

# SpectraCell's Micronutrient Test

## An innovative approach to patient-centered wellness

### Why SpectraCell?

SpectraCell's Micronutrient Test (MNT) is the ONLY scientific and objective assessment of functional intracellular micronutrient status, supporting an effective, patient-centered approach to medical treatment and prevention of chronic illness. With over 20 years of experience and more than a million patients tested, our patented technology has positioned us as a leader in the field of functional micronutrient testing.



#### Functional

SpectraCell's proprietary technology measures the functional capability of lymphocytes to respond to growth stimulation using only intracellular micronutrient reserves. This assay is a more direct measure of immunocompetence than a total lymphocyte count.



#### Specific

Our lymphocyte-based technology provides information on:

- ✓ functional micronutrient status
- ✓ long-term intracellular micronutrient levels
- ✓ whole-cell metabolic capability



#### Comprehensive

The functional levels of 31 vitamins, minerals, fatty acids, antioxidants, and metabolites are assessed.



#### Proprietary

Only SpectraCell offers the patented Spectrox® (reflects antioxidant capacity) and Immunidex (an overall measure of immune system function).

### No One-Size-Fits-All Approach to Effective Patient Outcomes

### Testing Methodology

#### The Gold Standard in Functional Intracellular Testing

What makes the MNT particularly relevant is that it takes biochemical individuality into account when assessing micronutrient status. The MNT is performed using metabolically active cells, measuring DNA synthesis via a patented, chemically-defined culture media that is free of serum and protein (both of which can affect test variability). This unique media allows for the identification of functional intracellular deficiencies that limit mitogenic responses and cell-mediated immune function. Our patented control media contains the minimal amount of each essential micronutrient required to support optimal lymphocyte growth (mitogenic response). We evaluate the functional intracellular status of micronutrients involved in cell metabolism by manipulating each individual micronutrient in the media. This is followed by mitogenic stimulation and DNA synthesis measurement.

The MNT is truly functional in that it takes into consideration cellular **absorption**, **transport**, **metabolism**, and **utilization** (including numerous other contributing factors) in its nutritional evaluation of cell function, and correlates with both tissue and systemic health.

### SpectraCell's Micronutrient Profile

<p><b>Vitamins</b></p> <ul style="list-style-type: none"> <li>Vitamin A</li> <li>Vitamin B<sub>1</sub></li> <li>Vitamin B<sub>2</sub></li> <li>Vitamin B<sub>3</sub></li> <li>Vitamin B<sub>6</sub></li> <li>Vitamin B<sub>12</sub></li> <li>Vitamin C</li> <li>Vitamin D</li> <li>Vitamin K</li> <li>Biotin</li> <li>Folate</li> <li>Pantothenate</li> </ul>	<p><b>Minerals</b></p> <ul style="list-style-type: none"> <li>Calcium</li> <li>Chromium</li> <li>Copper</li> <li>Magnesium</li> <li>Manganese</li> <li>Zinc</li> </ul> <p><b>Amino Acids</b></p> <ul style="list-style-type: none"> <li>Asparagine</li> <li>Glutamine</li> <li>Serine</li> </ul>	<p><b>Fatty Acids</b></p> <ul style="list-style-type: none"> <li>Oleic Acid</li> </ul> <p><b>Antioxidants</b></p> <ul style="list-style-type: none"> <li>Alpha Lipoic Acid</li> <li>Coenzyme Q10</li> <li>Cysteine</li> <li>Glutathione</li> <li>Selenium</li> <li>Vitamin E</li> </ul> <p><b>Carbohydrate Metabolism</b></p> <ul style="list-style-type: none"> <li>Fructose Sensitivity</li> <li>Glucose-Insulin Interaction</li> </ul>	<p><b>Metabolites</b></p> <ul style="list-style-type: none"> <li>Choline</li> <li>Inositol</li> <li>Carnitine</li> </ul> <p><b>Spectrox® for Total Antioxidant Function</b></p> <p><b>Immunidex Immune Response Score</b></p>
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# Why Functional Assessments Are Key to Personalized Wellness

Standard tests such as static quantitative measurement methods assess the **concentration** of a nutrient present, but do not address its **functional impact**. It is possible for levels of a nutrient within cells or in blood to be high, while its functional status is actually deficient. Measuring and reporting micronutrient concentration levels in the absence of a functional assessment offers an incomplete picture and can lead to inaccuracies in identifying and reporting true micronutrient deficiencies.

## Function = Performance ≠ Potential

By the same token, serum (extracellular) nutrients can fluctuate wildly, represent only a snapshot in time, and tell you little about the functional health of cells. The MNT measures micronutrient status in the context of cellular function over a period of 4-6 months. No other nutritional test compares.

In addition to 31 micronutrients, SpectraCell's functional micronutrient test includes four components that are not otherwise available commercially

### SPECTROX®

Spectracell's micronutrient test can determine specific antioxidants deficiencies, but it goes one step further: Spectrox® measures the cell's overall ability to resist oxidative stress and free radical damage. Nutrients (especially antioxidants) work synergistically, so measuring total antioxidant function is the most accurate way to assess a person's capacity to resist oxidative damage, given the manner in which these individual biochemicals repair, recharge and interact with each other.

### IMMUNIDEX

An assessment of cell-mediated immune function is provided via the Immunidex, an immune response score provided exclusively by SpectraCell. This proprietary test measures T-cell lymphocyte proliferation, or how well a person's white blood cells respond when exposed to a mitogen (a chemical that stimulates cell division). A higher Immunidex score is generally favorable and suggests a more efficient cellular immune response to exogenous threats (such as pathogens or allergens) and endogenous ones (like tumors).

## Micronutrient Testing

### GLUCOSE-INSULIN INTERACTION

This patented test assesses carbohydrate metabolism and how well insulin functions within cells. Specifically, it measures how efficiently cells metabolize glucose. Defective glucose-insulin metabolism may result from specific micronutrient deficiencies, which can be corrected. For example, chromium is necessary for optimal carbohydrate metabolism. Some clinical conditions associated with a defective glucose-insulin interaction are hypoglycemia, diabetes, obesity, extreme stress (trauma, infections, burns, shock, etc.), and corticosteroid therapy.

### FRUCTOSE SENSITIVITY

This component assesses another aspect of carbohydrate metabolism: how well a person metabolizes fructose. The fructose sensitivity test detects those persons who are unable to metabolize **excess** fructose by comparing a person's lymphocyte growth rate (in a patented chemically-defined growth medium) while exposed to minimal or excess amounts of fructose. A major change in growth response indicates a metabolic impact of excess fructose. Since humans have a limited ability to metabolize fructose, amounts ingested beyond metabolic capacity can raise triglycerides (blood fats), deplete certain micronutrients such as copper or vitamin C, and increase uric acid levels, which can lead to gout. Not everyone is susceptible to the adverse metabolic effects of excess fructose, and SpectraCell's Micronutrient Test will help determine this.