SpectraCell Laboratories
Science + Health + Solutions

LABORATORY REPORT

Account Number: 269435

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6777 Woodlands Parkway
Suite 300
The Woodlands, TX 77382
USA

Name: **Cheryl Winter**
Gender: Female DOB: 06/01/1958

Accession Number: Q29010
Requisition Number: 1078718

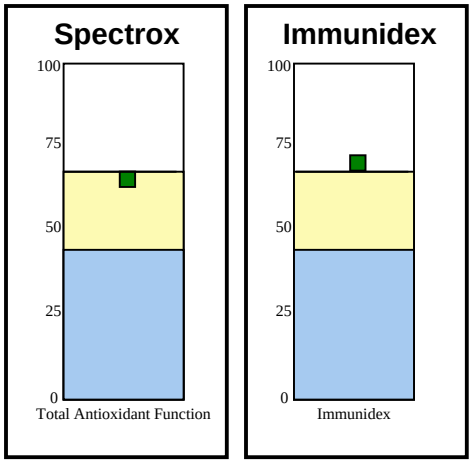
Date of Collection: 09/01/2016
Date Received: 09/02/2016
Date Reported: 09/15/2016

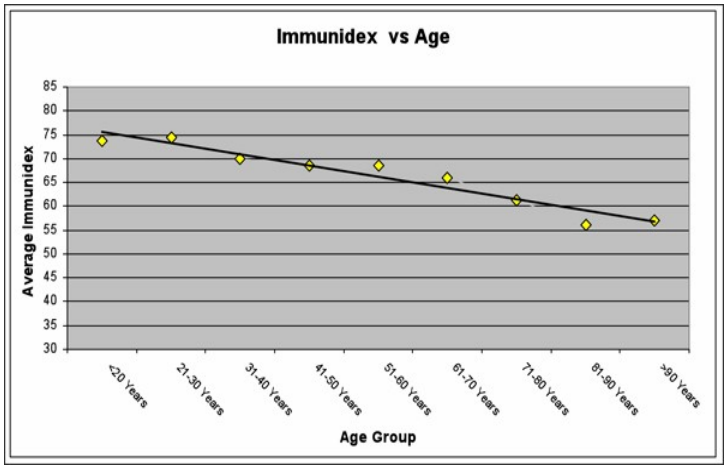
Summary of Deficient Test Results

No deficiencies were noted in the performance of the Micronutrient Testing.

Borderline deficiencies include:

Vitamin B1	Vitamin B12	Serine	Glutamine
Zinc	Magnesium	Glutathione	Vitamin C





James W. Jacobson, Ph.D.
Laboratory Director

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_2O_2) 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, Alpha Lipoic Acid, and Vitamin C.

Repletion Suggestions

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.

Micronutrients	Patient Results (% Control)	Functional Abnormals	Reference Range (greater than)
B Complex Vitamins			
Vitamin B1 (Thiamin)	82	Borderline	>78%
Vitamin B2 (Riboflavin)	61		>53%
Vitamin B3 (Niacinamide)	95		>80%
Vitamin B6 (Pyridoxine)	63		>54%
Vitamin B12 (Cobalamin)	17	Borderline	>14%
Folate	48		>32%
Pantothenate	13		>7%
Biotin	40		>34%
Amino Acids			
Serine	32	Borderline	>30%
Glutamine	42	Borderline	>37%
Asparagine	54		>39%
Metabolites			
Choline	29		>20%
Inositol	64		>58%
Carnitine	56		>46%
Fatty Acids			
Oleic Acid	73		>65%
Other Vitamins			
Vitamin D3 (Cholecalciferol)	60		>50%
Vitamin A (Retinol)	76		>70%
Vitamin K2	48		>30%
Minerals			
Calcium	46		>38%
Manganese	64		>50%
Zinc	41	Borderline	>37%
Copper	54		>42%
Magnesium	38	Borderline	>37%
Carbohydrate Metabolism			
Glucose-Insulin Interaction	56		>38%
Fructose Sensitivity	47		>34%
Chromium	50		>40%
Antioxidants			
Glutathione	46	Borderline	>42%
Cysteine	48		>41%
Coenzyme Q-10	91		>86%
Selenium	82		>74%
Vitamin E (A-tocopherol)	92		>84%
Alpha Lipoic Acid	87		>81%
Vitamin C	44	Borderline	>40%
SPECTROX™			
Total Antioxidant Function	65		>40%
Proliferation Index			
Immunidex	67		>40%

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

Adequate
Borderline
Deficient

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

Borderline
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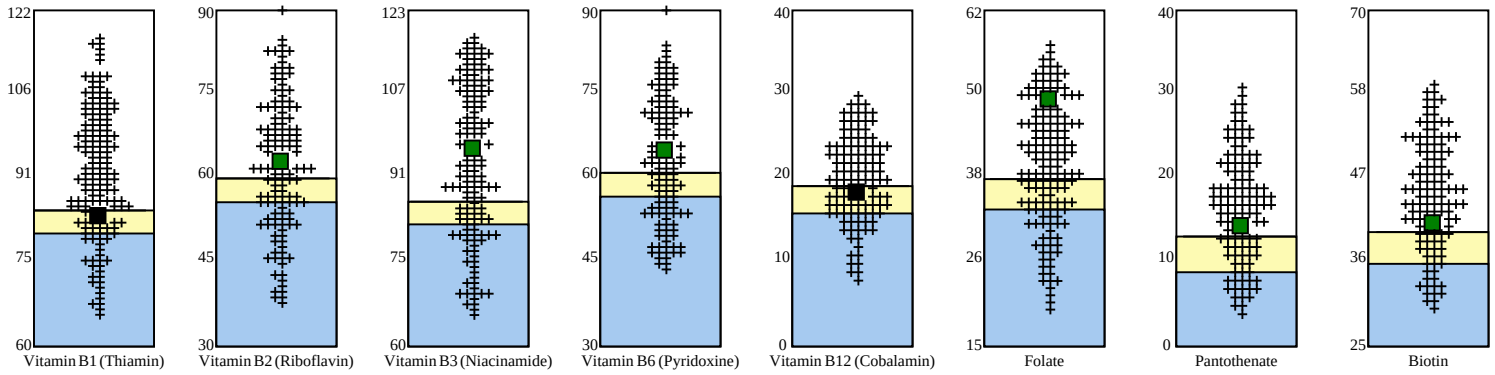
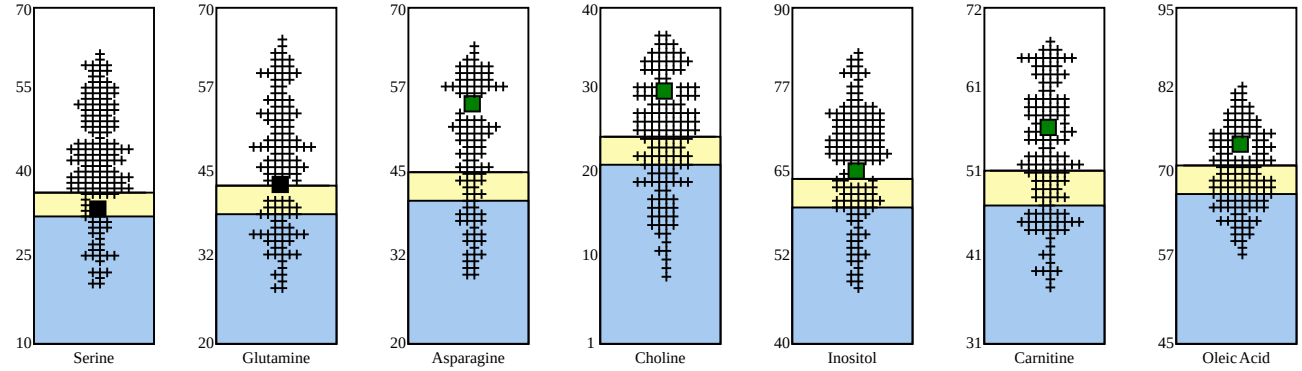
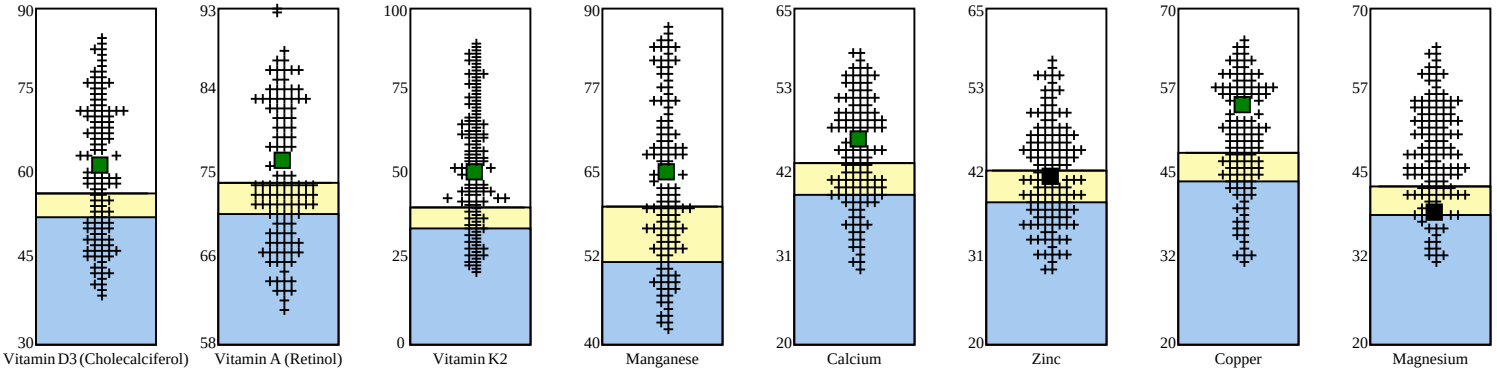
B Complex Vitamins



Amino Acids & Metabolites



Other Vitamins & Minerals



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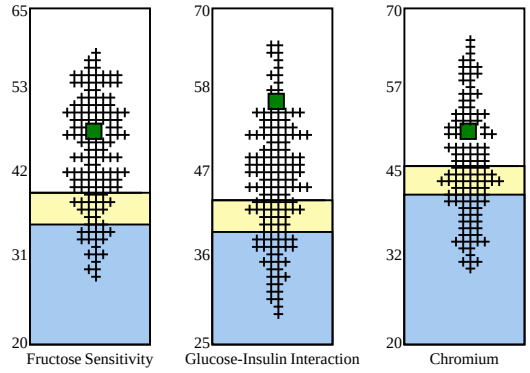
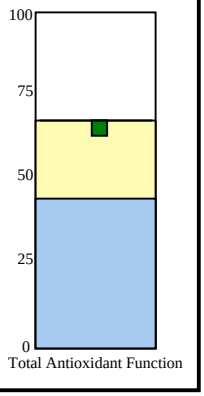
Carbohydrate Metabolism



Spectrox

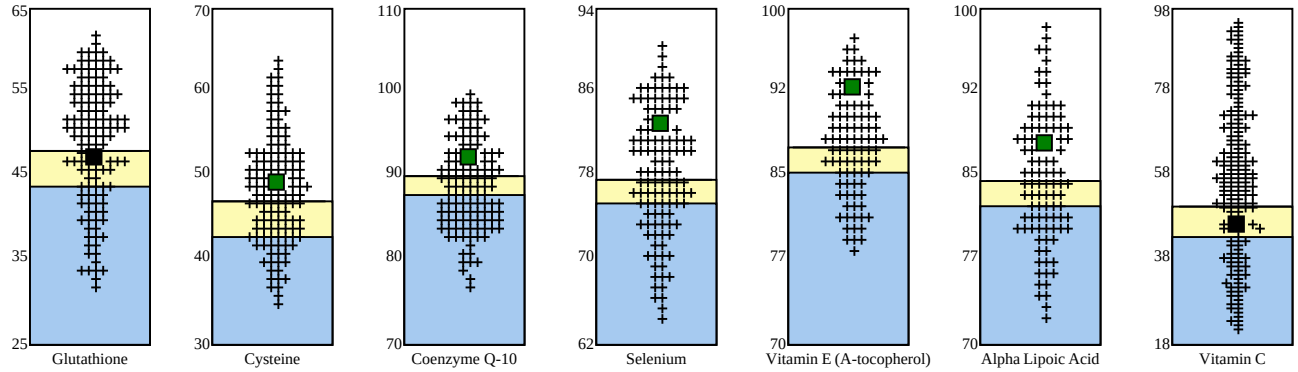


A Spectrox value above 65%-
indicates a desirable status for apparently healthy individuals. Since antioxidants are protective nutrients, the most desired status would be the greatest ability to resist oxidative stress.

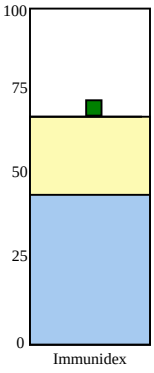
A Spectrox value between 40% and 65%-
indicates an average antioxidant function for apparently healthy individuals. An average status means the ability to resist oxidative stress similar to the majority of persons. However, average status is not ideal, nor is it clearly deficient.

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



Immunidex



The Immunidex is an indication of the patient's T-Lymphoproliferative response to mitogen stimulation relative to the response of a control population. An average or weakened immune response may improve with correction of the nutritional deficiencies determined by the micronutrient testing.

An Immunidex above 65%- indicates a strong response, a measurement of cell-mediated immune function.

An Immunidex between 40% and 65% - indicates an average response.

An Immunidex below 40%- may indicate a weakened cell mediated immune response.

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SUPPLEMENTAL INFORMATION

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