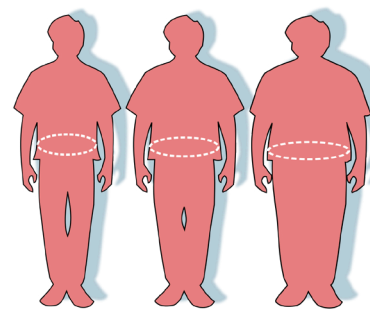


A Window on Obesity

CLINICAL APPLICATIONS OF SPECTRACELL'S MICRONUTRIENT TESTS IN OBESITY

Obesity is a complex, multi-factorial, chronic disease involving environmental (social and cultural), genetic, physiological, metabolic, behavioral and psychological components. It is the second leading cause of preventable death in the U.S. Each year, obesity causes at least 300,000 excess deaths in the U.S., and healthcare costs of American adults with obesity amount to approximately \$100 billion.



Being overweight and obesity are part of the U.S. Department of Health and Human Services' health agenda that have steadily moved away from their established targets for improvement. Today, public health leaders recognize obesity as a "neglected public health problem." Approximately 127 million adults in the U.S. are overweight, 60 million obese and 9 million severely obese. That's 65% of our population that is overweight or obese.

Obesity increases the risk of illness from about 30 serious medical conditions, including diabetes, high blood pressure, high cholesterol, coronary heart disease and is associated with increases in deaths from all-causes. Earlier onset of obesity-related diseases, such as Type 2 Diabetes, are being reported in children and adolescents with obesity. The increase in overweight, obesity and severe obesity prevalence is evident in adults (aged 20 to 74) of both genders over the last decade. Prescription medications used to treat many of these conditions can induce deficiency status.

Weight loss drugs and bariatric surgery also increase the risk of serious deficiencies as well. Multiple medications, post-surgical "dumping" and severely limited food intake without proper supplementation can lead to malnutrition and serious deficiencies. This increases the risk for illness and chronic disease conditions despite efforts to lose weight and gain health.

DRUGS AND THEIR EFFECT ON NUTRITIONAL STATUS

DRUG	NUTRIENT	POTENTIAL HEALTH PROBLEM(S)
Anti-Diabetic Drugs	Coenzyme Q10	Various cardiovascular problems, weak immune system, low energy
Sulfonylureas (Dymelor,	Vitamin B12	Anemia, tiredness, weakness, increased cardiovascular disease risk
Micronase/Glyrase/Diabeta, Tolinase)	Folic Acid	Birth defects, cervical dysplasia, anemia, cardiovascular disease
Biguanides (Glucophage)		
Weight loss drugs	Vitamin D	Osteoporosis, muscle weakness, hearing loss
Orlistat	Vitamin E	Heart disease risk, weak immune system, increased free radical damage
No other prescription or OTC weight loss drugs have been studied for nutrient depletions		
Hydralazine-containing Vasodilators	Vitamin B6	Anemia, tiredness, weakness, increased cardiovascular disease risk
	Coenzyme Q10	Various cardiovascular problems, weak immune system, low energy
Diuretics Furosemide (Lasix),	Calcium	Osteoporosis, heart & blood pressure irregularities, tooth decay
Bumetanide (Bumex), Ethacrynic acid	Coenzyme Q10	Various cardiovascular problems, weak immune system, low energy
(Edecrin) Hydrochlorothiazide (HCTZ),	Folic Acid	Birth defects, cervical dysplasia, anemia, cardiovascular disease
Methylclothiazide (Enduron),	Magnesium	Cardiovascular problems, asthma, osteoporosis, cramps, PMS
Chlorothiazide (Diuril),	Potassium	Irregular heartbeat, muscle weakness, fatigue, edema
Indapamide (Lozol), Metolazone	Vitamin B1	Depression, irritability, memory loss, muscle weakness, edema
(Zaroxolyn), Chlorthalidone (Hygroton),	Vitamin B6	Depression, sleep disturbance, increased cardiovascular disease risk
Dyazide, Maxzide, Triamterene	Vitamin C	Lowered immune system, easy bruising, poor wound healing
(Dyrenium), etc.	Sodium	Muscle weakness, dehydration, memory problems, loss of appetite
	Zinc	Weak immunity, wound healing, sense of smell/taste, sexual dysfunction

NUTRIENTS SPECIFICALLY IMPORTANT TO CARDIOVASCULAR DISEASE

In addition to common depletions by drug therapies used to treat disease conditions related to obesity, these nutrients have extra significance in treating obese patients:

NUTRIENT	CONDITIONS EXACERBATED BY DEFICIENCY
CoQ10	Various cardiovascular problems, weak immune system, low energy
Calcium	Heart & blood pressure irregularities, osteoporosis, tooth decay
Magnesium	Cardiovascular problems, asthma, osteoporosis, cramps, PMS
Potassium	Irregular heartbeat, muscle weakness, fatigue, edema
Vitamin B6	Increased cardiovascular disease risk, depression, sleep disturbance
Vitamin B12	Increased cardiovascular disease risk, anemia, tiredness, weakness
Folic Acid	Cardiovascular disease, birth defects, cervical dysplasia, anemia
Vitamin E	Hearing disease risk, weak immune system, increased free radical damage
Carnitine	Elevated blood lipid levels, abnormal liver function, muscle weakness, less energy, impaired glucose control

NUTRIENTS TESTED BY SPECTRACELL'S MICRONUTRIENT TEST

VITAMINS	MINERALS	ANTIOXIDANTS	FATTY ACIDS
Vitamin A	Calcium	Alpha Lipoic Acid	Oleic Acid
Vitamin B1	Magnesium	Coenzyme Q10	
Vitamin B2	Zinc	Cysteine	METABOLITES
Vitamin B3	Copper	Glutathione	Choline
Vitamin B6	Manganese	Selenium	Inositol
Vitamin B12	Chromium	Vitamin E	Carnitine
Vitamin C			
Vitamin D	AMINO ACIDS	CARBOHYDRATE METABOLISM	SPECTROX®
Vitamin K	Asparagine	Fructose Sensitivity	Total Antioxidant Function
Biotin	Glutamine	Glucose-Insulin Interaction	IMMUNIDEX
Folate	Serine		Immune Response Score
Pantothenate			

COMPARISON: MICRONUTRIENT TESTING vs. OTHER NUTRITIONAL ASSAYS

	SpectraCell® Micronutrient Test	Metabolite Excretion (Urine)	Enzyme Activation Index	Mass Spectrometry
Measures cellular <i>function</i> for each micronutrient?	YES	NO	NO	NO
Determines ability of patient's cells to combat oxidative stress?	YES	NO	NO	NO
Determines how healthy a patient's immune response is?	YES	NO	NO	NO
Reflects average of long-term nutritional history (over 3 months)?	YES	NO	NO	NO
Uses living cells from the patient?	YES	NO	NO	NO
Is biochemical individuality a fundamental premise on which it is based?	YES	NO	NO	NO