**Why The Outbreak Of Candida Albicans**

**Introduction**

Recently numerous articles have appeared in both medical and nutritional journals concerning overgrowth of Candida Albicans as a cause of allergies, fatigue, digestive problems, emotional problems, and numerous other complaints. Candida was discovered over 100 years ago. Why is it becoming such a major problem today?

**Common Causes Of Candida Overgrowth**

Some of the numerous reasons for candidiasis overgrowth are well known. Antibiotic therapy, especially long-term, is associated with Candidiasis. Astonishing amounts of antibiotics fed to livestock assure that all of us are ingesting some antibiotic residues, unless we procure antibiotic-free meat.

There is also a known connection between candida overgrowth, use of the birth control pill and therapy with steroid hormones.

However, many questions remain unanswered.

* Why are some people more prone to Candida infection than others?.
* Why must Nystatin and anti-fungal regimes be continued for several years or longer?
* Why is there often a recurrence of candida overgrowth when the diet or medication is stopped?

**Hair Analysis Reveals Underlying Causes**

This article is a report on research conducted by Analytical Research Labs based upon tissue mineral analysis performed on several hundred candidiasis patients. A number of metabolic imbalances were revealed that yield insight into underlying metabolic factors responsible for candidiasis.

Note: All tissue mineral values referred to in this article were determined by inductively coupled plasma atomic emission spectrometry (ICP-AES) in unwashed hair samples.

**Metabolic Aspects Of Candida Albicans Infection**

A number of metabolic factors influence the body's ability to directly or indirectly control Candida Albicans overgrowth. While certain of these factors overlap, a separate presentation will lend more clarity to the multiplicity of factors involved.

* **Bio-unavailability of copper.** Copper has a fungicidal value in the body's tissues. Copper compounds are used commercially as sprays on vegetables, as algicides in swimming pools, etc.
* **Zinc deficiency**. Zinc is an essential mineral nutrient related to copper metabolism and is necessary for the synthesis of all body proteins.
* **Inadequate biochemical energy production.** Biochemical energy is required for all body functions, including immune system function, and all other body systems.
* **Excessive alkalinity of the digestive tract.** An alkaline environment of the intestinal tract favors yeast growth.
* **Excessive systemic alkalinity of body tissues.** May permit candida to thrive in other body tissues.
* **Impaired short-chain fatty Acid metabolism**. Short-chain fatty acids have fungicidal properties. Caprylic and butyric acid are frequently used as anti-candida agents. A healthy body synthesizes appropriate protective fatty acid compounds.
* **Immune System Incompetence**. Yeast infections are far more common in immune-suppressed patients.
* **Impaired Carbohydrate Metabolism**. Impaired carbohydrate metabolism (hypoglycemia, dysinsulinism and diabetes) is intimately associated with candidiasis overgrowth.
* **Stress.** Psychological stress impairs immune system function.
* **Other Nutrient Imbalances.** Tissue mineral testing can identify other metabolic imbalances. Through tissue mineral testing, these metabolic factors can be monitored and corrected, resulting in an individualized and more effective approach to candidiasis.

**Following are details of each of the factors that   
contribute to Candida overgrowth**

**Copper Bio-Unavailability A Major Cause of Candida Infection**

The most commonly observed mineral imbalance we find in many patients with Candida infection is termed bio-unavailable copper.

Bio-unavailable copper is indicated on a tissue mineral test by a copper level above 3.0 mg/% or below 1.0 mgs/%. Other mineral indicators of a candida overgrowth are an elevated calcium level, elevated calcium/magnesium ratio, (greater than 10/1) or a low sodium/potassium ratio (less than 2.3/1).

Bio-unavailability means there is an excess of copper stored in various tissues and organs. While in excess, it is not able to be accessed.

When copper is bio-unavailable, it cannot serve its normal function as a fungicide. Copper is involved in enzymes in cellular oxidative (aerobic) metabolism, and this appears to be the reason for its anti-fungal action.

The causes of copper bio-unavailability are several, however the principal one is adrenal gland insufficiency, exhaustion or burnout. Inadequate secretion of adrenal glucocorticoid hormones prevents adequate synthesis of the major copper-binding protein, ceruloplasmin.

Adrenal exhaustion results from stress, which results in a depletion of various nutrients such as manganese, zinc, vitamin C, pantothenic acid, vitamin E, vitamin A, etc., which are vital for optimal adrenal gland activity.

**Depletion of nutrients occurs due to:**

* antibiotics and other medications which deplete copper reserves,
* inadequate diet,
* increased demand for nutrients due to stress, air pollution, illness, toxic metals, etc.,
* poor absorption and/or utilization of nutrients due to food sensitivity, inadequate digestive function, etc.

**Zinc Deficiency**

Zinc metabolism is closely related to Candida because 1) the zinc/copper balance is critical, and 2) zinc is required for many essential enzyme systems, including production of digestive enzymes and synthesis of all body proteins.

A zinc imbalance is indicated on a tissue mineral chart by a zinc level less than 12.0 mgs/% or greater than 20.0 mgs/%, or a zinc/copper ratio greater than 12.0 mgs/%. A phosphorus level greater than 16 or less than 12 may also indicate a zinc imbalance.

**Deficiency of zinc is common for several reasons:**

* Use of superphosphate fertilizers and hybrid crops have contributed to widespread zinc deficiency in all foods.
* Processing and refining further depletes foods of their zinc content. For example, zinc loss occurs in the conversion of whole wheat to white flour, in the conversion of sugar cane to white sugar, and in spraying of frozen and canned vegetables with EDTA to retain color.
* Foods, relatively low in zinc, such as chicken and fish are being increasingly substituted for higher-zinc foods such as beef and red meats. Soy protein, commonly substituted for beef, is low in zinc.
* Stress of any type results in zinc depletion.
* Zinc deficiency is accentuated if copper exposure is high, because of a copper-zinc antagonism. Copper exposure is higher today for several reasons:
* Birth control pills raise tissue copper levels by raising estrogen levels.
* Copper is absorbed from the Copper-7 intrauterine device.
* Water remaining in copper pipes, and consumption of high-copper foods such as soy, avocado, and chocolate are sources of copper.
* Stress causes copper levels to increase, by causing a zinc deficiency.

**Impaired Biochemical Energy Production**

Hair analysis research indicates that the great majority, if not all, Candida patients have severely impaired production of biochemical energy.

**Such impaired energy production is indicated on the tissue mineral chart by:**

* a metabolic rate that is too rapid or too slow, and/or
* evidence of problems in the energy-production pathway. The energy pathway requires many nutrients such as copper, iron, manganese, potassium, magnesium, etc., in optimal amounts and ratios. Various imbalances in these nutrients are indicative of energy production problems. An excess of toxic metals, such as cadmium, usually signals serious problems in the energy pathways of the body.

Since biochemical energy (adenosine-tri-phosphate-ATP) is required for ALL cellular functions, including immunity, fatty acid metabolism, maintenance of pH, etc., restoration of the energy system is essential for permanent correction of candida infections.

**Excessive Alkalinity Of The Intestinal Tract**

Individuals with candida overgrowth frequently have impaired digestive enzyme production.

This is indicated on the tissue mineral test by low sodium and potassium levels relative to calcium and magnesium levels, or a sodium-to-potassium ratio less than 2.3/1. Sodium and potassium are required in optimal amounts for production of hydrochloric acid in the parietal cells of the stomach. HCL production is impaired when tissue levels of these minerals are low.

A low sodium/potassium ratio is associated with a liver dysfunction, often accompanied by an inadequate secretion of bile acids. Bile acids also aid in maintaining intestinal pH and keep yeast organisms in check.

Insufficient hydrochloric acid and bile acid levels result in an increase alkalinity of the intestines, which in turn favors yeast overgrowth. Adequate levels of hydrochloric acid also help maintain proper intestinal flora by maintaining intestinal pH.

**Excessive Systemic Alkalinity**

Excessive systemic alkalinity is present in many Candida Albicans patients. Increased systemic alkalinity favors the spreading of the yeast infection from the intestines to other body tissues.

These individuals exhibit a mineral pattern referred to as slow oxidation, and/or a sodium/potassium ratio less than 2.3:1, which is indicative of adrenal burnout.

A slow oxidation pattern reflects both an underactive thyroid and adrenal gland activity, which causes alkalinity due to decreased production of acid metabolic end-products. These individuals also usually have a high tissue calcium level and rapidly convert lactic acid to the alkaline compound calcium lactate.

A low sodium/potassium ratio also reflects a state of protein breakdown, and in this process potassium is released from cells, leading to an increased alkaline condition.

Correction of the sodium/potassium ratio is essential to eliminate yeast problems, because this is indicative of adrenal insufficiency, induced hyper-alkalinity, an impaired immune system, and deficient hydrochloric acid and bile acid secretion.

**Impaired Short-Chain Fatty Acid Metabolism**

The success of caprylic acid products in controlling intestinal yeast indicates another nutritional problem area for many individuals. Many people today suffer from poor fat digestion and utilization. This is related to a deficiency of digestive enzymes, but may also be adversely influenced by an inadequate diet, and inadequate fat metabolism. The underlying causes must go back to impaired liver function, low energy production, deficiency of essential minerals and disabling of critical enzymes due to toxic metals, etc.

**Immune system Incompetence**

Candida has been related to AIDS and other immune deficiency diseases. We frequently note that candida patients exhibit certain mineral patterns similar to immune incompetence. These patterns are a sodium/potassium ratio less than 2.3:1, copper level less than 1.0 mgs/% or greater than 10.0 mgs/%, or a calcium/magnesium ratio greater than 12:1 or less than 3.3:1 mgs/%.

Nutrition programs aimed at correcting the immune system will usually have very beneficial effects on Candida patients.

**Carbohydrate Intolerance**

While we are led to believe that the carbohydrate intolerance demonstrated by the Candida patient is due to the yeast acting upon sugars in the diet, it is also conceivable that the body's inability to properly metabolize sugars and starches contributes to yeast overgrowth.

* Poor absorption of carbohydrates can leave excessive quantities of carbohydrates in the intestines where they are targets for fermentative organisms.
* Insufficient insulin levels, or deficiencies of chromium, manganese, zinc or other elements involved in glucose metabolism can prevent conversion of sugars into ATP within body cells; thus allowing glucose to buildup in the cells where again it is a target for yeast organisms.

Problems in carbohydrate metabolism are indicated on a tissue mineral chart by abnormally high or low levels or manganese, zinc, potassium and chromium. A calcium/magnesium ratio above 8.5:1 mgs/% or below 4.5:1 mgs/% is also indicative of glucose tolerance problems.

**Psychological Stress**

Psychological stress has deleterious effects upon the immune system, the digestive system, glucose metabolism, and copper and zinc metabolism.

Stress causes rapid depletion of zinc, pathological accumulation and bio-unavailability of copper, resulting in a severe derangement of glucose metabolism as well.

**Other Nutrient Imbalances**

While this is a large area of research, toxic metals are known to interfere with hundreds of physiological functions. Mercury is known to impair immune system function. Cadmium displaces zinc in over 70 enzyme systems: lead by impairing calcium metabolism, diminishes insulin secretion resulting in impaired glucose metabolism which favors candida overgrowth.

**Conclusion**

To conclude, hair analysis, when correctly performed and interpreted, yields insights into a number of possible mechanisms of Candida Albicans infection. These include copper bio-unavailability, zinc deficiency, inefficient biochemical energy production, hyper-alkalinity of the digestive tract and systemic alkalinity, impaired fatty acid metabolism, impaired immune response, impaired carbohydrate metabolism, toxic metal poisoning and deficiency of various trace elements.

Use of tissue mineral analysis to uncover these metabolic imbalances can produce a more rapid and complete recovery from a yeast infection.

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