Acta Scientific Nutritional Health

Volume 1 Issue 3 July 2017

Editorial

Trace Elements and Nutrition

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Received: May 23, 2017; **Published:** July 23, 2017

Nutrition and food science have enhanced the development of an abundant, nutritious, safe food supply. A healthy diet should contain all of the required nutrients and sufficient calories to balance energy expenditure and provide for growth and maintenance throughout the life cycle. Importantly, dietary factors are associated with the leading causes of death, including coronary heart disease, certain types of cancer, stroke, non-insulin dependent diabetes mellitus and atherosclerosis.

Trace elements required for the body in very small amounts. Trace elements such as iron, iodine, fluoride, copper, zinc, chromium, selenium, manganese and molybdenum are vital for maintaining health. In the body, these are part of enzymes, hormones and cells in the body. Insufficient intake of trace minerals can cause symptoms of nutritional deficiency. However, needs for these are easily met by eating a variety of foods from the different foods.

Iron is a component of haemoglobin in blood, one of the most important functions of iron is to transport oxygen from the lungs to different parts of the body. In myoglobin, iron enables storage of oxygen in muscle cells. It is also part of many enzymes and is essential for growth, healing, immune function and synthesis of DNA. Foods such as beef, poultry, fish, soybean flour, spinach, beans and fortified cereals in the diet are required for adequate intakes of this essential nutrient.

Iodine is indispensable element for thyroid hormones T3 or triiodothyronine, and T4 or thyroxine. Inadequate production of thyroid hormones can cause enlargement of the thyroid gland, also known as goiter, while its deficiency during pregnancy can cause irreversible brain damage in new born. However, sufficient amounts of iodine can be maintained by consuming iodized salt, seafood, eggs and milk.

Fluoride is a well-recognized for its role in forming bones and teeth. It is present in the body fluoride as calcium fluoride. Fluoride hardens tooth enamel, reduces incidence of tooth decay and may prevent bone loss. Main source of fluoride is fluoridated water, fluorine is also present in saltwater fish, tea and coffee.

Copper is a component of many enzymes and prevents damage to cells due to its antioxidant action. It also helps in production of energy from carbohydrates, protein and fat and for formation of bone, connective tissues and red blood cells. It is present in many foods such as organ meats, shellfish, chocolate, beans and whole-grain cereals.

Zinc is an essential trace element having role in formation of enzymes; improves immune function, helps in blood clotting, maintains sense of taste and smell, keeps skin healthy and enables normal growth and development. Sufficient amounts of zinc can be obtained by eating eggs, seafood, red meats, fortified cereals and whole grains.

Chromium is an important trace mineral that is necessary for normal functioning of insulin, a hormone that maintains blood sugar levels. It is also essential for metabolism of carbohydrates, proteins and fats. Some important sources of chromium include liver, processed meats, brewer's yeast, whole grains, cheese and nuts. Selenium, along with vitamin E works as an antioxidant that prevents damage of cells, may prevent some cancers. It is important for the normal functioning of the thyroid gland. Meat, seafood, nuts and cereals are good sources of selenium.

Manganese helps in the formation and activation of enzymes. It works as an antioxidant, helps in development of bones and heals wounds by increasing collagen production. Good sources of manganese include pineapple, nuts, whole grains and beans. Like manganese, molybdenum helps activate some enzymes and enables normal cell function. Dietary sources of molybdenum include milk, legumes, whole-grain breads and nuts.

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