Vitamin Summary: Water Soluble Vitamins

Vitamin	Function	Addl Tissue Effects	RDA mg/l	Special Needs	Deficiencies	Toxicity	Food Stabil-ity	Notes
Thiamin (B-1)	energy metabolism: TPP & in TCA cycle	*nerve cell membrane	mgs	-----	Beriberi also: nerve damage heart and muscle damage, paralysis	-----	heat sensitive	
Riboflavin (B-2)	energy metabolism: FMN, FAD & in ETS	*normal vision, skin health	mgs	infants, children, pregnant women	facial skin, eyes, GI tract damage	-----	light UV	
Niacin (B-3)	energy metabolism: NAD, NADP	*health of skin, nervous and digestive systems	10's of mgs	-----	pellagra	niacin flush liver damage peptic ulcers		*can be synthesized in body from tryptophan
Biotin	energy metabolism:coenzyme in TCA, fat syn,thesis, gluconeogenesis, amino acid metabolism		tenths of mgs	-----	-----	-----		*synthesized by GI tract bacteria
Pantothen-ic Acid	energy metabolism: Coenzyme A, syn of lipids, steroid hormones & hemoglobin		mgs	-----	-----	-----	heat sensitive	

Vitamin	Function	Addl Tissue Effects	RDA mg/l	Special Needs	Deficiencies	Toxicity	Food Stability	Notes
B-6	coenzymes PLP & PMP in amino acid and fatty acid metab, transfer of amino groups, converts tryptophan to niacin	*prod of RBC's *cognitive devel *immune fct, *steroid activity *serotonin syn	mgs	-----	weakness, irritability, insomnia, convulsions	nerve damage, depression, fatigue	heat sensitive	*stored in muscle tissue *toxicity assoc with trtmt for PMS, CTS and Sleep Disorders *alcohol use promotes loss
Folate	coenzyme THF & DHF, synthesis of RNA & DNA, activates B12	*new cell formation	100's ugs	women of childbearing age and pregnancy	impairs cell and protein synthesis, anemia, GI tract damage,cervical cancer	-----		*excess secreted in bile *GI tract injury causes rapid loss
B-12	folate activation, synthesis of RNA & DNA,	*sheath around nerves, bone cell activity	ugs	-----	pernicious anemia	-----		*requires intrinsic factor or absorption *only nutrient found naturally only in animal foods
Ascorbic Acid (C)	coenzyme, collagen formation, thyroxin & norepinephrin syn	*Antioxidant, stress resposnse, *protects lungs, *deactivates histamine, *disease resistance	10's of mgs	smokers oral surgery metal poisoning burns, infections	scurvy also: pinpoint hemorages, bleeding gums	nausea cramps diarrhea kidney stones		*some stored in adrenal gland

Vitamin Summary: Fat Soluble Vitamins

Vitamin	Function	Addl Tissue Effects	RDA mg/l	Special Needs	Deficiencies	Tox-icity	Food Stab-ility	Notes
A & Beta Carotene	* syn of rhodopsin	*promote vision *cell differentiation *support immune system *Promote growth and remodeling	mgs	-----	nightblindness, blindness, keratinization, mucous cell destruction	birth defects		*deficiency main cause of child blindness *toxicity from use as ance trtmt and cancer cure
D		*hormone like action: cell differentiation *promote bone mineralization also effects on brain, nervous tissue, pancreas, skin, muscle, cartilage, reprod. system	ugs	growing children, older, darkskinned people need adequate dietary supply	rickets, osteomalachia	kidney stones, hardened blood vessels		*body can syn from cholesterol *most critical of all vitamins to remain in RDA range
E		*antioxidant *stabilizes cell membranes	mgs		erythrocyte hemolysis, neuromuscular dysfunction, loss of coordination, impaired vision and speech	decreased clotting,	heat sensiti ve	*body's most important antioxidant
K	*synthesis of clotting proteins		10's of ugs		failure of blood to clot	RBC hemolysis, jaundice, brain damage		*significant amounts can be synthesized by GI tract bacteria