

COPPER IN THE DIET TODAY

The evidence is increasing that the cause of numerous developmental defects may be due to less than optimal nutrition before pregnancy, during embryonic life, and in fetal development. Some nutritional deficiencies may not be caused by too little of a needed substance but from too much of a conflicting substance that is causing a secondary deficiency.

It is estimated that in the United States, 50% of human conceptions fail to implant and of those implanting, 30% fail to reach term. Also in the United States, 3% of infants born have at least one serious malformation and an average of 10 infants/1000 die before their first birthday. About one half of those deaths are attributed to identifiable birth defects, low birth weight, and prematurity.

With a better understanding of maternal and fetal nutritional demands, many of these congenital malformations and deaths can be prevented. Copper is one of those molecules that regulate gene expression by activating and regulating genetic transcription. Copper and the other trace minerals should not be overlooked in the importance of genetic expression.

The average diet is deficient in trace minerals, particularly zinc and copper. A research team examined 20 diets composed of conventional foods from hospital diets and actually measured the content of trace minerals in these diets. Even though the mean calories in the diet were 1,994 (about 15% below the RDA for adults), the mean amount of copper was 60% below the daily RDA and 35% below for zinc (2-3 mg daily intake of copper and 15 mg of zinc).

One fourth of the hospital diets had less than .5 mg of daily copper! In self-chosen diets, a daily mean intake of 1 mg of copper was measured. It is also estimated that the average intake of copper by women of childbearing age is lower than the current RDA for adults. Copper is lost through the normal digestive route daily, but it is also lost through sweat and exfoliation of the skin and hair. People living in warm climates may be more susceptible to a negative balance due to sweating.

Another reason for low copper intake is that foods that were once considered high in copper and provided good sources of trace minerals are now poor due to exhausted agriculture fields and artificial fertilization practices. Copper and most trace minerals are not replaced in the soil. Soils have about a 10-year store of minerals to support intensive farming before the land becomes so exhausted that it cannot produce healthy plants for human and animal consumption. With the present fertilization technique of replacing nitrogen, potassium, and phosphorous into the soil to make the crops grow large, copper and other trace minerals become quickly exhausted.

In 1977, USDA published the copper content of fresh peas versus canned peas. In copper alone, there was a 93% reduction. In domesticated beef, compared to wild game (deer, salmon, elk, and bison), there was over a 60% reduction in copper per 100 grams of meat.

Water softening, conditioning, distilling, and filtration, processes have all added to the reduction of copper from ground water stores. Antacids, high iron intake, black tea, non-steroidal anti-inflammatory drugs and penicillamine also reduce copper absorption by the body. Corticosteroid intake can also cause copper deficiencies.