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Vitamin	A	Carotenoids	D	E	C	Folic Acid
Synonyms	Retinol	Provitamin A	Cholecalciferol	Tocopherol	Ascorbic Acid	Folate, Folacin
Functions	Epithelium Growth, Immunity Cell differentiation Retina, Cornea Reproduction Anti-cancer: breast bladder, cervical <i>Stored in liver</i>	Antioxidant Respirat. Epithel <i>Double A molecule Splits to become A Converts as needed. Less biologically active.</i> <i>Stored in fat cells</i>	Hormone activity Bone & tooth form Absorpt: Ca, Phos Collagen. Anti-cancer Anti-inflammatory Thyroid function Brain development	Antioxidant! Transcription Prevents lipid peroxidation. Nerve, Muscles Reproduction Anti-clotting RBC life span	Antioxidant, Anti-histamine Immune, Healing Collagen, Bone Oxidation-Reduct Vascular Integrity Neurotrans function Regenerates vit E	Tetrahydrofolic funct Epithelium, Growth Reproduction Brain develop RNA, DNA, RBC,Hb Methionine metab Amino Acid metabol Neurotransmitters
Antagonists	Low fat & protein Diarrhea, Alcohol Diseases: liver, pancreas, kidney Mineral oil, Infections. Cystic fibrosis, Parasites,	Poor conversion: diabetes hypothyroidism Alcohol, Caffeine Malabsorption High intakes= less absorption	Low diet fat Malabsorp/Celiac Phenobarbitol Cholestyramine Mineral oil, Dilantin, Steroids Caffeine. XS vit A	Pollutants, N2O Ozone, Mineral oil Inflammation Neomycin, Toxins Cholestyramine Malabsorption Xs Cu, Fe. Low Zn	Toxins, Oxidants Tobacco, Aspirin Heating, Caffeine Diuretics, Cortisone Stress, Illness OCP, HRT, Pregn. Inflammation	Alcohol, OCP, HRT Phenobarbitol Dilantin, Valproic Diuretic, Caffeine Antacids, Tobacco Methotrexate, Tetracyc Def of: B12, C, E
Enhancers	Fat, Bile, E, Zn Protein	Bile, Fatty acids E, C, Zn , Thyroid	Dietary fat Bile, Taurine	Dietary fat, Bile Selenium, C	Bioflavonoids L-Carnitine	Gastric Acid C, B5, B12, B6, E
Deficiency Diseases	Xerophthalmia Bitots Spots, Blind Keratomalacia Hyperkeratosis	See vitamin A	Rickets Osteomalacia Hypothyroidism Tetany	Sterility Musc. paralysis Hemolyt. anemia Retrolentafibroplasia	Scurvy Petechiae Growth retardation	Anemia: macro, megaloblastic Mental retardation Neural tube defects Homocysteinemia
Deficiency Symptoms & Associated Conditions	Vision dysfunctions Night blind Xerophthalmia Abnorm cornea Immune dysfunc Increased infections Acne, Eczema Dry skin & eyes Dermatitis, L planus Mucosal inflamm Folliculitis Ridged nails	Free radical activity Poor lung epithel Aching joints Low T Cells Visual disturbances	Osteoporosis Periodontitis Profuse sweating Restlessness Muscle pain, weak Head frontal bulges Rib bulges Low Ca. Seizures Psoriasis, Scaly lips Cancer: prostate, breast, colon Shortness of breath	RBC fragility Hyperbilirubinemia! Infant jaundice Low HDL Xs clotting Miscarriage Hormonal disorders Bladder cancer, cataracts. Weak muscles Impaired reflexes Folate deficiency	Bruising, bleeding Immune dysfunction Poor bone, healing, Capillary fragility Joint pain Cataracts, Gingivitis Periodontitis Depression Anxiety, Anemia Cervical dysplasia Folate deficiency	Poor growth Fatigue, Weakness Melasma, Depression Gingivitis, Glossitis Inflammation Immune dysfunction Atherosclerosis Loss of villi. Diarrhea Cognitive dysfunction Neuropathy. Low WBC Cervical dysplasia
Diagnostic Tests	Serum A, RPB Retinyl esters Dark Adaptation	Serum carotene	D3: 25 OH & 1,25 Alkaline phos (H) Serum PTH (L)	Serum vitamin E Lipid peroxidation Hemolysis - jaundice	Plasma C Leukocyte C	RBC & serum folate Homocysteine FIGLU MCV, MCH
Supplement	Fish oils w/ A&D Micellized. Acetate	Beta - best Mixed carotenoids	D3 only (not D2) Sun => 10,000 iu	d-alpha not dl-alpha Mixed. Tocotrien	Ascorbic Acid Buffered. Ester	Folic Acid 5MTHF

				ols		
RDA to UL (Upper Limit)	Ch:1250-UL 5000iu Ad:3000- UL10,000iu	No RDA No UL	Ch: 200 to >1000 iu Ad: 600 to >2000iu	Ch: 9 iu –UL 300iu Ad: 28iu- UL 1500iu	Ch:40 –UL 650mg Ad:100- UL 2000mg	Ch:150 –UL600 mcg Ad: 400 – UL1000 mcg
Therapy Ranges	2,000 -50,000 iu Preg: <10,000 iu	2000 – 10,000 iu	200 - 2000 iu Based on condition	25 iu - 1000 iu Based on condition	100 - 20,000mg + Based on condition	200 mcg -10 mg Preg: 1 - 3 mg
Toxicity	>30,000iu longterm	None	>50,000 long term	>1650 iu long term	Non-toxic	Not determined
Symptoms of Excess	Headache, Scaly skin Bone loss. Diplopia Birth defects. Low D	Orange/yellow skin. Excess: not a cause of A toxicity	Hypercalemia Joint pains, Nausea Anxiety. Thirst	Fatigue, Bruising Bleeding, Nausea Reduced carotene	Diarrhea, Gas, Cu deficiency Kidney stones	Masks pernicious anem Neurologic symptoms
Avoid In	Retinal receptor cancer		Hypercalcemia Hyperphosphatemi a	<i>Potentiates Nitroglycerine</i>	Uric acid stones G6PD Deficiency Hemochromato sis	Untreated pernicious anemia (need B12) Absence of or low B12
Sources	Animal. Liver, Egg, Milk, Fish	Yellow/orange Vegs, Fruits, Yolks	Liver, Oils, Yolks, Fish, Sunlight	Germ, Seeds, Oils, Eggs, Grains, Fish	Raw vegies, Fruits Acerola, Sprouts	Green leafies, Beans, Fruits, Nuts

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Vitamin	B1	B2	B3	B5	B6	B12
Synonyms	Thiamin	Riboflavin	Niacinamide, Niacin, Nicotinic	Pantothenic Acid Ca Pantothenate	Pyrdioxine, Pyridoxal, Pridoxamine	Cobalamins, Cyano Methyl, Adenosyl
Functions	Func: TDP, TPP Glycolysis Energy metabolism CHO metab Growth, Acid prod Mitochondria Neurologic.Cardi ac. Oxidative decarboxylation	Func: FAD, FMN Oxidation- Reduct Detoxification Energy Metabol Amino Acid Met Growth, Epith Dehydrogenat ion MAO function	NAD/ NADP Electron Transfer ATP production Fatty acid synthes Amino Acid met Brain, Nerves Spares tryptophan <i>Tryp convert to B3</i>	CoEnzyme A Acyl transfer. Adrenal function Antibodies Nerves. ATP Choline metabol Anti- histamine Healing Control propionic	P5P. Gene expression. Transamination Metabolism: protein, amino acids, CHO, fat RBC formation Neurological Neurotransmitter Steroid metabolism Affects >100 enzymes	Metabolism: lipids amino acids Methylation Nucleic acids Growth Bone marrow Neurological Neurotransmitter RBC formation
Antagonists	Heating Alcohol Fever, Drugs Stress, Soda/lime, Diuretics Raw Fish, Candida	Heating, Alcohol Caffeine, Fever Drugs, Stress Processing Oral Contracept. UV light Tetracycline Thyroid disord	Alcohol, Diuretics Niacytin (corn) Leucine Antidepressants Isoniazid Tetracycline	Stress, Alcohol Caffeine Drugs Processing of food Diabetes Inflammation Malabsorption	Alcohol. Diuretics Caffeine, Drugs, OCP HRT, Flax seed meal Hydrazines L-Dopa, Isoniadid D-Penicillamine HIV, Liver disease Cancer. Niacin metab.	No intrinsic factor Low gastric acid Cirrhosis, Stress Alcohol, Sprue, NO Dilantin,Clofibrat e Antacids, Prilosec Pepcid, Neomycin Oral Contracept

Enhancers	Lipoic acid	Phosphorus Fiber	Tryptophan <i>converts to niacin</i>	Vitamin C B vitamins	Phosphorus Zinc (phosphorylation)	H Cl , Pepsin Animal Protein
Deficiency Diseases	Beri-Beri Alcoholic:Wernicke Korsakoff's Cardiac failure	Seborrhea,Ane mia Acne Rosacea Corneal vascular Liver defects	Pellagra: Dermatitis Diarrhea Dementia	Loss hair pigment Adrenal insuff. Growth retard. Burning feet synd	Convulsions Neuropathy Carpel Tunnel	Anemias: Macrocytic Megaloblastic Neuropathy Growth retard
Deficiency Symptoms & Associated Conditions	Sensory loss Loss of reflexes Foot/wrist drop Motor loss. Insomnia, Headache Myopathy, Pica Cardiac abnormals Poor vision. Fatigue Memory loss Noise sensitivity Lymbic dysfunction Calf tenderness!	Fatigue, Hair loss Dermatitis Cheilosis Fissured tongue Scrotal dermatitis Poor growth Photophobia Poor appetite Folate deficiency Chapped lips B6 deficiency Eyes burn, itch	"Red Neck" Glossitis, Red sore tongue Slow growth Edema, Fatigue Weakness, Diarrhea, Dermatitis Depression Hyperpigmentati on Hyperlipidemia Appetite loss Memory loss	Fatigue, Nausea Depression Anxiety, Restless Inflammation Poor healing, IBS Neuralgia, Eczema Palpitation, Edema Allergy, Insomnia Hives, Urticaria Burning feet Toe walking Adrenal fatigue	Anemia: microcytic Insomnia,Inflammati on Poor growth, Neuralgia Malabsorption Poor conv try>niacin Immune dysfunction Cramps, PMS Hyperpigmentation Memory loss Seborrhea, Dermatitis Pregnancy nausea Cheilosis, Glossitis	Slow growth Development delays Anemias, Depression RBC hemolysis Paresthesias Memory loss Red, slick tong Glossitis. Constipation MS. Neuropathy Homocysteinemia Tactile hypersensitive Loss of balance
Diagnostic Tests	ETK(transketolase)	EGR (reductase)	Urine 1-N-Methyl nicotinamide	Microbial assay Lymph response	RBC P5P EAsAT Homocysteine Kyneurenic/Xanthurenic	Methylmalonic Homocysteine High MCV
Supplement	Thiamine HCL	Riboflavin R-5-P	Niacin (flush) Niacinamide	Pantothenate Pantothenic acid	Pyridoxine HCl P-5-P	Hydroxy, Methyl Oral, Subling, Inject
RDA/AI to UL (Upper Limit)	Ch:0.2mg-No UL Ad:1.0mg- No UL	Ch:0.3mg-No UL Ad:1.6mg- No UL	Ch:2mg- UL 10 mg Ad:18mg- UL35mg	Ch:1.7mg-No UL Ad:7mg- No UL	Ch:0.1mg-UL 30mg Ad:2.0mg-UL 100mg	Ch:0.4 mg-No UL Ad:2.8 mg-No UL
Therapy Ranges	2 mg - 500 mg	2 mg - 400 mg R5P 10 - 50	25 mg - 5000 mg	250mg - 6,000 mg	10 mg - 500 mg P5P 10-50 mg	50 mcg - 5 mg need adequate folate
Toxicity	Nontoxic	Nontoxic	Liver toxicity	Broad range	>500 mg long term B2.R5P is protective	Broad range Xs depletes FA
Symptoms of Excess	Headache, Seizure, Arrhythmia	None	Niacin only - gives flush	Possible diarrhea	Reversible neuropathy	Anemia, neuralgia Folate deficiency
Avoid In	High histamine Anxiety	High histamine	Flushing to niacin Liver effects	Low histamine	L-Dopa treatment	High histamine
Sources	Meat Legumes, Wheat Germ, Yeast	Beef liver, Steak, Ricotta, Oysters Mushrooms	Beef liver, Poultry, Beef,Fish,Mushro om	Meats, Liver, Yolk Legumes, Grains Royal jelly	Vegetables, Grains, Fish,Beans, Nuts, Meats	Mollusks, Fish, Beef, Poultry, Egg, Milk, Legumes, Grains

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MINERALS

Mineral	CALCIUM (CA)	PHOSPHORUS (P)	MAGNESIUM (MG)	POTASSIUM (K)	MOLYBDENUM [Mo]
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Functions	Bone & tooth structure Muscle function, Clotting Heart rhythm,Nerve funct Blood vessel expans/contr Hormone&Enzyme secret Cell membrane permeabil	Bone, Tooth, pH Muscle function Brain, Nerve function Calcium metabolism Cell membrane Phospholipids	>300 Enzyme functions Neuromuscular Hormone metabolism Neurotransmitters Heart, Bone, Calcium Blood pressure, ATP	Neuromuscular Heart rhythm Kidney function Body fluid Muscle contract Ca conservation	Oxidase enzymes: Nitrite reductase Molybdopterin Detox. Enhances S use Depletes Cu
Distribution	99% in bones & teeth 1% blood, muscle & intracellular fluid	2 nd most abundant 85% in bone 14% soft tissue, 1% blood	>60% in bones. <40% in soft tissue 1% in serum, extracell blood	95% in body cells	Bound to Sulfur or Oxygen
Antagonists	Caffeine, Coffee, Alcohol, Sodas, Smoking, Oxalates Antacids!! Phytates,Fiber Toxic metals,Tetracycline XS:Fat, Prot, Fe, Na, Phos Def: Mg, D.	Antacids containing aluminum or Mg Kidney malfunction Phytates XS Mg, Ca, Al	Oxalic acid, Phytates Antacids, Diuretics Caffeine,Alcohol, Fiber OCP, HRT, Antibiotics Cisplatin, Malabsorption XS Ca, Phos, Prot, Fat	Diuretics, Stress Alcohol, Caffeine, Steroids, Laxatives Colchicine,Alda cto Furosemide, Low Mg,	Sulfates, Sulfites, Aldehydes, Chemicals, Toxins Pollutants, Arsenic Phosphate Tungston
Enhancers	D3! Mg! B6,Bo,Si,EFAs, K Taurine Protein,Lactose PTH,Calcitriol, Calcitonin	Vitamin D3 PTH, Calcitriol, Calcitonin	Vegetable based diet B6, Boron, Vit D3 Carbohydrates, Lactose	Vegetable diet B6, Magnesium	Vegetable diet Vit C, B vitamins
Deficiency Diseases	Rickets Osteoporosis Periodontosis	Rickets, Cardiac myopathy	Seizure disorder Toxemia, PreEclampsia	Hypokalemia	Development delay Neurologic disord
Deficiency Symptoms & Associated Conditions	Osteopenia, Cramps Periodontitis, Tremors Seizures, Insomnia Hypertension Irritability Anxiety. Brittle nails	<i>Deficiency is rare</i> Anorexia, Bone loss Weakness, Neurological problem Ataxia, Paresthesia, Muscle myopathy	Cramps, Osteoporosis, Insomnia. Irritability Depression HTN,N/V Arrhythmia, Constipation Osteo, Perio,PMS, ADHD Salt craving, Yawn, Sigh	Muscle weakness Heart arrhythmias Lethargy Muscle cramping Nervousness	Esophageal cancer rritability, Amino acid intol, Poor detox Chemical sens Anemia
Diagnostic Tests	Serum Ca, Ionizable Ca Serum osteocalcium Urine crosslinked pyridinolines	Serum phosphorus (low specificity)	RBC Mg, WBC Mg Urine load test Serum not valid , Hair	Serum potassium	RBC Mo Plasma Mo Hair
Supplements	25 – 39% absorption. Acet, Aspart, Chelate, Carbonate, Cl, Citrate Glucon, Hydroxyapatite, Orotate, Lactate,Monopho	K Phos, Neutra Phos K	Aspartate, Chelate Chloride, Citrate Gluconate, Glycinate Malate, Orotate, Oxide Proteininate, Sulfate	Aspartate, Bicarbonate, Chloride, Citrate, Gluconate, Iodide	Chelate, Sodium molybdate
RDA/AI to UL (Upper Limit)	Ch: 210-800 mg Adol: 1300 mg Adult: 1000 -1300 mg UL for all: 2500 mg	Ch: 100-500 mg UL 3000 mg Adult: 700-1250mg UL 3000 –	Ch: 80 – 240 mg UL 65-350 mg Adult: 360 – 420 mg UL supplements: 350 mg	Ch: Inf 400- 700mg Ch>1 3000 mg Ad::4500- 5100mg No UL	Ch: 2 -22 mcg UL 300 – 600 mcg Adult: 43- 50 mcg UL 2000 cg

		4000mg		for all	
Therapy	250 – 1500 mg	250 to 750 mg	50 to 750 mg	50 – 500 mg	50 – 20 mcg
Toxicity	>2500 mg	Rare	IV XS & in kidney fail	None listed	Non-toxic @1500 mcg
Symptoms of Excess	Def: Mg, Mn, Phos, Zn Alkalosis. Constipation Joint pain. Soft tiss calcif.	Hypocalcemia Tetany	Diarrhea, Cramping Low: Ca, Phos IV low BP, flushing	Hyperkalemia Cardiac arrhythmia Cardiac arrest	High uric acid Gout , Low Cu, Anemia, Diarrhea
Avoid In	Hypercalcemia	Hypophosphatemia	Hypocalcemia, ESRD	Hyperkalemia	Low Cu
Sources	Milk prod, Salmon, Sardines w/ bones, Mollusks, Vegetables, (Not high oxalates: spinach, rhubarb, chard)	Widely available! Meat Poultry, Fish Eggs, Milk, Nuts Legumes, Cereals, Grains [Sodas]	Greens, Chlorophyll, Vegetables, Legumes, Nuts, Seeds, Whole grains, “Hard” water	Fruits, Melons, Vegetables, Meats Whole Grains Legumes, Milk	Legumes, Meat, Fish, Poultry Wheat, Grains Vegetables, Greens, Eggs

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Mineral	IRON (Fe)	COPPER (Cu)	CHROMIUM (Cr)	MANGANESE (Mn)	SELENIUM (Se)	ZINC (Zn)
Functions	Hemoglobin Myoglobin Oxygen transport Growth, VitA Cell differentiation Electron trans Energy ,O2 trans	Bone, Hair Skin, Immunity Hemoglobin Thyroid funct Neurotrans Oxidases, SOD Collagen	Glucose control Insulin function & secretion Circulation Liver function	Reproduction Growth, Bone Cartilage Glucose control Thyroid, SOD Brain & CNS Lipid metabol	Glut Peroxidase Antioxidant Redox, Pancreas Vit E, Conversion:T4> T3 Sulfur substitute Cardiac function	>200 enzyme function Energy metab, Protein, Collagen, Immunity Alk phosphatase Sexual maturation, Sensory!! MT, SOD, Detox, Insulin funct
Distribution	66% in Hb Absorption = 15%	Liver, Kidney Absorpt=75%	Kidney, Liver	In tissues in trace amounts	Exists in 3 oxidation states	Primarily in all organs & tissues
Antagonists	Coffee, Oxalate Phytate, Fiber Polyphenols, XS P Toxic metals, Tetracycline,ED TA Casein,Neomycin Cholesytramine, , Ca, P, Zn XS E, Cu	Cobalt, Mn Cadmium Fiber, Phytates OCP, HRT Malabsorption Antacids XS Zinc, P, Mo Ca, Vit C	Glycemic foods Antacids!!!! Alcohol Caffeine, Stress Steroids Diabetes Preg: H losses XS Iron	Antacids Malabsorption XS Re, Cu, Zn XS Cobalt, Phos Chemical expos	Toxic metals esp Pb, HG,Cd, As, Cu Malabsorption Sulfites, Toxins Stress, Infection Smoking, Pregnancy Fe def. Free radicals MSUD, PKU	Antacids! Cu,Pb,Cd,Hg Stress, Steroids, Ca Diarrhea, Malabsorpt Alcohol, Hormones Sugars, Iron, Phytate Diabetes, Furosemide Processed foods Vegetarian diet, Fiber
Enhancers	C B12, Folate, Cu Lactic, Citric, Nickel Tartaric, Sugars, Mucin, Meats	Iron, Histidine Amino acids, Meth, Cys, Citric Guconic,	Iron Meth, Histidine Picolinate VitC	Vit C, E, B6	Sulfur aminos Methionine Taurine, B2, Vit E	Animal protein Vit A, B vit, Picolinate Cit, His, Cys, GSH Pancreatic enzymes

		Lactic				
Deficiency Diseases	Anemia Plummer-Vinson	No pigment in skin and hair	Diabetes Gestat diabetes	Convulsions Neuropathy	Kashin-Beck's Keshan's	Acrodermatitis enteropathica
Deficiency Symptoms & Associated Conditions	Microcytosis Palpitations, SOB Glossitis, Stomatitis Dysphagia, Anemia Intestinal malabs Infections, Fatigue Pale eye membrane Spoon nails	Iron-resist anemia Hypochromia Low WBC, Hypopigment Abnorm bone Immune dysfun CardioPulm Dys Depress/Schizo H Chol L HDL	Glucose intoler Insulin resist Syndrome X Cardiovasc Dis H triglycerides Neuropathy Poor collagen Weight loss	Poor growth CNS dysfunc Poor insulin func Impaired SOD Tinnitus, Tardive Insomnia, Fatigue Poor bone, cartil Hair color chng Ataxia, Infertility	Cardiomyopathy Joint degeneration Pancreatic insuff Loss hair pigment Immune dysfunc Muscle wasting Calf tenderness Cancer, Low convers T4>T3 Cell fragility	Poor healing, Eczema Derm, Acne, Malabsorp Inflammation, Infertility Sensory disorder, Pica Picky appetite, Diabetes Loss of smell, taste, Vision dys, Vit A defic Pregnancy, Lactation Nail: white lines!
Diagnostic Tests	Serum Iron, IBC % saturation Serum ferritin !	Ser Cu, ESOD Ceruloplasmin RBC Cu, Hair	RBC Cr Serum (poor) Hair	RBC Mn, Hair MnESOD Mononuclear BC	EGPX, RBC (serum poor) Hair Toenails	WBC Zn! RBC Zn, MT! Alk Phos, Hair Taste test. (Serum poor)
Supplements	Fumarate, Citrate Chelate Gluconate, Sulfate	Chelate, Citrate Gluconate Sulfate	Trivalent Cr ³⁺ Picolinate, Cit, Chelate, GTF	Chelates	Chelate, Picolin Selenate Se Methionine	Acetate, Citrate Gluconate, Oxide Picolinate, Sulfate
RDA/AI to UL (Upper Limit)	Ch: <1 – 11mg UL 40 mg Adult: 8 – 27 mg UL 45 mg	Ch: 200-440mcg No UL Adult: 0.7-1.3mg No UL	Ch: 0.2-15 mcg Adult: 25-45 mcg No UL	Ch: 0.6-1.5 mg Adult: 1.6-2.6 mg UL 11 mg	Ch: 15 – 40 mcg Ad: 55-70mcg UL 400 mcg	Ch: 2 -5 mg UL 4 – 23 mg Adult: 8 – 14 mg UL 40 mg
Therapy	0 – 40 mg	0 – 4 mg	50mcg – 1 mg	1 – 20 mg	25 – 200 mcg	5 – 90 mg
Toxicity	>60 mg	1000 mg (1 gr)	Hexaval (Cr ⁶⁺)	Industrial expos	Gram amounts	150 – 450 mg
Symptoms of Excess	Hemochromatosis Liver damage Free radical damage Copper skin color	Wilson's Disease Hematuria, N/V Jaundice Trt: Zn, Mo	From industrial sources: (Cr ⁶⁺) Picolinat 2.4 mg kidney/liver dys	Oral use toxicity in liver failure Industrial expos = Parkinsonian	Selenosis Fatigue, N/V, Hair & nails brittle Paresthesia	Low Cu, Low HDL High cholesterol Metallic taste! N/V Abdom pain & cramps
Avoid In	Hemochromatosis Thalassemia	Wilson's	Liver failure	Liver failure	Selenosis	Menkes' disease which is low copper
Sources	Organ meats, Liver Meat, Yolks, Leafies, Molasses, Mollusks Nuts, Legumes,	Seafood, Liver Organ meats, Eggs, Milk products Grains	Mushrooms Prunes Veggies Organ meats	Whole grains, Frutis, Nuts, Dark leafies, Liver, Wine	Grains, Meat Organ meats Poultry, Seafood Soil sources vary	Seafood! Oysters, Meat, Liver, Soy, Yeast, Milk Legumes, Fruits, Wheat germ

			Whole grains			
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LOCATION	SIGNS & SYMPTOMS	HELPFUL NUTRIENTS	OTHER
Head General	Bulging frontals	Vitamin D3!! Calcium!!	
Ears	Hard ear wax	Omega 3 fatty acids	Allergies, Structure
	Itching, Ear infections	Vitamin A, C, Zinc, B5, Quercitin	
	Lobe: Vertical ear crease	Magnesium, B vits, Omega 3, CoQ10	Cardiovascular risk
	Ringling/ Tinnitus	Niacinamide, B6	Allergies, TMJ
	Sound sensitivity	Magnesium, Zinc	
Eyes	Corneal “Blood shot”, Burning, Itching	B2	
	Dry, Soft cornea, Xerosis, Bitots	Vitamin A! Zinc	
	Eyelid pallor	Iron	
	Iris: Copper ring	Zinc!	XS Cu. Wilson’s
	Macular degeneration, retinal problems	Zn,Tau,NAC,Bilberry, ALA, Lutein,Lycopene	Hypoadrenalism
	Night blind or sensitivity to light	Vitamin A (beta carotene must convert)	
	Vision dysfunction, poor eye contact	Vitamin A, Zinc, Omega 3, B1! (Nystagmus)	
Hair	Loss of / thinning, Loss of pigment	Protein, Zn, Biotin, PABA, EFAs, Cysteine	XSvitA, Hypothyroid
	Lackluster, Unruly “fly away”	Biotin, EFAs, Protein, Zinc, Amino acids	
Nose	Loss of smell sense	Zinc	Toxins
	Sinusitis, Post-nasal drip	Vit C, Vit A, B5, Zinc, Quercitin, B carotene	Allergies
Oral	Aphthous ulcers	Probiotics, Digestive enzymes	Food reactions
	Cheilosis (corner cracks), Lip fissures	B2, Iron	Poor nutrition
	Gingivitis, Periodontitis	Vit C,B vits, B5,Quercitin,Zn,CoQ10,Ca,Mg	Pathogens
	Leukoplakia	Vitamin A, beta carotene, Quercitin	
	Swallowing difficulty	Iron	TMJ
	Taste: Loss	Zinc	Toxins
	Taste: Metallic		Xs Zinc, Toxic metals

	Tongue: Coated	Fiber, Digestive acid & enzymes, Probiotics	
	Tongue: Fissured, Glossitis, Papilla atrophy	B Cpx, B6, B12, FA, Digestive acid, enzymes	Malabsorption
	Tongue: Red, Inflamed	Niacin!	
	Tongue: “Bald” Slick, red	B vitamins! B12! Iron!	Achlorhydria
	Voice hoarse	Thyroid support: tyrosine, Cu, Zn, Se, I, FA	Hypothyroid
	Parotid enlargement, Dental erosions		Bulimia
Digestive	Belching, Bloating, Gas	Digestive acid, enzymes, Probiotics, Se, Zn,	Food reactions
	Bowel inflammation, colitis	Probiotics, Glutamine	Food Rxns, Pathogens
	Constipation	Fiber, Probiotics, Magnesium, Choline	
	Diarrhea, Abnormal stool, Mucous	Fiber, Prob, Prot,B3,Zn,Glutamine, Enzymes	Foods/Path. Xs C,Mg
	Gastritis, Gastric Ulcer	EFAs, Probiotics, Bismuth, Demulscents, DGL	H pylori
	Nausea, Vomiting	B6, B5,	Xs: Zn,D3,E. Toxics
	Stool: yellow	Bile acids, choline, taurine	
Cardiovascular	Abnormal rhythm, Palpitations	Mg, Potassium, Taurine, B1, B6, Iron, CoQ10	Xs Tyrosine
	Atherosclerosis	C, E, Cr, Se, Mn, Mg, EFAs, Quercitin, CoQ10	
	Cardiomyopathy, CHF	L-Taurine!, Se!, CoQ10, B1 (CHF)	
	Hypertension	Magnesium!	
	Hyperlipidemia	L-carnitine!(trigly), B vits, CoQ10, Mg, B3, Fiber	Xs sugars, calories
	Varicosities	Vit E, C, Bioflavonoids, Quercitin	
Extremities	Finger prints: not clear - wrinkled		Adrenal, Collagen
	Nails: ridged, horizontal indentations	Protein. Broad deficiencies	Maldigest/Malabsorption
Hematologic	Anemias	Macro: B12, FA, Cu, E, B2, Micro: Iron, B6	
	Clotting problems (poor)	Vitamin K, Mn	
	CRP elevated	Vit C, Quercitin, Bioflav., Omega 3, Garlic	ASA
	Fibrinogen elevated	Vit E, EPAs, Se, FA, Garlic	ASA
	Leukopenia	Copper, C	
	Homocysteinemia	B6, P5P, MB12, 5MTHFolate, TMG, DMG	
	Hyperbilirubinemia: inf jaundice, Gilbert's	Vitamin E! Vit C	Free radical exposure
	Liver: enzymes elevated	B vitamins, Inositol, Choline, Greens, EFAs	Toxins. Liver disease

	Liver: Alkaline phos elevated only	Vitamin D3 deficiency	
	Uric acid low	Molybdenum	Copper toxicity
Hormonal Genl	Cold intolerances. Hypothyroid	Tyrosine, Iodine, FA, Copper, Se, B5	
	Glucose intol: Hypoglycemia, Diabetes	Cr, Zn, Mn, Mg, B vits, Va, Biotin, Gymnema	
	Growth delays	Protein!, Fat, Zn!, A!, D3!, B vitamins!	Celiac. Malabsorpt
	Sweating excessively (infants & adults)	Vit D3!! EFAs, Mg	

<u>LOCATION</u> Horm:	SIGNS & SYMPTOMS	HELPFUL NUTRIENTS	OTHER
Fem ale Mal e	Breast cancer	D, E, A,carotenoid,Se,Quercitin,CoQ10, Fiber	Xs fat, trans fats
	Breast tenderness	Vit E, EFAs,	Xs fat, trans fats
	Hot flashes	EFAs, Mg, Black cohosh, Ginseng, Boron	X niacin
	Infertility	See Pregnancy + Tyr, Zn, Iodine (thyroid supp)	Acupuncture
	Menstrual: Cramps, PMS, Heavy bleeding	Mg, B6, Ca, Potassium, B6, EFAs, Quercitin	
	Pregnancy	B's!O3,Mg,D3,Ca,FeCr,Zn,Se,Probiotic,Chol	Limit A <5000 iu
	Vaginal dryness	EFA's	
	Infertility	Vit E, Zn,C,L-Carnitine, Arginine, EFAs	
	Prostatitis	Zn!, D3! B6, C, Quercitin!, CoQ10	
Immunity	Cancer	Combo antiox: C,E,Carotenoids,Se,Zn,CoQ10,	Xs fats, trans fats
	Chemical sensitivity	Zn:Cu, Se,C,E,B2,B vits, B5, Taurine, CoQ10	X exposures
	Infections	Zn, A, D3, C, Quercitin, EFAs, Cod Liver Oil	
	Inflammation	A, B's,C,D,E Quercitin,Turmeric,EFAs,CoQ10	
Muscle/Skeletal	Arthralgia, Bursitis, Tendonitis	C, B5, D3, Mg, EFA's, Quercitin, Glucosamine	
	Calf tenderness	B2!! B complex, Mg	

	Degenerative joint & discs	C, Bioflavonoids, Quercitin, Glucos, Turmeric	
	Legs: Bowed or “Knock knee”	Vitamin D3!, Cod liver oil, Ca, Mg, Zn	
	Low tone	Zn! Protein, Amino acids, B6	
	Muscle Cramps, Spasm, Pains	Mg! Taurine! 5HTP! Inos Ca, Potass, Biotin	X Nighshades
	Muscle wasting	Protein, Aminos, Zn, Se, L-Carnitine, B vits	
	Osteoporosis, Periodontosis	Ca, Mg, D3, K, C, EFAs, Bo, Cu, Zn, Mn, Silica	
Neurological	Balance problems (dizzy)	B12 (methyl)! FA, B6/P5P, B3, Quercitin	Reposition maneuver
	Burning Foot sensation	B5 (pantothenic acid)!	
	Carpal Tunnel Syndrome	B6/P5P! B2/R5P! Mg!, B complex, Quercitin	X Nightshades
	Foot Drop/Wrist Drop reflex	B1!	
	MS	Bvits, MB12, FA, B6/p5p, CoQ10, CompNutr	Gluten? Toxins
	Neuropathy, Neuralgia, Paresthesias	B1, B2, B6/P5P, MB12!, FA, E, Cr, Mg, CoQ10	
	Parkinson’s	Vit E, CoQ10, B vitamins + Comp Nutrition	X B6 w/ L-Dopa
	Raynaud’s	B vitamins	?Hypoadrenalism
	Seizures	Mg, B6/P5P, B1, D, Ca, Taurine,	
	Startle easily, Reflexes brisk	Mg! Ca, D, B vitamins	
	Tremors	Magneisum, Choline, Inositol	Limit Tyrosine
Psychological	Appetite: Eating disorder – Bulimia	Digestive enzymes, Probiotics, Zn, B vits	X Trigger foods
	Appetite: Poor or Anorexia	Zinc, Vit A, Protein, B vits, B1, B3, Biotin	Toxics
	Appetite: Cravings for Fats, Butter	EFAs, Tyroisine, Iodine, Cu/Zn bal, Folic	Hypothyroid!!
	Appetite: Cravings Glutens, Milk products	Digestive enzy w/ peptidases, Probiotics, Zn	X GFCF
	Appetite: Cravings for Ice	Iron deficiency anemia!	
	Appetite: Cravings Salt	Mg	Low adrenal function
	Appetite: Pica -craving non foods	Zn, Ca, Mg, Iron, Se, B1	Toxic metals!
	Behaviors: ADD, ADHD	Mg, Zn, B vits, Ca, Cr, 5HTP, Tyrosine	?Food reactions
	BiPolar	Mg, Taurine, Ca, Zn, Limit B vitamins	X Choline, Tyrosine
	Depression, Mood disorders	Mg, B vits, 5HTP, Tyrosine, Choline, O3, Biotin	
	Dream recall – poor	B6/P5P!	
	Fatigue	Mg, B vits, Tyrosine, CoQ10, B5	?Hypoadrenalism
	Insomnia	Melatonin! 5HTP, Mg, Ca, Inos, B3, Valerian	

	Memory & cognitive dysfunction	Mg, B vits, B12, FA,B6, D, Omega 3,Choline	
Respiratory	Asthma	Vit D3, Potassium, Quercitin, CoQ10	?Milk products
	Shortness of Breath	Vit D3, Iron.	
Skin	Acne, Eczema, Dermatitis, Psoriasis	Zn, A, D, CLO. O3, B vitamins. Niacin!	?Milk products
	Folliculitis, Hyperkeratosis	D!, A!, Zn! Omega 3! Cod liver oil!	?Foods
	Pallor	Protein, Glucose control. Amino acids. Zn.	Hypoadrenalism
	Peeling palms, feet	Omega 3, Vit A, Vit D, Zinc	Yeast problems
	Pigment: hyper	B6, B3, Folic Acid + B complex	From HRT, OCP
	Pigment: hypo (Vitiligo)	PABA, Tyrosine, Cu:Zn balance	Autoimmune
	Rosacea	B2! + B complex to balance	
Urinary/Genital	Cystitis	Buff Vit C, Quercitin. Probiotics. If IC:No B's	Alkaline diet
	Kidney stones – Calcium oxalate	Mg, B6, Ca citrate,potassium citrate (if Cit low)	
	Kidney stones – Uric acid (Gout)	Mg, B6,O3,E,A,D3,C,FA,Zn,Se, Blk cherry ext	Avoid purines

Advanced Nutrition & Human Metabolism: Groff. 4thEd, 2005 Harper's Review of Biochemistry: Lange Med 25thEd, 2000 Food-Medication Interactions: www.foodmedinteractions.com Office of Dietary supplements, NIH: Fact Sheets 20086 6 Principles of Nutrition Assessment. Gibson 2nd E. 2005