

# MULTIMIN SELENO ZINC PLUS

## ZINC

Zinc is an essential trace mineral that strengthens the body's natural immunity and therefore makes it an essential supplement for today's busy lifestyle. Dr. D. Bryce-Smith, in an excellent article in "Chemistry in Britain", 1989, entitled: "Zinc Deficiency the Neglected Factor", states the following: "Evidence is now emerging that deficiency of the essential micronutrient zinc is endemic in the UK and many other countries, and is the key factor in a surprising number of disorders of physical and mental health."

Zinc has a wide range of functions. It is essential for cell formation, bone development, metabolism, digestion and detoxification, and normal repair of tissue. Zinc also plays a crucial role in growth and cell division, where it is required for DNA and RNA synthesis (and therefore protein synthesis), in insulin activity, in liver function and in the immune system. Zinc is also involved in the body's enzymatic reactions and in the synthesis or metabolism of proteins, carbohydrates, lipids and nucleic acids. It is a mineral which is present in most body tissues, in particular the thyroid, pancreas and reproductive organs – it actually plays an important part in fertility, growth and reproduction. Zinc also promotes the healing of skin wounds – something that was recognised centuries ago by the ancient Egyptians who reportedly used it in a salve on burns. It has been found that taking zinc improves the body's natural defenses. In fact, there is a growing body of evidence that zinc is vital for overall health, since it has been suggested to contribute to the alleviation of colds and has been found to stimulate the body's natural recovery process. Zinc deficiencies cannot only cause loss of taste and appetite, but can also result in hair loss and discoloration, skin problems and fatigue.

### ZINC AND GROWTH

Zinc is required for growth in general. A deficiency of zinc slows down the replication of cells and impairs metabolic processes involved in growth, maturation and repair of normal tissue.

### ZINC AND THE BRAIN

Zinc is essential for the maturation and function of the nervous system, including the brain. Zinc has also been associated with disorders of the mind, mood, learning ability and behaviour.

### ZINC AND IMMUNOCOMPETENCE

Zinc is an essential component of an efficient immune system. Stress increases the excretion of zinc and further aggravates the problem of suppressed immune response. Because immunity in the child is developed during late gestation and early lactation, many researchers have concluded that lack of adequate dietary zinc during these critical periods can lead to marked long-term immunodeficiency.

### ZINC NUTRITION

Recommended Dietary Allowance for Zinc (RDA): (as recommended by the US Academy of Sciences, 1980)

Children under 6 months	3 mg
Children 6 months – 12 months	5 mg
Children 1 – 12 years	10 mg
Males and Females over 12 years	15 mg
Pregnant Women	20 mg
Lactating Mothers	25 mg

In the UK, the average daily intake of zinc varies between 9 – 10 mg with less for vegetarians. This is only about 66% of normal RDA and only 40% of RDA for lactating mothers.

### WHERE DOES ZINC COME FROM IN THE DIET?

Zinc is present in most foods, but meat and fish provide the best sources, as bio-availability of zinc from animal products is far greater than from plant foods. Plant foods, which have a high content of phytic acid and fibre, reduce the absorption of zinc. Therefore zinc is generally poorly absorbed from vegetarian diets. Also, the increased intake of healthy foods (for the heart) such as vegetables and salads has significantly decreased the zinc status of many people because of a lower zinc intake (less meat and fish intake) and poorer zinc absorption from the digestive tract. This often results in sub-optimal to deficient zinc status in humans.

### SUPPLEMENTING ZINC

Zinc can be supplemented as zinc salts, but absorption in this form is poor and subject to interference from other minerals and diet components. Supplementing zinc in chelated forms assures improved absorption and improved status.

### WHAT IS CHELATION?

Chelation is a process of bonding a mineral to an amino acid. The resulting organic compound is more readily absorbed, transported and metabolised by the body.

## MANGANESE

### WHAT IS MANGANESE AND HOW DOES IT AFFECT PEOPLE?

Manganese is an essential trace mineral with a host of functions in the human body. Manganese is a component of several enzymes. Manganese is associated with the formation of connective and body tissues, bone/cartilage replacement, growth and reproduction, lipid and carbohydrate metabolism. Manganese is an essential component of an effective immune system. Manganese is mainly found in the skeleton, liver, kidneys, pancreas and heart.

### MANGANESE AND FREE RADICALS

Without adequate levels of manganese, superoxide dismutase found in mitochondria (the power generating units) of body cells that protect the fragile mitochondrial membrane from the attack of free radicals, would simply be inactive and accumulation of free radicals would lead to severe membrane damage.

## MANGANESE NUTRITION

Although manganese is considered an essential trace mineral, no official daily recommendation of manganese for humans has been established. However, 4 – 5 mg of manganese is generally accepted to be an average daily requirement, as a healthy human body uses approximately 4 mg manganese each day. Although the average Western diet provides between 1 – 8 mg manganese daily, it must be understood that only 3 – 5% of dietary manganese is absorbed and daily intakes should be sufficient to allow for the losses. Although whole grains, legumes, nuts and tea are considered high in manganese, they will only contain the amount of manganese that is available from the soil they have grown in.

### SUPPLEMENTING MANGANESE

The most efficient way to supplement manganese to the human diet is to have a daily intake of 1 – 2 ml MULTIMIN Seleno Zinc Plus (5 – 10 mg manganese) in 50 ml water with a meal.

## COPPER

### COPPER AND HUMAN HEALTH

Copper is one of a relatively small group of metallic elements fundamental to human health. Copper, along with amino and fatty acids and vitamins, is required for normal metabolic processes. A wide range of vital human enzyme functions depend upon copper as an essential trace mineral. Since the body cannot synthesise copper, the human diet must supplement regular amounts of copper.

### DO WE CONSUME ADEQUATE COPPER?

Numerous research studies have shown that some people consume copper intakes well below recommended allowances, with inadequate intakes of less than 1 milligram daily. Recent surveys show that only 25% of the United States population consumes an adequate amount of copper a day as estimated by the US Food and Nutrition Board of the National Academy of Sciences. It has been found that typical diets in industrialised countries have less than 40% of the recommended dietary allowance. In the UK, it is now recommended that daily intake of copper should range from 0,4 mg/day for 1 – 3 year old children to 1.2 mg/day for adults. Recent studies suggest that diets containing less than 1 mg copper/day for adults may give reason for concern.

### HOW DOES COPPER WORK?

Copper is a major component of haemoglobin, the protein responsible for oxygen transport in blood cells. It combines with certain proteins to produce enzymes that act as catalysts in a number of body functions. Some copper enzymes provide energy required by biochemical reactions. Others are involved in the transformation of melanin for pigmentation of the skin and still others help to form cross-links in collagen and elastin and thereby maintain and repair connective tissues. Elastin is a protein required to keep skin, blood vessels and lungs supple and elastic. This is especially important for the heart and arteries. Copper is also involved in the production of chemicals called prostaglandins, which regulate

blood pressure, pulse and healing. In fact, some research suggests that copper deficiency is one factor leading to an increased risk of developing coronary heart disease. Copper is required by the central nervous system as a component in the production of noradrenaline, which is the neurotransmitter that keeps us alert. Research is currently being intensified regarding the overall role that copper plays in human health.

### **COPPER FOR HEALTH**

Our daily diet must provide specific amounts of copper for a number of reasons in order to maintain human health. Unfortunately, this is not always the case. Changes in eating habits and the introduction of limited medically controlled diets may result in inadequate intakes of copper.

### **COPPER AND SKELETAL BONES**

Copper plays an essential role in maintaining bone health. Almost two centuries ago Rademacher, the German physician, empirically established that broken bones healed faster when patients were given copper supplements. Since then, compelling evidence has established a vital role for copper in the biosynthesis of bone and connective tissues and their maintenance. Prolonged cortisone treatment, well known for promoting the development and accelerating the progression of osteoporosis has been shown to increase the body's excretion of copper and lower copper status.

### **COPPER AND CHOLESTEROL**

Research in numerous animal models, including humans, has shown that copper deficiency can significantly increase the plasma cholesterol concentration.

### **COPPER NUTRITION**

The copper content of foods is dependent on the copper content of the soil. Rich sources of copper are organ meats, shellfish, whole-grain cereals, legumes and nuts.

### **COPPER SUPPLEMENTATION**

The fact that only some of us obtain the recommended 2 – 3 mg daily requirement of copper in our normal diet, makes copper an essential supplemental trace mineral for humans. Consumers of large amounts of Vitamin C and zinc would be well advised to supplement with 3 mg of copper daily under a physician's supervision. A daily intake of 1 – 2 ml of MULTIMIN Seleno Zinc Plus provides 2.5 – 5 mg copper.

### **COPPER AND IMMUNE FUNCTION**

Adequate copper status is essential for normal functioning of the immune system. It has been found that immune impairment could be detected as soon as one week after the initiation of a diet low or marginal in copper, and the addition of adequate copper reversed the immune suppression within one week of supplementation. The US National Research Council recommends 1.5 – 3 mg of copper per day for adults to avoid copper deficiency. There is some evidence that people taking zinc supplements should increase copper intake.

## **SELENIUM**

### **WHAT IS SELENIUM?**

Selenium (Se) is an essential trace mineral found in 30 distinctive selenoproteins, virtually all containing selenocystein, and each with its own distribution, physiological function and selenium content.

Selenium is the most important trace mineral for natural immunity in the prevention of viral diseases via the enzyme glutathione peroxidase in animals and humans.

### **HOW DOES A SELENIUM DEFICIENCY AFFECT PEOPLE?**

Selenium is well-known as one of the two (with zinc) most important trace elements in the immunocompetence system of animals and humans. The following are some of the most important aspects that will be affected when the human body is in a sub-optimal selenium status:

#### **Selenium an Anti-Oxidant**

Selenium acts as an anti-oxidant, thereby protecting the body's cells against free radical damage and keeping them healthy.

#### **Selenium and Vitamin E**

The effect of Vitamin E is greatly reduced with a sub-optimal selenium status because of the highly significant synergism between Vitamin E and selenium.

#### **Selenium Deficiency in Europe & Africa**

According to Rayman (1999) the entire European population is considered selenium deficient (40% – 85% of optimal levels). Rayman states that Southern Africa is also severely selenium deficient.

#### **Selenium and Old Age**

Loss of function in 65 year olds was two-fold faster in individuals with a sub-optimal selenium status.

#### **Selenium and Immunocompetence**

Selenium has been shown to be an absolute essential element for efficient immunity.

### **SELENIUM NUTRITION AND SUPPLEMENTATION**

Meats and seafood are rich in selenium. Cereals contribute varying amounts, depending upon the soil concentration. The RDA for men is 70 µg and for women, 55 µg per day. 1 – 2 ml of MULTIMIN Seleno Zinc Plus provides 150 – 300 µg selenium.

## **CHROMIUM**

### **DEFINITION AND FUNCTION**

Chromium is an essential trace mineral in animals and humans. Without chromium in our bodies, the hormone insulin would not work, and insulin is the master hormone of our metabolism. It not only controls blood sugar levels and many other aspects of carbohydrate breakdown and storage, but also directs much of our metabolism. Because insulin requires chromium to function properly, this trace element has significant biological effects in the body. Chromium is also an activator of several enzymes.

## **CHROMIUM AND BODY COMPOSITION**

The effect of chromium on relative amounts of lean body mass compared to the amount of body fat is of increasing interest. In four separate studies, lambs, rats and chickens were supplemented with chromium picolinate. There were increases in muscle mass and decreases in fat body mass in each of the species. Human studies have shown a reduction in fat and increase in muscle. In an October 1996 study, 154 individuals in three groups were supplemented with either 200 µg of chromium as the picolinate compound, 400 µg of chromium as the picolinate compound or a placebo. After 72 days of the study, researchers found there was a statistically significant difference in body composition between the chromium groups and the control group. This data suggests that supplementation with chromium picolinate can lead to significant improvements in body composition when a BCI (body composition index) is used as the outcome criterion that represents a sum of the net gains in non-fat mass added to the sum of the net losses of body fat.

### **CHROMIUM NUTRITION**

Yeast, beer, liver, whole-grain cereals and bread, meat and cheese are good sources of chromium.

### **SUPPLEMENTING CHROMIUM**

Take 1 – 2 ml MULTIMIN Seleno Zinc Plus (provides 100 – 200 µg chromium) in 50 ml water with a meal to ensure optimum absorption.

### **SUPPLEMENTATION WITH ESSENTIAL TRACE ELEMENTS**

Supplementation of the human diet with essential trace elements has become an absolute necessity for optimum performance and reproduction. The human diet has changed significantly over the past century, decreasing the natural intake of substantial trace element sources. One of the most important sources of trace minerals in the human diet, namely animal liver, has been condemned by the medical world because of its high content of fats and cholesterol. Man's water sources have also changed from "mineralised" fountain or borehole water to "clean" rainwater, stored in huge dams. Current farming methods, particularly the excessive use of agrochemicals, are also known to cause severe trace element deficiencies, both in the soil and in the crop it yields. The use of alcohol is also well-known to destroy large quantities of vitamins and trace minerals, thereby increasing requirements of supplementary vitamin and trace minerals for optimal functioning of the human body.

### **ENQUIRIES**

#### **MULTIMIN PHARMACEUTICALS (PTY) LTD**

P O Box 2279, Clareinch, 7740

Tel: +27 21 685 3833

Fax: +27 21 685 1508

Email: gdmitch@iafrica.com