



# LABORATORY REPORT

		Date of Collection: 08/14/2008 Date Received: 08/15/2008 Date Reported: 08/27/2008

## Summary of Deficient Test Results

FIA Comprehensive 5000 has determined the following functional deficiencies:

Pantothenate

Zinc

Spectrox

Vitamin C

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**CLIA# 45D0710715**

## OVERVIEW OF TEST PROCEDURE

1. A mixture of lymphocytes is isolated from the blood.
2. These cells are grown in a defined culture medium containing optimal levels of all essential nutrients necessary to sustain their growth in cell culture.
3. The T-lymphocytes are stimulated to grow with a mitogen (phytohemagglutinin) and growth is measured by the incorporation of tritiated (radioactive) thymidine into the DNA of the cells.

The growth response under optimal conditions is defined as 100%, and all other growth rates are compared to this 100% level of growth.

For example – we remove vitamin B6 from the medium and stimulate the cells to grow by mitogen stimulation. Growth is measured by DNA synthesis and the rate of growth is dependent only upon the functional level of vitamin B6 available within the cells to support growth. For Vitamin B6 a growth rate of at least 55% of the growth rate observed in the optimal (100%) media is considered normal. Results less than 55% are considered to indicate a functional deficiency for Vitamin B6. Each nutrient has a different reference range that was established by assaying thousands of apparently healthy individuals.

## BREAKING DOWN THE REPORT

### 1. TEST RESULT (% CONTROL)

This column represents the patient's growth response in the test media measured by DNA synthesis as compared to the optimal growth observed in the 100% media.

### 2. FUNCTIONAL ABNORMALS

An interpretation is provided for those nutrients found to be deficient.

### 3. REFERENCE RANGE

This column represents how this patient's result compares to thousands of patients previously tested. A patient's result is considered deficient when it is less than the reference range.

### 4. GRAPHS

The abnormal range of results is noted in the blue area. Abnormal results are indicated in red. The gray cross hatch area is a representation of the range of test results found in a random selection of subjects.

## SPECTROX® – TOTAL ANTIOXIDANT FUNCTION

SPECTROX® is a measurement of overall antioxidant function. The patient's cells are grown in the optimal media, stimulated to grow, and then increasing amounts of a free radical generating system (H<sub>2</sub>O<sub>2</sub>) are added. The cell's ability to resist oxidative damage is determined. The increasing levels of peroxide will result in diminished growth rates in those patients with poor antioxidant function capacity.

## INDIVIDUAL ANTIOXIDANT LEVELS

In the tests for individual antioxidants, it is determined which specific antioxidants may be deficient and thus affecting the SPECTROX® antioxidant function result. For these tests, the patient's cells are preincubated with one of the nutrient antioxidants, i.e. selenium, and then the Spectrox® test is repeated to determine if the addition of selenium improves the patient's antioxidant function. This process is repeated for each individual antioxidant.

Antioxidants tested with this process:

Glutathione, Cysteine, Coenzyme-Q10, Selenium, Vitamin E, and Alpha Lipoic Acid



## Repletion Suggestions

- |                               |   |
|-------------------------------|---|
| 1. Pantothenate               | 500 mg b.i.d. (1000 mg daily)   |
| 2. Zinc                       | 25 mg daily   |
| 3. Total Antioxidant Function | Based on Spectrox and individual Antioxidant tests:<br><br>* Glutathione: 600 mg daily of N-Acetylcysteine (NAC)<br><br>* Cysteine: The daily dose of N-Acetylcysteine (NAC) listed for Glutathione is usually sufficient for Glutathione and/or Cysteine repletion.<br><br>* Vitamin E: 200 IU daily of mixed tocopherols<br><br>* Selenium: 50 mcg daily<br><br>* Coenzyme Q10: 30 mg daily of CoQ10 Take each dose with a meal<br><br>* Lipoic Acid: 50 mg daily<br><br>* Vitamin C Deficient: 250 mg t.i.d. (750 mg daily) Take each dose with a meal |

***Please note: Supplementation is usually required for four to six months to effect the repletion of a functional deficiency in lymphocytes***

*Suggestions for supplementation with specific micronutrients must be evaluated and approved by the attending physician. This decision should be based upon the clinical condition of the patient and the evaluation of the effects of supplementation on current treatment and medication of the patient.*

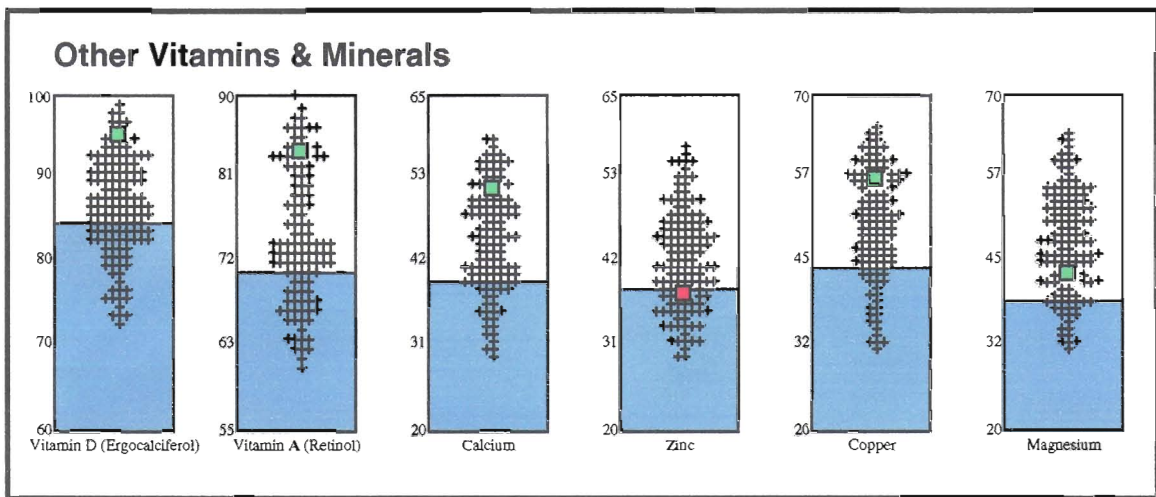
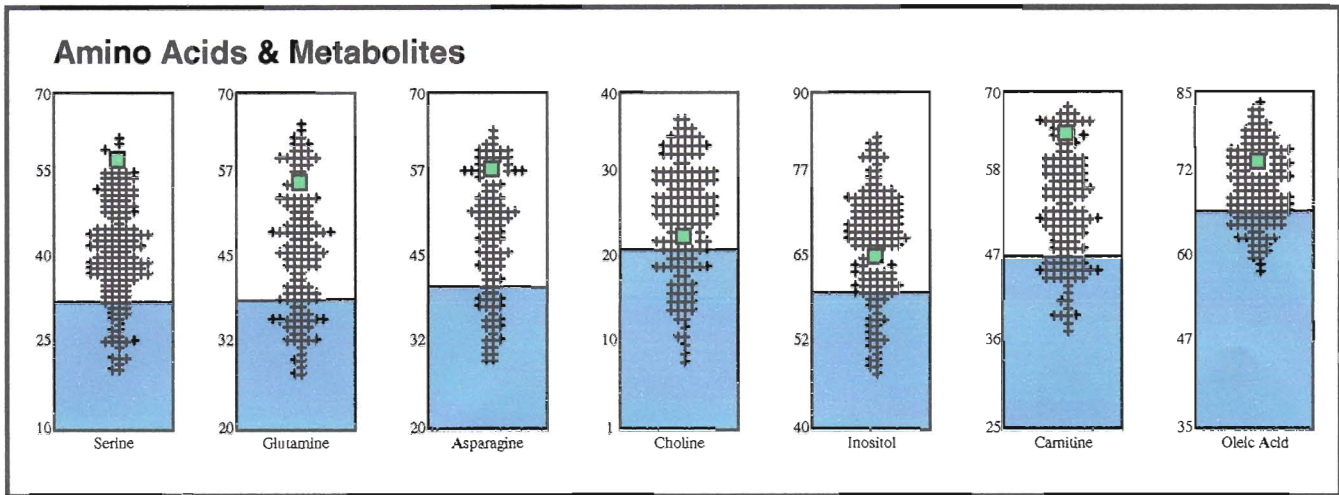
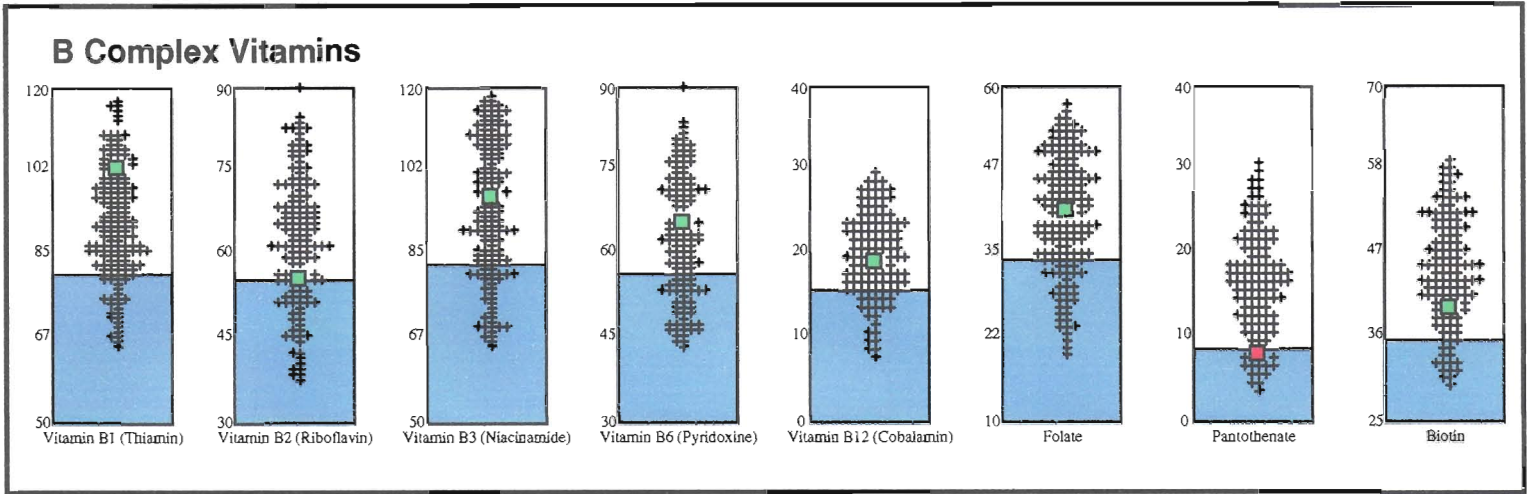


<b>FIA™ Test Description</b>	<b>Patient Results (% Control)</b>	<b>Functional Abnormals</b>	<b>Reference Range (greater than)</b>
<b><u>B Complex Vitamins</u></b>			
Vitamin B1 (Thiamin)	101		>78%
Vitamin B2 (Riboflavin)	54		>53%
Vitamin B3 (Niacinamide)	95		>80%
Vitamin B6 (Pyridoxine)	64		>54%
Vitamin B12 (Cobalamin)	18		>14%
Folate	40		>32%
<b>Pantothenate</b>	<b>7</b>	<b>Deficient</b>	<b>&gt;7%</b>
Biotin	39		>34%
<b><u>Amino Acids</u></b>			
Serine	56		>30%
Glutamine	55		>37%
Asparagine	57		>39%
<b><u>Metabolites</u></b>			
Choline	22		>20%
Inositol	64		>58%
Carnitine	63		>46%
<b><u>Fatty Acids</u></b>			
Oleic Acid	73		>65%
<b><u>Other Vitamins</u></b>			
Vitamin D (Ergocalciferol)	94		>83%
Vitamin A (Retinol)	83		>70%
<b><u>Minerals</u></b>			
Calcium	51		>38%
<b>Zinc</b>	<b>37</b>	<b>Deficient</b>	<b>&gt;37%</b>
Copper	56		>42%
Magnesium	42		>37%
<b><u>Carbohydrate Metabolism</u></b>			
Glucose-Insulin Interaction	40		>38%
Fructose Sensitivity	54		>34%
Chromium	49		>40%
<b><u>Antioxidants</u></b>			
Glutathione	56		>42%
Cysteine	51		>41%
Coenzyme Q-10	94		>86%
Selenium	84		>74%
Vitamin E (A-tocopherol)	89		>84%
Alpha Lipoic Acid	86		>81%
<b>Vitamin C</b>	<b>25</b>	<b>Deficient</b>	<b>&gt;40%</b>
<b><u>SPECTROX™</u></b>			
<b>Total Antioxidant Function</b>	<b>51.0</b>	<b>Deficient</b>	<b>&gt;65%</b>

The reference ranges listed in the above table are valid for male and female patients 12 years of age or older.

■ Adequate  
■ Deficient

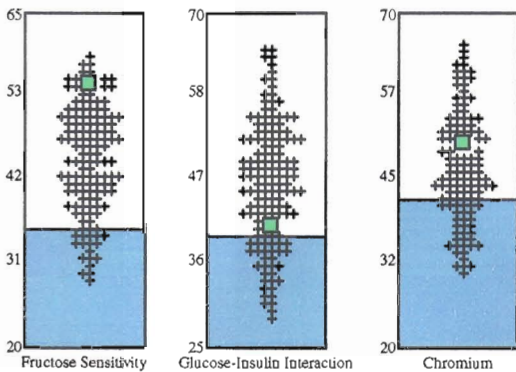
Values in this area represent a deficiency and patient may require nutrient repletion or dietary changes



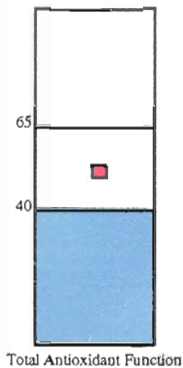
■ Adequate
 ■ Values in this area represent a deficiency and patient may require nutrient repletion or dietary changes
 ■ Deficient



### Carbohydrate Metabolism



### Spectrox



A Spectrox value above 65% indicates a desirable status for apparently healthy individuals. Since antioxidants are protective nutrients, the most desired status would be the greatest ability to resist oxidative stress.

A Spectrox value between 40% and 65% indicates an average antioxidant function for apparently healthy individuals. An average status means the ability to resist oxidative stress similar to the majority of persons. However, average status is not ideal, nor is it clearly deficient.

A Spectrox value below 40% indicates a deficient antioxidant function resulting in a decreased ability to resist oxidative stress or an increased antioxidant load.

### Individual Antioxidants

