend that People suffering from chronic fatigue should consume foods that are rich in zinc minerals. Fish oil is the most recommended cure for curing chronic fatigue. The mineral helps in proper muscle development, and thus, its intake ensures that muscles within the body are always revitalized regardless of the activity in which an individual takes part.

Treats Alopecia

Alopecia is a condition that causes the loss of hair in both children and adults. Doctors often tell people who suffer from this condition to boost their intake of zinc in their diet. Since it is beneficial for healthy hair, the disease occurs minimally. Zinc supplements are mainly recommended to patients to reduce the risk posed by the disease. The pills can be found across most health stores and groceries. Children are more likely to be affected by the condition, and thus, parents are encouraged to feed their children foods rich in minerals.

Controls Bone Loss

Bone nutrient deficiency occurs due to fragile and weak bones. Zinc contains the mineral hydroxyapatite, which aids in the strengthening of bones in the body. It is, therefore, instrumental that Zinc gets supplemented in the diet of any individual, both young and old (García, 2014)

Treats Night Blindness

Zinc has been found to reduce night blindness. It works in conjunction with vitamin A. People are required to consume about 300 milligrams of zinc in their diet to maintain good vision. The consumption of foods such as beef, lamb, oysters, buckwheat, and crabs, as they are hoarded with this mineral, will improve your ability to see. It is particularly helpful for those suffering from night blindness. Vitamin A stimulates the production of specific enzymes that need Zinc, therefore making it a necessary element in reducing night blindness.

Zinc for treating Diarrhoea

According to the World Health Organization, diarrhoea kills an astonishing 1.6 million children under five every year. The consumption of zinc pills helps to reduce diarrhoea. Various studies have proven that Zinc aids in the reduction of diarrhoea.

Treating of Psychiatric Conditions

Zinc has been found to be instrumental in the treatment of mental conditions. Zinc is a supplement that suppresses the production and transmission of glutamate when used with fluoxetine. Doctors use the mineral in children with attention deficit disorder. The mineral also helps to reduce occurrences such as hallucinations, aggression, and delusions in mentally unstable people. Zinc's antidepressant properties make it elemental in the treatment of mental conditions.

Prevention of autism

Autism is a condition that affects individuals, and zinc has been used to reduce its impact on individuals. The mineral suppresses the symptoms of the disease and makes it easier for patients to function normally. Zinc can reverse brain cell changes in people who have autism.

Zinc helps in reducing stress and improving the mood of an individual

Zinc has been found to reduce stress in individuals. Consumption of the mineral refreshes brain cells and thus affects the behaviour of an individual. The mineral increases brain-derived neurotrophic factor, which is common in individuals who do not suffer from depression

Zinc promotes body growth

Among the essential benefits of the consumption of Zinc is body growth. Zinc contributes heavily to the development of most body organs in children. Mothers are told to make sure that the foods they feed or consume have zinc so that the child can grow and become healthy. Children who eat zinc-endowed foods have been found to grow in height and weight in comparison to those who do not consume the mineral. As one grows older, the consumption of zinc supplements ensures that the body remains strong and functions properly (Maywald, 2015).

Protection of body organs such as the liver and kidneys

The liver and kidneys are well protected by enzymes released through the consumption of Zinc. Consumption of the mineral ensures that related complications within the body are reduced significantly. Zinc encourages the production of hormones by the organs that contribute to the

development of reproductive organs.

Effects Of Excessive Consumption Of Zinc

Each person is required to consume a certain amount of zinc. Excessive consumption of the mineral can sometimes be harmful to the body. First, the mineral causes nausea if consumed more than required. The continued use of zinc supplements affects the impact of other medicines, such as antidepressants. Also, Zinc also hinders the healing process of the body in the long term. The mineral affects the strength of white blood cells (Fuentes-Gandara, 2018)

In conclusion, Zinc is an essential mineral in our bodies. People should try to incorporate foods rich in minerals into their daily diet for healthy living.

References

- Abdali, D., Samson, S. E., & Grover, A. K. (2015). How effective are antioxidant supplements in obesity and diabetes?. *Medical Principles and Practice*, 24(3), 201-215.
- Fuentes-Gandara, F., Pinedo-Hernández, J., Marrugo-Negrete, J., & Díez, S. (2018). Human health impacts of exposure to metals through extreme consumption of fish from the Colombian Caribbean Sea. *Environmental geochemistry and health*, 40(1), 229-242.
- García Manzanares, Á., & Lucendo, A. J. (2014). Bone Metabolism and Osteoporosis in Adult Celiac Disease. *OmniaScience Monographs*.
- Holmes, A. M., Song, Z., Moghimi, H. R., & Roberts, M. S. (2016). Relative penetration of zinc oxide and zinc ions into human skin after application of different zinc oxide formulations. *ACS nano*, 10(2), 1810-1819.
- Kambe, T., Hashimoto, A., & Fujimoto, S. (2014). Current understanding of ZIP and ZnT zinc transporters in human health and diseases. *Cellular and molecular life sciences*, 71(17), 3281-3295.
- Maywald, M., & Rink, L. (2015). Zinc homeostasis and immunosenescence. *Journal of Trace Elements in Medicine and Biology*, 29, 24-30.