

Vitamins

Vitamins

- Essential
- Produce deficiency symptoms when missing from diet
- Yield no energy
- Fat-soluble vitamins
- Water-soluble vitamins

Vitamins

- Water soluble
 - Vitamin C & B vitamins (vitamin B6, Vitamin B12, thiamin, niacin, folate, riboflavin, Biotin, Pantothenic acid)
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- Fat soluble
 - A,D,E and K
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Folate

- Required to produce new cells
 - Example
 - Red blood cells

- Deficiency
 - Anemia (Megaloblastic) – Large, immature red blood cells
 - Neural tube defects

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 - Neural tube develops in 1st month of gestation
 - Defect occurs when spinal column or skull don't form properly
 - Spina Bifida – failure of neural tube to close
 - Spinal cord bulges through the back.
- Sources
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B-Vitamins

- Many of the B-vitamins are co-enzymes
- Co-enzymes are needed for the enzymes to do their job
- Most B-vitamins help release energy into the body from food

Vitamin D

- Function
 - Prohormone – works like a hormone, sends signals to organs.
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- Sources
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Vitamin D – Sunshine Vitamin

- Derived from cholesterol
- Synthesized from sun exposure
 - Sunscreen SPF ≥ 8 decreases synthesis 95%
 - Expose hands, face, arms 2-3 x/week for 5-10 minutes each time (more for darker skin)
- Insufficient sun exposure makes this a vitamin (have to get it through diet)
- Activated by enzymes in **liver** and **kidneys**

Toxicity Warning

- Vitamin D can be very toxic, especially in infancy and childhood
- Upper Level is 50 ug/day
- Results in
 - Over-absorption of calcium (hypercalcemia), increase calcium excretion
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Vitamin D

- Deficiency
 - Groups at risk for deficiency

Vitamin A

- Function

Retinoids

Carotenoids