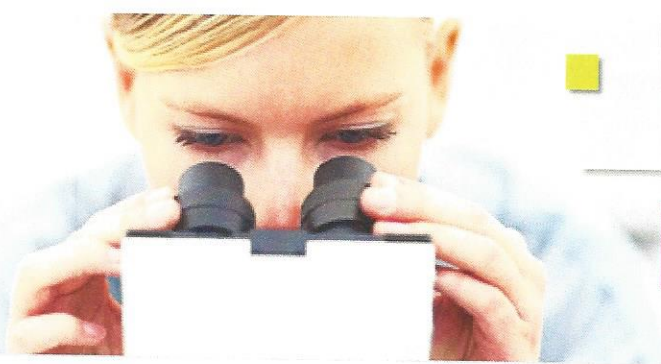


Micronutrient Testing



Research has shown that 50% of those taking multivitamins ARE STILL DEFICIENT.

Micronutrient Testing from SpectraCell Laboratories

SpectraCell Laboratories, Inc. is a CLIA accredited clinical laboratory that specializes in patented functional intracellular testing.

This patented process resulted from 18 years of research at the University of Texas. Our tests measure how micronutrients are actually functioning within your patients' white blood cells. These tests allow nutritional assessment of your patients for a broad variety of clinical conditions including arthritis, cancer, cardiovascular risk, diabetes, various immunological disorders, metabolism disorders and micronutrient deficiencies.

SpectraCell's Micronutrient Testing is More Advanced Than Other Laboratory Tests

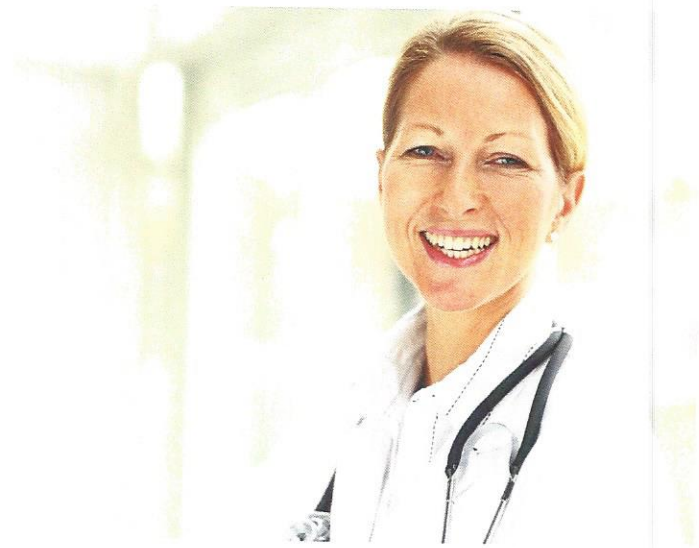
Before the introduction of micronutrient testing, many diagnoses and risk assessments were based on clinical observation and measurements of static levels of certain nutrients in serum. Static serum levels are not representative indicators for assessing cell metabolism and utilization.

SpectraCell's Patented Technology

SpectraCell's patented chemically defined control media contains the minimal amount of each essential micronutrient that is needed to support optimal lymphocyte growth or mitogenic response. The functional intracellular status of micronutrients involved in cell metabolism is evaluated by manipulation of the individual micronutrients in the media, followed by mitogenic stimulation and measurement of DNA synthesis.

The same micronutrient technology also provides a total antioxidant function test (SPECTROX®) which assesses the ability of cells to resist damage caused by free radicals and other forms of oxidative stress. Due to the considerable number of cellular antioxidants with extensive interactions, redundancies, repair and recharging capabilities, measuring total function is the most accurate and clinically useful way to assess your patient's capacity to resist oxidative damage. Since lymphocytes are produced in the bone marrow and stored in peripheral locations for long periods of time (the average life span of a lymphocyte is approximately four to six months), SpectraCell's measurements provide a powerful portrait of

each patient's long term nutrient status. This is analogous to the use of a glycosylated hemoglobin test to evaluate blood glucose levels over a 1-3 month period.



Patented Chemically Defined Media

Micronutrient testing utilizes metabolically active peripheral lymphocytes and measures DNA synthesis using a patented, chemically-defined culture media that is free of serum or protein that could affect test results. This unique media allows our scientists to identify functional intracellular deficiencies that limit mitogenic responses and cell mediated immune function.

Interpreting Test Results

SpectraCell provides easy to read test reports for the clinician and the patient. We've incorporated numerical and graphic representations for each result and we offer repletion suggestions based on each patient's deficiencies. We've included easy-to-understand supplement information that explains the role of each nutrient found deficient, deficiency symptoms, how to obtain that nutrient in food, and toxicity and RDI standards for adults.

Micronutrient Testing Sample Report

LABORATORY REPORT

Account Number: 186506

John Doe, M.D.
1234 Any Street
Suite 244
Anytown, TX 77581-1234
USA

Name: **Janet Doe**
Gender: Female DOB: 04/10/1971

Accession Number: K88809
Requisition Number: 438507

Date of Collection: 01/10/2012
Date Received: 01/11/2012
Date Reported: 01/20/2012

Summary of Deficient Test Results

Testing determined the following functional deficiencies:

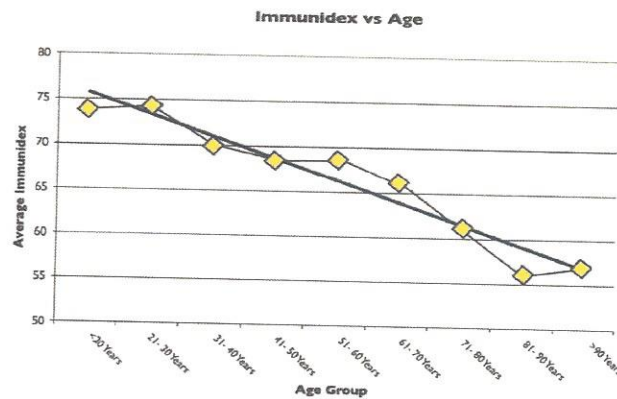
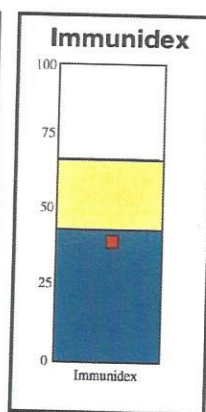
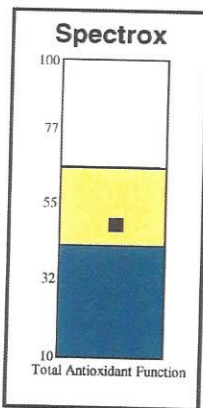
Vitamin B1
Vitamin K2

Glutathione
Immunindex

Selenium

Vitamin E

SAMPLE



John F. Crawford, Ph.D.
Laboratory Director

CLIA# 45D0710715

All tests performed by SpectraCell Laboratories, Inc. * 10401 Town Park Drive Houston, TX 77072
Tel (713) 621-3101 * Toll-free (800)-227-LABS(5227) * Fax (713) 621-3234 * www.spectracell.com

Do the Prescriptions You Take Deplete Your Nutritional Status? - (Continued)

DRUG	NUTRIENT DEFICIENCY	POTENTIAL HEALTH PROBLEMS
ANTI-INFLAMMATORIES Steroids: Prednisone, Medrol, Aristocort, Decadron	Calcium Vitamin D Magnesium Zinc Vitamin C Vitamin B6 Vitamin B12 Folic Acid Selenium Chromium	Osteoporosis, heart and blood pressure irregularities, tooth decay Osteoporosis, muscle weakness, hearing loss Cardiovascular problems, asthma, osteoporosis, cramps, PMS Weak immunity, wound healing, sense of smell/taste, sexual dysfunction Lowered immunity, easy bruising, poor wound healing Depression, sleep disturbances, increased cardiovascular disease risk Anemia, depression, tiredness, weakness, increased cardiovascular risk Birth defects, cervical dysplasia, anemia, cardiovascular disease Lower immunity, reduced antioxidant protection Elevated blood sugar, cholesterol & triglycerides, diabetes risk
NSAIDS (Motrin, Aleve, Advil, Anaprox, Dolobid, Feldene, Naprosyn and others)	Folic Acid	Birth defects, cervical dysplasia, anemia, cardiovascular disease
Aspirin & Salicylates	Vitamin C Calcium Folic Acid Iron Vitamin B5	Lowered immune system, easy bruising, poor wound healing Osteoporosis, heart & blood pressure irregularities, tooth decay Birth defects, cervical dysplasia, anemia, cardiovascular disease Anemia, weakness, fatigue, hair loss, brittle nails Fatigue, listlessness, and possible problems with skin, liver and nerves
DIURETICS Loop Diuretics (Lasix, Bumex, Edecrin) Thiazide Diuretics (HCTZ, Enduron, Diuril, Lozol, Zaroxolyn, Hygroton and others)	Calcium Magnesium Vitamin B1 Vitamin B6 Vitamin C Zinc Coenzyme Q10 Potassium Sodium	Osteoporosis, heart and blood pressure irregularities, tooth decay Cardiovascular problems, asthma, osteoporosis, cramps, PMS Depression, irritability, memory loss, muscle weakness, edema Depression, sleep disturbances, increased heart disease risk Lowered immunity, easy bruising, poor wound healing Weak immunity, wound healing, sense of smell/taste, sexual dysfunction Various cardiovascular problems, weak immune system, low energy Irregular heartbeat, muscle weakness, fatigue, edema Muscle weakness, dehydration, memory problems, loss of appetite
Potassium Sparing Diuretics	Calcium Folic Acid Zinc	Osteoporosis, heart & blood pressure irregularities, tooth decay Birth defects, cervical dysplasia, anemia, cardiovascular disease Weak immunity, wound healing, sense of smell/taste, sexual dysfunction
CARDIOVASCULAR DRUGS Antihypertensives (Catapres, Aldomet)	Coenzyme Q10 Vitamin B6 Zinc Vitamin B1	Various cardiovascular problems, weak immune system, low energy Depression, sleep disturbances, increased cardiovascular disease risk Weak immunity, wound healing, sense of smell/taste, sexual dysfunction Depression, irritability, memory loss, muscle weakness, edema
ACE Inhibitors (Capoten, Vasotec, Monopril & others)	Zinc	Weak immunity, wound healing, sense of smell/taste, sexual dysfunction
Beta Blockers (Inderal, Corgard, Lopressor and others)	Coenzyme Q10	Various cardiovascular problems, weak immune system, low energy
DIABETIC DRUGS Metformin	Coenzyme Q10 Vitamin B12 Folic Acid	Various cardiovascular problems, weak immune system, low energy Anemia, depression, tiredness, weakness, increased cardiovascular risk Birth defects, cervical dysplasia, anemia, heart disease, cancer risk
Sulfonylureas (Tolinase, Micronase/Glynase/DiaBeta)	Coenzyme Q10	Various cardiovascular problems, weak immune system, low energy
ANTIVIRAL AGENTS Zidovudine (Retrovir, AZT & other related drugs) Foscarnet	Carnitine Copper Zinc Vitamin B12 Calcium Magnesium Potassium	Increased blood lipids, abnormal liver function and glucose control Anemia, fatigue, cardiovascular and connective tissue problems Weak immunity, wound healing, sense of smell/taste, sexual dysfunction Anemia, depression, tiredness, weakness, increased cardiovascular risk Osteoporosis, heart and blood pressure irregularities, tooth decay Cardiovascular problems, asthma, osteoporosis, cramps, PMS Irregular heartbeat, muscle weakness, fatigue, edema

Micronutrient Testing



IMMUNIDEX™ - Immune Response Score

What does the Immunidex™ measure?

A patient's Immunidex™ score is one measurement to evaluate a person's cell-mediated immune system performance. Specifically, it measures T-cell lymphocyte proliferation. Since immune function is a systemic measure of general health, a higher Immunidex™ score is generally desired since it means a person can respond efficiently not only to exogenous threats such as pathogens or allergens, but also to endogenous threats like tumors. The immune system, comprised of both cell-mediated (Th1) and humoral (Th2) components, when balanced and performing optimally, affords us critical protection and promotes health and wellness.

How is the Immunidex™ performed?

A patient's lymphocytes are isolated from whole blood and introduced to a protein that stimulates growth. The protein mitogen used to trigger mitosis, or cell division, is PHA (phytohemagglutinin), which stimulates T-lymphocytes to proliferate. The proliferative response is measured by the incorporation of radioactive thymidine into newly synthesized DNA. Your patient's response is compared to responses of a reference population and results are reported to you as an Immunidex™ score.

What affects the Immunidex™ result?

Micronutrient deficiencies will undermine a person's immune function, and thus lower the Immunidex™. Since the highly complex immune system is dependent on the intracellular availability of vitamins, minerals and antioxidants, correcting specific micronutrient deficiencies typically raises the Immunidex™ and contributes to tangible clinical benefits, such as reduced infections and may assist in achieving Th1/Th2 balance.

How does the Immunidex™ correlate with antioxidant function?

In general, the higher the antioxidant score (Spectrox™), the higher the Immunidex™ score. Antioxidant function plays an important role in promoting optimal T-cell (lymphocyte) function. It is important to find out if a patient has deficiencies in specific antioxidant nutrients so they can supplement wisely. But it is also important to measure a total antioxidant function because the metabolic pathways in which antioxidants are involved are highly

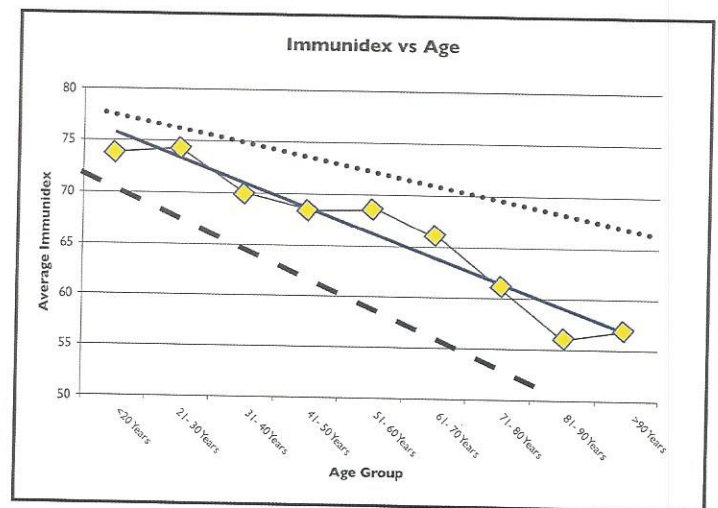
complex, sometimes redundant and often overlapping. Research confirms that taking excess antioxidants that are not needed (i.e. where no deficiency exists) can actually cause them to become pro-oxidants and decrease antioxidant function.

How is Immunidex™ related to aging?

As we age, our immune function typically decreases as seen in the figure below. Although many factors are involved in this complicated process of decline, the Immunidex™ is one of many relevant aging biomarkers since age diminishes the ability of a person's lymphocytes to respond to challenges. The effects of both good and poor antioxidant function on the Immunidex™ is shown and emphasizes the importance of testing for antioxidant function (Spectrox™) and individual antioxidant deficiencies.

How do you order the Immunidex™?

The Immunidex™ is part of SpectraCell's Micronutrient Testing panel. There is no additional charge for this calculated test result. Ordering instructions are the same – same kit, same blood draw instructions.



..... Spectrox™ >65%
———— Spectrox™ all patients
- - - - Spectrox™ <40%



Micronutrient Testing

SPECTROX™ - (Total Antioxidant Function)

Function:

The function of antioxidants is to protect biomolecules from oxidative damage. SPECTROX™ measures the net ability of antioxidant and repair mechanisms of each individual's own cells, giving a total assessment of antioxidant function.

Oxidative Stress:

Each person's cells and tissues are constantly subjected to highly reactive and unstable molecules termed free radicals, causing oxidative stress. These hostile molecules are a normal byproduct of life and are produced by the metabolism of oxygen, immune system cells, numerous enzyme reactions essential for metabolism and environmental sources (smoke, ionizing radiation, air pollution, chemicals, toxic heavy metals and oxidized (rancid) fats). Some of the more common free radicals are superoxide, hydroxyl, singlet oxygen and peroxides. By their chemical nature, free radicals, although short-lived, promote a chain reaction of radical formation, followed by a wake of chemically altered, damaged biological molecules. Research is continuing to find that much biological damage and diseases are induced and/or mediated by injury from free radicals.

Cellular Antioxidants:

Protection of deleterious effects from free radicals is found in a diverse range of molecules termed antioxidants. Free radicals and their chain reaction byproducts can be neutralized and converted to less harmful products (quenched) by antioxidants. Antioxidants are enzymes (superoxide dismutase, catalase, glutathione peroxidase), essential nutrients (carotenoids, vitamin C, vitamin E, cysteine, selenium) or a wide variety of endogenous compounds (glutathione, sulfhydryl groups, thioredoxin, lipoic acid, coenzyme Q10, urate, bilirubin) or dietary compounds (mannitol, bioflavonoids, phenolic acid derivatives, proanthocyanidins). Antioxidants interact in a complex manner with recharging and overlapping, redundant functions. Cells also possess extensive mechanisms to repair damaged biomolecules, which appear protective in a total antioxidant function test.

The clinical correlation of antioxidant status to health remains under investigation. Research evidence in humans has indicated that deficient intakes or levels of nutrient antioxidants are associated with higher risks of arthritis, cancer, cardiovascular disease, cataracts and many other degenerative diseases. Also, higher intakes of nutrient antioxidants are associated with a lower incidence of chronic degenerative diseases. Encouraging studies have also shown that intervention with antioxidant nutrient supplements have therapeutic benefits in humans. Thus, strong scientific evidence illustrates that antioxidants help prevent chronic degenerative diseases and may help restore health.

Micronutrient Testing



Vitamin, mineral and antioxidant deficiencies have been shown to suppress the functions of the immune system which can contribute to the overall condition of one's health and diseases such as :

- Arthritis
- Cardiovascular disease
- Cancer
- Diabetes

50% of people taking multivitamins are still nutritionally deficient.

- William Shive, University of Texas at Austin

Are YOU getting the nutrients YOU need?

STANDARD TEST RESULTS DO NOT MEASURE IF THE NUTRIENT IS PROPERLY FUNCTIONING WITHIN THE BODY.

SpectraCell Laboratories developed their exclusive, patented micronutrient tests to measure the function of selected vitamins, minerals, antioxidants and other essential micronutrients within your white blood cells. Analysis can reveal a person's functional nutrient status over a much longer time period than conventional serum testing. SpectraCell's tests give a more meaningful measurement of nutritional status than all other nutritional testing.

But I eat a balanced diet, exercise and take a multivitamin...

MANY PEOPLE WORK AT IMPROVING THEIR HEALTH, YET SOME INDIVIDUALS STILL HAVE DEFICIENCIES. WHY?

BIOCHEMICAL INDIVIDUALITY

Because each of us is metabolically and biochemically unique, the micronutrient requirements for one person may be quite different than the requirements for another.

ABSORPTION

Although you may eat a balanced diet, if you do not absorb vitamins, minerals, antioxidants and/or other essential micronutrients properly, you will have deficiencies.

CHRONIC ILLNESS

Health conditions such as arthritis, cancer, cardiovascular disease, diabetes, fatigue and multiple sclerosis, to name a few, can be affected, directly or indirectly, by micronutrient deficiencies.

AGING

Our micronutrient requirements at age 30 are quite different from our requirements at age 40, 50 and beyond. Absorption difficulties, especially of vitamin B12, quite commonly occur as we age.

LIFESTYLE

Excessive physical activity, prescription drugs, smoking, alcohol and sedentary habits all impact micronutrient demands. SpectraCell's micronutrient testing is the only test that takes all the above factors and many others into consideration to identify your nutrient status. With this information, specific deficiencies that could negatively influence your health may be corrected.

HOW DO I GET MICRONUTRIENT TESTING?

We can tell you more about SpectraCell's micronutrient tests and order a test for you. You will receive your easy-to-read, comprehensive test results within 3 weeks. Additional testing services including homocysteine and specialized tests to assess cardiovascular risk are also available through SpectraCell Laboratories.

Nutritional Considerations of

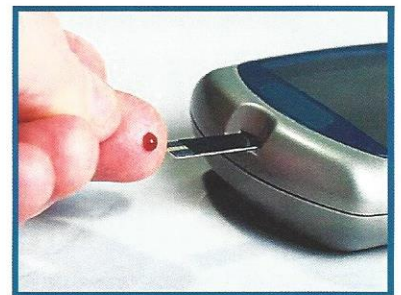
Metabolic Syndrome

Metabolic syndrome is a group of health risks that significantly increase your chance of developing cardiovascular disease stroke and diabetes. According to a national health survey, more than 1 in 5 American adults (47 million) and roughly one million adolescents have metabolic syndrome and the number is rising. The risk of metabolic syndrome increases with age, affecting more than 40% of people in their 60s and 70s.

There is evidence that subclinical deficiencies in certain vitamins, minerals and antioxidants can significantly influence the development of metabolic syndrome and its symptoms. Similarly, the presence of metabolic syndrome in a patient may lead to various nutrient deficiencies.

Diabetic Health

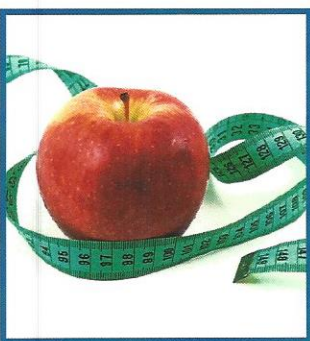
According to the American Diabetes Association, type 2 diabetes is the most common form of diabetes. With this type of diabetes, cells do not receive enough insulin. As a result, cells starve for energy, and, over time, a glucose buildup in the blood stream causes negative effects on a person's eyes, kidneys, nerves and/or heart.



Micronutrients such as **niacin, magnesium, calcium, zinc, carnitine, inositol, alpha-lipoic acid, as well as vitamins E, B6 and D** all play an important role in the prevention and treatment of diabetes.

Neurology

A single micronutrient deficiency can contribute to any number of disorders of the nervous system, including migraines, neuropathy and even Alzheimer's. Similarly, a high amount of oxidative stress at the cellular level could predispose a person to certain neurological complications.



Obesity and Bariatric Surgery

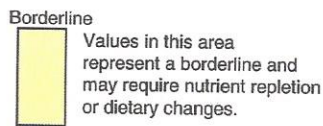
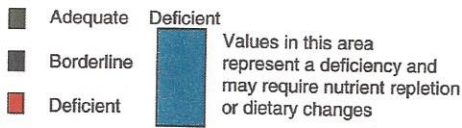
Obesity is a complex, multi-faceted, chronic disease involving social, environmental, genetic, physiological, metabolic, behavioral and psychological components. It is the second leading cause of preventable death in America, second only to cigarette smoking, and increases risks of illness from over 30 medical conditions including diabetes, hypertension, cancer, infertility, arthritis and heart disease. Prescription medications used to treat many of these conditions often induce micronutrient deficiencies as well. In fact, an astounding 98% of bariatric surgery patients exhibit micronutrient deficiencies within two years of surgery.

ADHD and Autism

Low levels of vitamin D have been linked with autism and in some cases of severe deficiency, high-dose vitamin D therapy actually reversed some of the autistic behaviors. Some research even suggests that the nutritional status of the mother during gestation can affect behavior in children. One study confirmed that low folate status in pregnancy was associated with hyperactivity in children.

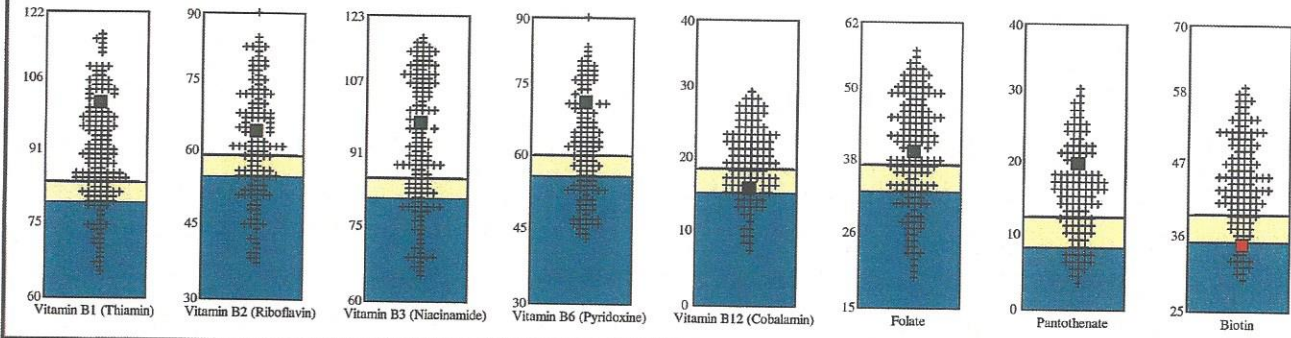


Sample Report - Graphic Results

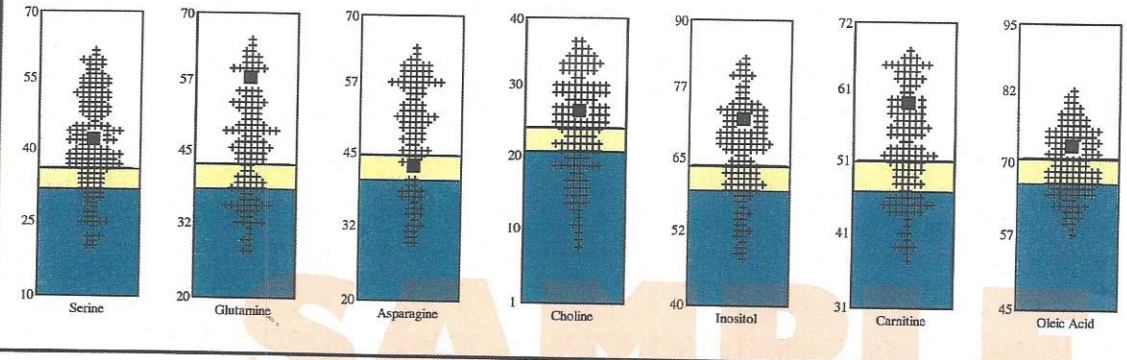


Accession Number: K35273
Kristine Doe

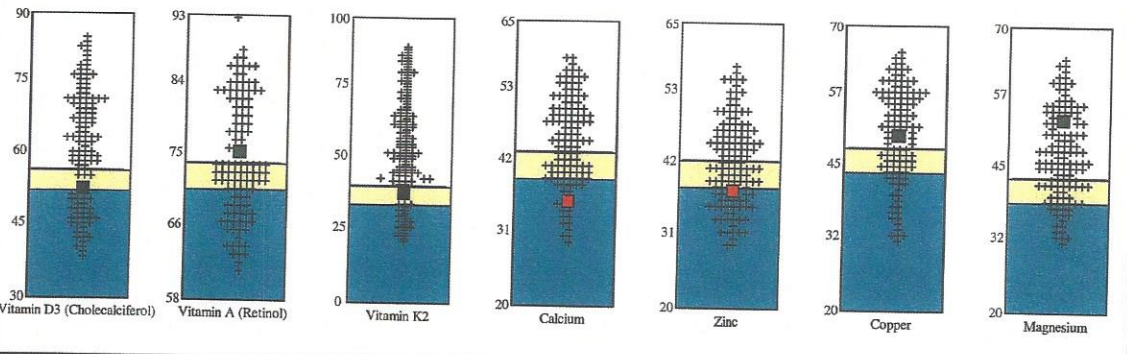
B Complex Vitamins



Amino Acids & Metabolites



Other Vitamins & Minerals

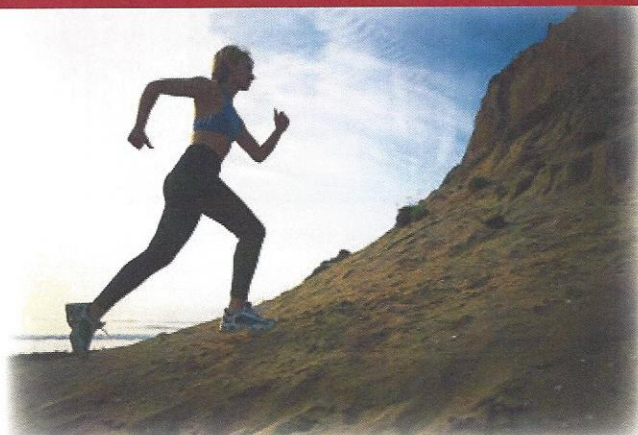


Lipoprotein Particle Profile™

Cardiovascular disease is the leading cause of death. Standard cholesterol tests can miss that YOU are at risk.

50% of heart attack victims had normal cholesterol levels.

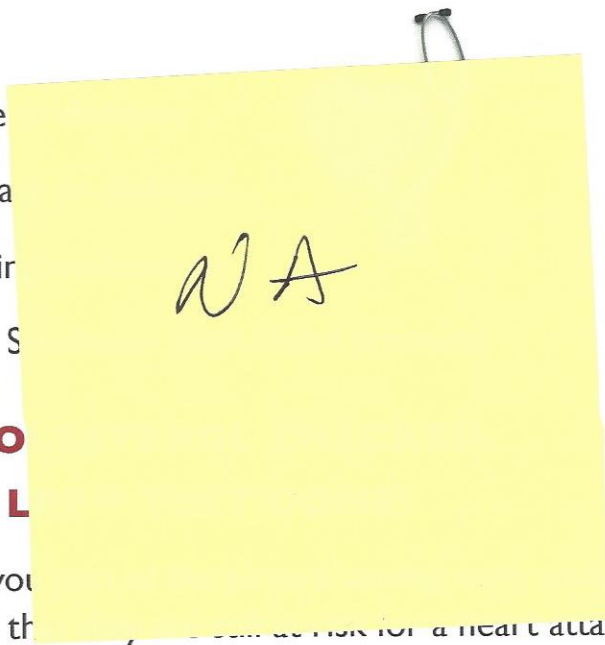
- National Heart, Blood, and Lung Institute



Who should take the LPP™ Test?

All patients, and especially those who:

- Have a family history of heart disease
- Have been diagnosed with heart disease
- Are already taking cholesterol-lowering medications
- Have been diagnosed with Metabolic Syndrome



I'VE ALREADY HAD MY CHOLESTEROL TESTED. WHY SHOULD I HAVE THE LPP™ TEST?

Standard cholesterol testing only gives you a false sense of security. People with “normal” cholesterol numbers unaware that they are still at risk for a heart attack. The National Cholesterol Education Program introduced new risk factors that are responsible for many individuals at risk of cardiovascular disease. These risk factors can only be identified with advanced lipoprotein testing.

According to the National Cholesterol Education Program (NCEP) guidelines, 50 percent of people who have a heart attack have normal cholesterol levels.

Cholesterol is carried throughout the body in little balls called lipoproteins. It is the lipoproteins, not the cholesterol in them, that leads to clogging of the arteries.

Nutritional Survey

DO YOU CURRENTLY EXPERIENCE ANY OF THE FOLLOWING CONDITIONS

- | | | |
|---|------------------------------|-----------------------------|
| Do you experience fatigue? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Do you experience anxiety? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Do you have loss of weight or appetite? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Do your hands tingle? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Do you experience muscle cramping? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Do you experience vomiting? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Does your heart flutter? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Do you have skin conditions? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Are you experiencing depression? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Do you have weight gain? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Do you experience bruising? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Do you have reduced muscle mass? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Do you have diarrhea? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Are you experiencing hair loss? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Do you have digestive problems? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Do you experience numbness? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Do you experience muscle weakness? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Do you experience nausea? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Do you experience constipation? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Do you experience slow wound healing? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Do you experience skin rashes? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Do you have a low libido? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| Do you experience low energy levels? | YES <input type="checkbox"/> | NO <input type="checkbox"/> |

If you experience two or more symptoms from the list above you might want to ask your doctor about SpectraCell's micronutrient testing.

Does your **nutritional balance** stack up?

FIND OUT TODAY
IF YOU'RE GETTING
THE **VITAMINS &**
MINERALS THAT
YOUR BODY NEEDS.

