

CLINICAL APPLICATIONS OF SPECTRACELL'S MICRONUTRIENT TESTS IN OSTEOPOROSIS AND BONE DENSITY

We have long been aware of the importance of calcium and vitamin D for maintenance of bone density after menopause. Less well known is the accumulating evidence that a predisposition for osteoporosis begins in childhood and adolescence. In fact, some evidence indicates that a woman's diet while pregnant can influence her child's later bone mass. Monitoring functional calcium levels may be as important early in a woman's life as it is after menopause, especially for strenuously athletic adolescents and young adults. Certain medical conditions, such as irritable bowel syndrome and renal disease, can also predispose women to osteoporosis. In addition to a need for calcium, a sufficient supply of magnesium and zinc in the diet have also been found to be critical for preventing loss of bone mass, and aging itself constitutes an independent risk factor for magnesium deficiency. A lifelong process of assuring sufficient levels of magnesium and zinc, as well as adequate amounts of calcium and vitamin D, assists in the prevention of osteoporosis, especially after menopause.

DRUGS AND THEIR EFFECT ON NUTRITIONAL STATUS

DRUG	NUTRIENT LOSS	POTENTIAL HEALTH PROBLEM(S)
FEMALE HORMONES	Vitamin B2 Vitamin B3 Vitamin B6	Problems with skin, eyes, mucous membranes and nerves Cracked scaly skin, swollen tongue, diarrhea Depression, sleep disturbance, increased cardiovascular disease risk
Oral Contraceptives Norinyl, Ortho-Novem, Triphasil, etc.	Vitamin B12 Vitamin C Folic Acid Magnesium Selenium Zinc	Increased cardiovascular disease risk, anemia, fatigue, weakness Lowered immune system, easy bruising, poor wound healing Birth defects, cervical dysplasia, anemia, cardiovascular disease Osteoporosis, cramps, PMS, cardiovascular problems, asthma Lower immunity, reduced antioxidant protection Weak immunity, wound healing, sense of smell/taste, sexual dysfunction
HORMONE REPLACEMENT THERAPIES Evista, Prempro, Premarin, Estratab	Vitamin B2 Vitamin B6 Vitamin B12 Vitamin C Folic Acid Magnesium Zinc	Problems with skin, eyes, mucous membranes and nerves Depression, sleep disturbance, increased cardiovascular disease risk Anemia, fatigue, weakness, increased cardiovascular disease risk Lowered immune system, easy bruising, poor wound healing Birth defects, cervical dysplasia, anemia, cardiovascular disease Osteoporosis, cramps, PMS, cardiovascular problems, asthma Weak immunity, wound healing, sense of smell/taste, sexual dysfunction
DIURETICS Loop Diuretics Furosemide (Lasix), Bumetanide (Bumex) Ethacrynic acid (Edecrin) Thiazide Diuretics Hydrochlorothiazide (HCTZ), Methylclothiazide (Enduron), Chlorothiazide (Diuril), Indapamide (Lozol), Metolazone (Zaroxolyn), Chlorthalidone (Hygroton), etc. Potassium-sparing diuretics Dyazide, Maxzide, Triamterene (Dyrenium)	Calcium Magnesium Potassium Vitamin B1 Vitamin B6 Vitamin C Sodium Zinc Coenzyme Q10	Osteoporosis, heart & blood pressure irregularities, tooth decay Cardiovascular problems, asthma, osteoporosis, cramps, PMS Irregular heartbeat, muscle weakness, fatigue, edema Depression, irritability, memory loss, muscle weakness, edema Depression, sleep disturbance, increased cardiovascular disease risk Lowered immune system, easy bruising, poor wound healing Muscle weakness, dehydration, memory problems, loss of appetite Weak immunity, wound healing, sense of smell/taste, sexual dysfunction Various cardiovascular problems, weak immune system, low energy
Aspirin & Salicylates	Vitamin C Calcium Folic Acid Iron Potassium Sodium 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 Irregular heartbeat, muscle weakness, fatigue, edema Muscle weakness, memory loss, dehydration Fatigue, listlessness, and possible skin problems

Micronutrient Testing

An effective diagnostic tool in the prevention and management of chronic diseases allowing diagnosis of specific functional deficiencies within the cell, where it is required for optimal health.

NUTRIENTS SPECIFICALLY IMPORTANT TO BONE HEALTH AND OSTEOPOROSIS

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:

Calcium	Osteoporosis, tooth decay, heart & blood pressure irregularities
Magnesium	Osteoporosis, cramps, PMS, cardiovascular problems, asthma
Vitamin D	Osteoporosis, muscle weakness, hearing loss

NUTRIENTS TESTED BY SPECTRACELL'S MICR ONUTRIENT

TEST

Vitamin A	Asparagine	Lipoic Acid
Vitamin B1	Calcium	Magnesium
Vitamin B2	Carnitine	Oleic Acid
Vitamin B3	Choline	Selenium
Vitamin B6	Chromium	Serine
Vitamin B12	Coenzyme Q10	SPECTROX™ Total Antioxidant Function
Vitamin C	Copper	Zinc
Vitamin D	Cysteine	
Vitamin E	Fructose Sensitivity	
Vitamin K2	Glucose/Insulin Metabolism	
Biotin	Glutamine	
Inositol	Glutathione	
Folate		
Pantothenate		

COMMON RELATED DIAGNOSIS CODES

414.0	Coronary atherosclerosis, of native coronary artery	266.2	Other nutritional deficiency
401.1	Essential Hypertension, benign	272.0	Pure hypercholesterolemia
401.9	Essential Hypertension, unspecified	780.2	Syncope and collapse
272.4	Hyperlipidemia, other and unspecified	786.05	Shortness of breath
269.3	Mineral Deficiency, unspecified	786.06	Tachypnea
269.9	Nutritional deficiency, unspecified	785.2	Undiagnosed cardiac murmurs
769.4	Other abnormal clinical findings	269.2	Vitamin deficiency, unspecified

COMPARISON: MICRONUTRIENT TESTING & OTHER NUTRITIONAL ASSAYS

	Micronutrient Testing	Metabolite Excretion	Enzyme Activation Index	Microbial Growth Assays
Measure a combination of cellular functions for each micronutrient?	YES	NO	NO	NO
Measure ability to support normal metabolic functions?	YES	NO	NO	NO
Determines individual functional requirements?	YES	NO	NO	NO
Demonstrate the intracellular function simultaneously?	YES	NO	NO	NO
Reflect average of long-term nutritional history (over three months)?	YES	NO	NO	NO
Use living cells from the patient?	YES	NO	NO	NO
Identify biochemical individuality?	YES	NO	NO	LIMITED