**Copper Elimination Insights**

**Introduction**

Years of experience in dealing with copper toxic individuals reveal that such individuals experience certain difficulties while on a nutritional correction program. One common complaint is that they are unable to take their nutritional program three times a day. Some copper-toxic individuals find it difficult to take their supplements even once a day.

**Copper Elimination Reactions**

During the correction of a copper imbalance, copper elimination frequently causes transitory symptoms. These symptoms may include, headaches, usually of the migraine type, skin rashes, free-floating mental depression, anxiety, insomnia, fatigue, digestive disorders, abdominal bloating and a flare-up of a wide variety of chronic conditions related to a copper imbalance; such as hypoglycemia, candida albicans, etc.

These reactions generally last a day or two and then usually subside. In some cases, what appears to be adverse reactions may last for a month or more. In his book A Nutritionist's Guide to the Clinical use of Vitamin B-1, Dr. Derrick Lonsdale claims, and rightfully so, that:

"One of the most alarming factors that will have to be considered when nutritional therapy begins, is the effect of what we have termed paradox. The patient's symptoms, particularly if they have been long standing, are apt to become considerably worse for an unpredictable period, varying from a few days to a few months. Biochemical changes may appear to reflect this."

**Dr. Lonsdale goes on to say:**

"Put simply, the patient's symptoms may become very much worse initially, before they begin to improve. The period of paradox can last for a variable time of days to months, and appears to be related to chronicity and severity. It is distressing to the patient or his relatives, may cause him to abandon therapy, and must be explained to him in some detail before treatment is instituted. On the other hand, we have learned that it is often a favorable sign that later success will be achieved and the family be reassured that it is worth pursuing. It can give rise to real problems of management as for example, when the patient reaches a stage where he refuses to take the vitamins or minerals prescribed, this is observed quite frequently in psychiatric problems...They are dynamic changes and invariably relative to each other and to the stage of disease or therapy."1

The supplement program may be temporarily reduced if symptoms become particularly annoying. These symptoms, related to the beneficial elimination of copper, are indications of a healing process and although uncomfortable, should be welcomed!

**Feeling of Hopelessness**

Another common occurrence which may be distressing is that the individual usually feels better for varying lengths of time when initially starting the program, followed by a return of previous distressing symptoms. Unfortunately, the individual often begins to lose hope of recovering from her or his afflictions. It is to be noted that copper toxicity is over a hundred times more prevalent in women than men. When this occurs, the individual will usually go-off their nutritional program for a varying period of time. Upon return to the program, they may again feel better for a few days only to re-experience their previous distressing symptoms.

**What Is A Copper Elimination?**

A copper elimination represents the elimination of excess copper from storage organs into the blood. Copper is stored in various tissues such as the liver, brain and bone to prevent it from building-up in excessive amounts in the blood.

**Treating a Copper Elimination**

As stated above, it is not at all uncommon for individuals suffering from copper toxicity to experience occasional unpleasant symptoms while on a nutritional correction program. While these problems appear to be related to the nutritional program, more often they are, they are stress-induced.

**Stress**

Stress and Increased Metabolic Rate

Any kind of stress, physical or emotional in nature, results in a necessary increase in the metabolic rate. Any increase in the metabolic rate, whatever its cause frequently results in the release of excess copper into the blood. It is to be noted that the major internal cause of a copper toxicity problem is a reduced ability to cope with stress. It is the intent of your nutritional program to increase your ability to cope with stress, hence avoiding any future excessive buildup of copper. Many of the distressing symptoms associated with copper toxicity are due to a stress-induced zinc deficiency.

**Severe Loss of Zinc due to Acute Stress**

"Dietary zinc requirement in the human adult is approximately 15 mg per day. In healthy individuals, most of it is excreted in feces, urine and sweat. However, during acute disease states, zinc losses can increase up to 4-fold and as much as 50-fold during total parenteral nutrition."2

**Stress as a Cause of Copper Elimination**

Whenever there is an increase in one's rate of metabolism (usually due to stress, whether physical or emotional), copper is mobilized from primary storage sites in the liver and brain and is discharged into the blood. The principal way that excess copper can be eliminated from storage sites is to increase one's rate of metabolism. People with high tissue copper levels, because of an adrenal insufficiency problem, are very susceptible to stress and consequentially suffer from periodical elimination of copper. Enabling such individuals to better cope with stress helps to prevent a buildup of excess copper in the tissues. In other words, sensitivity to stress is greatly reduced. Major copper eliminations are thus largely eliminated.

**Symptoms Commonly Associated with a Copper Toxicity Problem**

|  |  |  |
| --- | --- | --- |
|   | Abdominal bloating | Insomnia |
|   | Alopecia (hair loss) | Loss of appetite |
|   | Anxiety attacks | Loss of smell |
|   | Constipation | Loss of taste |
|   | Digestive distress | Mental depression |
|   | Hypoglycemia | Panic attacks |

**Clinical Disorders Commonly Associated with a Copper Toxicity**

|  |  |  |
| --- | --- | --- |
|   | Acne | Hypoglycemia |
|   | Adrenal insufficiency | Infections |
|   | Amenorrhea | Migraine headaches |
|   | Anemia | PMS |
|   | Anorexia | Prostate, enlarged |
|   | Arteriosclerosis | Psoriasis |
|   | Candida | Retinal detachment |
|   | Diabetes | Rheumatoid arthritis |
|   | High cholesterol | Schizophrenia |

**Why a Copper Elimination: An Adaptive Function**

The elimination of excess copper from tissue storage represents an attempt by the body to protect itself from the serious effects which results from a copper toxicity problem.

A buildup of copper in storage organs eventually results in malfunctions of the organs involved.

For Example:
Brain - Schizophrenia
Liver - Cirrhosis, hepatitis
Blood - Hemolytic jaundice

**Adrenal Gland Exhaustion:
A Major Cause of Copper Toxicity**

Diminished adrenal activity is perhaps the single most important physiological reason for copper toxicity problems today. When adrenal activity is insufficient, ceruloplasmin (a copper-binding protein) synthesis in the liver declines. Copper that is not bound to a protein cannot be utilized, and so it is that unbound copper begins to accumulate in various tissues and organs.

According to hair analysis research conducted by Dr. Paul C. Eck, 70-80% of people tested reveal weak adrenal glands or what is termed adrenal insufficiency! Individuals with weak adrenal glands tend to store excess copper in various body tissues, principally the liver and brain. Excessive storage of copper, as we have stated previously, eventually results in organ damage.

**Correction Of A Copper Elimination**

How Can an Acute Copper Elimination be Effectively Cut-off?

If appropriate action is taken, the distressing symptoms associated with a copper elimination can be frequently diminished.

**The Importance of Zinc & Vitamin B6**

Discomforting symptoms frequently occur when the individual is eliminating copper faster than their nutrient reservoirs of vitamin B6 and zinc can contain it. Many of the symptoms associated with copper toxicity relate to a copper induced vitamin B6, zinc and vitamin C deficiency. Both vitamin B6, and vitamin C are destroyed on contact with copper.3 Along with destroying vitamin B6 and vitamin C on contact, copper, in excess, causes a relative zinc deficiency. When zinc, vitamin B6 and vitamin C reserves become adequate, the distressing symptoms of copper toxicity are largely eliminated, hence the necessity to buildup the copper-toxic individual's storage reservoirs of the above vitamins and minerals. Until the individual's storage reservoirs of B6, vitamin C and zinc are sufficiently replete, symptoms will continue to be manifest.

**Slowing Down a Copper Elimination**

Numerous methods are available for slowing down the elimination of copper. Several means of slowing-down the elimination of copper would be to reduce the supplemental dosage to once a day, take or follow the recommended program every other day, add three calcium tablets three times a day and/or temporarily increase the individual's dietary intake of dairy products. The individual must be made aware that this is only a temporary stop gap measure, because if one remained on dairy products on a continuous basis their metabolic rate would decrease resulting in an increased storage of copper. Dairy products are often effective in reducing the symptoms of a copper elimination because they temporarily reduce the individuals temporary stress-induced excessive metabolic rate.

Inasmuch as an increase in one's metabolic rate will cause a flare-up in symptoms associated with a copper toxicity problem it becomes necessary to temporarily slow down one's rate of metabolism. This is accomplished by increasing one's calcium intake, increasing one's dairy product intake, together with an increase in dietary fat intake, such as, avocadoes, nuts, salad oils, cooking oils, dairy products, etc.) Slowing down one's rate of metabolism is definitely of value in reducing the symptoms associated with copper toxicity. When the distressing symptoms come under control, it is time to resume the original nutritional program.

**What to do When One is Undergoing a Copper Elimination**

**•   Reduce or temporarily go off program.**

If distressing symptoms occur, the individual should reduce the recommended nutritional program from three times a day to once a day, preferably taken at the evening meal. If this change does not suffice to alleviate the distressing symptoms of a copper elimination, it would be advisable to follow the supplemental program on an every other day, or every third day basis.

By reducing one's nutritional program the individual will be better able to tolerate the symptoms associated with a copper elimination. Eventually, as the copper-load is decreased, symptoms will also decrease.

**•   Temporarily increase your dietary fat intake by 25-30%**

Also helpful in alleviating the distressing symptoms is to increase one's dietary fat intake while the copper elimination is occurring. This can best be accomplished by increasing one's dairy food intake, e.g., milk, cottage cheese, cream, yogurt, etc. An increase in dietary fat is beneficial inasmuch as it results in a slow down of one's rate of metabolism which results in a beneficial diminished elimination of copper. An increase in the metabolic rate (whatever its cause) results in an increased elimination of copper. Another beneficial effect of dairy foods is their relatively high calcium content. Calcium tends to buffer the side-effects associated with a copper elimination. A person, in the process of eliminating copper should take three calcium tablets three times a day. Doing so will not stop the copper elimination from occurring, but will minimize some of the distressing side effects caused by a copper-induced calcium deficiency.

**Dietary Considerations**

**Need for Increase in Protein Intake**

One of the major problems associated with a copper toxicity problem is a copper-induced protein deficiency. This no doubt occurs, in part, because an excess of tissue copper causes a zinc deficiency. "Zinc has...been found to be important in governing the net rate of synthesis of nucleic acids and protein, thereby importantly influencing tissue growth and reparative processes..."4 Adding to the problem, individuals suffering from copper toxicity frequently develop a distaste for meat protein due to their reduced ability to digest and assimilate protein. Over a period of time, a serious protein deficiency develops. As stated previously, one major reason why copper accumulates in the body is a deficiency of protein required to bind copper, thus increasing one's metabolic rate. Although sometimes difficult, copper-toxic individuals should attempt to increase their protein intake (eggs, fish or chicken). Soy-protein products should be avoided, unless otherwise specified, if possible, inasmuch as soy products contain relatively high amounts of copper.

Copper-toxic individuals have a great need to increase their protein intake, but usually will not partake of an increased meat protein intake until their adrenal insufficiency problem is improved or corrected. Until such time, the copper-toxic individual must avail him or herself of digestive aids including hydrochloric acid and pancreatic enzymes.

An adequate level of zinc, so necessary to prevent an excessive copper buildup depends largely on the eating of red meat protein. As stated previously, individuals suffering from copper toxicity develop a strong aversion to the eating of zinc-rich red meat protein hence the tendency to the excessive accumulation of tissue copper.

**Eliminate Foods High in Copper Content**

Many diets today are high in copper and low in zinc content. In particular, vegetarian proteins such as soybean, nuts, seeds, tofu, avocado and grains, often highly beneficial for others, are high in copper content. Fast food hamburgers and other popular foods are also frequently soy-based. Soybean protein is coming into wider usage, due to its low cholesterol level and lower cost.

Other high-copper foods are organ meats, shellfish, wheat germ and bran, yeast, corn oil, margarine, and mushrooms. Except for margarine, these are excellent health foods in general, but should be temporarily avoided by copper-toxic individuals.

**Special Considerations Regarding Copper Detoxification**

**Diet for the Copper-Toxic Individual**

As stated previously, copper-toxic individuals frequently have an aversion to eating protein, particularly red meat protein. It is important for such individuals to eat some protein at least twice a day, even if the quantity is small. Meat protein is rich in zinc content, a mineral essential to prevent copper toxicity and to promote the elimination of excess copper. It is for this reason (high zinc content) that red meats are often avoided. Otherwise, progress is delayed. Strict vegetarian diets are not advisable, but may be necessary for a period of time in severe cases, until adrenal activity has been adequately reestablished.

**Excessive Intake of Sweets, Fruits and Fruit Juices**

The majority of copper-toxic individuals have an insatiable craving for sweets, fruit, and fruit juices. Such cravings arise from the fact that copper-toxic individuals, in general, suffer from a severe potassium deficiency. Fruit, fruit juices and vegetables are high in potassium content, and hence the craving for these foods. Such foods should be limited as much as possible for optimal results. In many cases, a high complex carbohydrate diet is necessary until adrenal activity is increased.

**Excess Sugar Intake as a Cause of Copper Toxicity and Zinc Deficiency**

The eating of sugar and sugar-containing foods contributes greatly to a copper toxicity problem by causing a zinc deficiency. This occurs because zinc is required for sugar and carbohydrate metabolism. The greater the sugar and carbohydrate intake, the greater the chances for a zinc deficiency to develop. Individuals suffering from copper toxicity problem usually limit their diets, to a great extent, to simple carbohydrates and carbohydrates which are rapidly absorbed (vegetable and fruit juices).

**•   A high sugar and carbohydrate diet lower tissue zinc levels. The consequences are many.**

It has been established that prolonged and repeated increases in the glucose content of the blood rid the islets of Langerhans in the pancreas almost completely of zinc. Zinc is necessary for both the production and secretion of insulin, which is necessary to burn sugars and carbohydrates.

"By means of prolonged and repeated increases in the glucose content of the blood, Maske succeeded in ridding the islets almost completely of zinc."

In other words, the eating of a sugar and a high carbohydrate diet, which is typical of the diet preferred by the copper-toxic individual, is conducive to causing a zinc deficiency. The end-result is an inability to derive sufficient energy from the metabolism of sugar and carbohydrates with a consequent buildup of copper in the tissues.

**One is forced to realize the importance of zinc in combating copper toxicity when one realizes that:**

**Zinc Regulates the Autonomic Device Which Retains or Liberates Insulin**

"Zinc is therefore the basic element of the autonomic device which retains or liberates insulin, thus regulating the sugar content of the blood. Naturally, this mechanism is thrown out of gear by any substance that upsets the metabolism of zinc, this reveals the fundamental role of one of the dusts of the soil in diabetes."5

**A Low Carbohydrate, High Fat and Protein Diet Favors Zinc Buildup in the Isles of Langerhans**

"...The zinc present in the islets of Langerhans is a function of animal feeding. When the ration was very rich in carbohydrates there was less zinc in the islets than when the animals had fasted or had received a feed rich in lipids and proteins."

**•   Vegetarian Diets are Lower in Zinc**

Since a main source of zinc in the diet is derived from meat protein, particularly red meat protein, vegetarian diets are relatively low in zinc content.

**•   Refining of Food Removes Zinc**

Processed foods should be avoided at all costs because the refining of foods, particularly cereals and grains, removes much of the zinc contained in these foods. What zinc remaining from the refining process is unavailable because the zinc is bound to phytin. Phytic acid forms an insoluble complex with zinc rendering it biounavailable.

**Hypoglycemia**

Functional hypoglycemia is frequently associated with elevated tissue copper levels. An excess of tissue copper reduces both manganese and zinc values, thereby interfering with normal glucose metabolism, by adversely affecting the endocrine glands. "The biochemical and physiological interrelationship of trace minerals and the endocrine glands is well documented. Deficiency of zinc, copper and manganese affects adversely the endocrine glands through either decreased dietary intake or increased secretion of the metal..."6

**Hypoglycemic-Induced Fear and Increased Adrenalin Secretion**

Many of the symptoms associated with hypoglycemia are associated with the body's attempt to increase a copper-excess-induced low blood sugar level. Anxiety and panic states are mainly due to an increased secretion of adrenalin, in an attempt by the body to correct the hypoglycemia. Zinc, in adequate amounts, reduces an excessive secretion of adrenalin, thus reducing anxiety and panic states. It is important to note that the mobilization and consequent elimination of copper results in temporary hypoglycemia which in turn results in an increased adrenalin secretion.

**Specific Distressing Symptoms Associated With A Copper Elimination**

Anxiety and Panic States Resulting from a Copper Elimination

Individual suffering from a copper elimination frequently experience feelings of anxiety and tension and for good reason.

As copper levels in the blood increases, the amount of anxiety tends to increase. Panic attacks, as well as anxiety attacks are also commonly due to a copper toxicity problem. Panic and anxiety attacks are frequently associated with an excessive buildup of lactic acid, caused by an excessive secretion of the stress hormone adrenalin. A copper toxicity problem is a common cause of increased adrenalin secretion. Adrenalin secretion is increased when blood sugar levels are low. Adrenalin is both a panic and anxiety hormone. A reduction in copper toxicity is effective in reducing the incidence and severity of both panic and anxiety attacks.

The major emotional cause of an increase in adrenalin secretion is adrenal insufficiency/hypoglycemia-induced fear. Copper, in excess, is instrumental in increasing adrenalin output just as copper is associated with increased estrogen hormone output. As copper eliminates into the blood, the amount of adrenalin increases resulting in excessive lactic acid accumulation (lactic acid dehydrogenase - a zinc-dependent enzyme). A reduction in copper toxicity results in a reduction of the anxiety attacks.

**The Value of Calcium in Preventing a Lactic Acid Buildup**

While zinc and vitamin B6 serve to release copper from the tissues, they do not fully address the lactic acid problem. Individuals suffering from copper toxicity commonly have excessively high calcium levels, as determined by a hair analysis. A high calcium level indicates a calcium bio-unavailability, which, in essence, is the same as a calcium deficiency.

A calcium deficiency results in increased adrenalin secretion which in turn results in excessive lactic acid buildup in the tissues. Calcium is necessary to mop-up excessive lactic acid. As a result of a calcium bio-unavailability, lactic acid levels continue to increase. Increasing one's calcium intake allows for calcium to combine with the lactic acid to form calcium-lactate resulting in a reduction or elimination of both anxiety and panic attacks. Because of a calcium bio-unavailability, copper-toxic individuals have little or no protection against a lactic acid buildup, resulting in the creation of more anxiety.

**Abdominal Bloating and Digestive Distress**

Abdominal bloating and digestive distress are common symptoms associated with copper toxicity. These symptoms are, of course, associated with impairment in the secretion of digestive enzymes and failure to secrete adequate levels of hydrochloric acid, principally due to an underlying adrenal insufficiency problem.

**Candida, Stress and Copper and Hypoglycemia**

Eventually, over a period of time, copper is eliminated from storage sites. Future eliminations of copper, due to stress, are thus minimized. As a result, symptoms of anxiety, migraine headaches, skin disorders, severe constipation, fears, candida infections etc., are greatly minimized.

As a result of a low blood sugar induced increased adrenalin secretion, (diminished immune response) a flare-up in candida may occur.

Often a copper elimination results in the flare-up of a candida infection and the many symptoms associated with candida.

The major reason candida continues to exist in an individual is because they are unable to reduce their excessive copper storage in the liver and in the brain. Whenever they undergo stress of any kind, copper builds up in the tissues resulting in a bio-unavailability of copper. It is the bio-unavailability of copper which permits candida to thrive. In essence, sufficient copper cannot be mobilized out of liver storage because of stress and weak adrenal glands.

**•   Candida Albicans (Yeast) Infections**

Copper is a stimulant to oxidative or aerobic metabolism. Copper biounavailability, deficiency or imbalance, often results in a tendency for yeast infections.

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**Emotional Aspects Of Copper Toxicity**

Emotional Considerations Resulting in Increased Copper Storage

It is important to note that one's attitude plays an important role in preventing the buildup of excessive copper in body tissues. Copper toxic individuals have a strong tendency to be perfectionistic, and indecisive.

•   Perfectionism

Individuals suffering from copper toxicity are known to be perfectionistic. Being perfectionistic places a great amount of stress on already stressed-out adrenal glands. Any added stress results in an increase in copper toxicity.

**•   Inability to Solve a Problem (Indecision)**

Copper toxicity results in a decreased ability to make decisions or solve problems. The result is increased stress. Making a decision, even a wrong decision, is beneficial in reducing stress and its consequential copper buildup.

**Miscellaneous Causes Of Copper Toxicity**

Birth Control Pills and Copper Intrauterine Devices as a Source of Copper Toxicity

One of the side effects of the pill is that it tends to raise copper levels in the body. This is due to the close association between the hormone estrogen and copper levels.

Several hundred milligrams of copper a year can easily be absorbed from a copper IUD. Many women still use the Copper-7 intrauterine birth control device, although it has been taken off the market. The only intrauterine birth control device sold today, however, is a copper-T. These devices can be very harmful for women prone to high copper levels.

**Miscellaneous**

It is important to point out that not all individuals suffering from copper toxicity exhibit symptoms of copper toxicity when copper is being eliminated.

**Low Copper Levels does not Preclude a Copper Toxicity Problem**

A low copper level, (below 1.1) in the majority of cases, indicates a decreased ability to release excessive copper from storage depots.

**How Long Will it Take to Eliminate Excessive Copper From Tissue Storage?**

The time required to eliminate excessive copper depends on how much copper is currently being stored in the tissues and how long it has been stored. One's calcium level, as determined by a hair analysis, is an excellent indicator of the amount of copper being stored. As copper is being eliminated, calcium levels tend to temporarily rise. It is at this time that symptoms related to copper toxicity commonly flare-up. A drop in one's calcium level is indicative of a reduction in copper storage levels and is considered to be a favorable sign of progress.

**A Final Statement**

Copper Eliminations Associated with Increased Awareness

As stated previously, the elimination of copper is frequently associated with a myriad of distressing symptoms. One of the major reason for an increased awareness is that the elimination of excess copper often is accompanied by an increase in consciousness. Not only may a person become increasingly aware of physical aches and pains, but also previous and current emotional conflicts may rise to a higher level of consciousness.

These reactions occur because many copper-toxic individuals have been living in a lowered state of awareness. Copper is commonly referred to as the anesthesia mineral, because like endorphins (opiate-like substances), accumulation of copper serves to diminish one's awareness of both distress and pleasure. It is important to note that an increase in awareness is a necessary part of the healing process.7 Although there may be some temporary anxiety or pain associated with the elimination of excess copper, usually one feels much better after the elimination process has been completed.

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