Metal’s Role in Health

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Metals such as zinc, magnesium, and selenium have important roles in human health. For example, it is predicted that approximately 10% of all human proteins bind zinc. Selenium is also required for normal health. Deficiencies of this element point to viral infections, cancer, and aging. In the cell, selenium is predominately used to make selenocysteine, which is used to create selenoproteins.
Having selenium inside the proteins confer special chemical properties that increase catalytic reactivity.
For example selenoproteins are essential for thyroid hormone and detoxification enzymes. To ensure normal physiological function, sufficient amounts of selenium must be included in any diet. Decreasing levels of selenium and production of selenoproteins increases the risk of inflammatory diseases. Recent trials have been conducted to understand the potential applications of selenium to improve human health. However, the use of selenium must be studies more thoroughly to confirm the health role it is hypothesized to have.

Selenocysteine
Selenoprotein N (SEP N 1) was the first selenoprotein to be found directly involved in inheritable disease. SEPN1 mutations cause a class of inheritable muscular disorders by disrupting certain chemical reactions within the skeletal muscle. This gene is responsible for two major types of muscular disorders: rigid spine muscular dystrophy (RSMD) and multiminicore Disease (MmD).

A recent paper studied the role of SEPN1 to regulate muscle homeostasis. Mice without the SEPN1 gene had defects in muscle shape and contractility. Moreover, these mice were incapable of doing normal physical exercise. This mutation not only affected skeletal muscle, but also caused increased spine curvature along with alteration s of vertebrae muscle.

Other experiments have found that SEPN1 is modified by glycans and is mostly found in the endoplasmic reticulum where proteins are made. The SEPN1
protein is found in high levels in human fetal tissue, but has relatively low levels in adult tissue especially in skeletal muscle.

2. SPEN1 still has an unknown cellular role.