

NTR 108 EXAM 2 REVIEW

b-carotene

- can be made into vitamin A by the human body
- most of the vitamin A in the human is from b-carotene

Vitamin D - bone metabolism, intestinal calcium absorption, kidney calcium reabsorption

F.AMINO ACID METABOLISM

1. *Transamination*

Transfer of an amine group from an amino acid to the carbon skeleton to form a new (different) amino acid

a. *Used for*

1)formation of nonessential amino acids

b. *Vitamin B6 is needed*

In the absence of Vitamin B6, all amino acids would be essential.

2. *Deamination*

Removal of the amine group from an amino acid

a. *Used for*

1)excretion of amine

2)energy production from amino acid

b. *Vitamin B6 is also needed*

3. *Nitrogen excretion*

a. *Loss of nitrogen in*

1)Feces (as protein)

2)Skin, Hair, Nails (as protein)

3)Urine (as urea)

b. *Excess nitrogen (amine group)*

1)Synthesized into urea in the liver

2)Urea is transported to the kidney and excreted in the urine

a. *Amino acids*

1)Structure

a)amine group

always has a Nitrogen

b)carbon skeleton

central carbon with hydrogen (backbone)

acid group

The r-group (side chain):

- differentiates one amino acid from another
- determines the structure
- determines function of the amino acid

B. Protein is an essential nutrient

1. **Essential** amino acids (EAA)

- a. Cannot be made by the body
- b. Must be included in the diet to maintain optimal protein status
- c. Provide a source of nitrogen for other compounds
- d. Can be used as an energy source

2. **Non-essential** amino acids (NEAA)

- a. Amino acids that the body is able to make from other substances in the diet
- b. Provide a source of nitrogen for other compounds
- c. Can be used as an energy source

C. **Functions of Proteins**

1. **Structural**

2. **Growth**

3. **Maintenance and repair of body tissues**

4. **Energy**

a) **4 kcals/gram**

b) **Secondary role**

5. **Hormone production**

- a. Insulin
- b. Glucagon
- c. CCK
- d. Secretin

Bone health:

1. **Ascorbic Acid (Vitamin C)**

a. **Definition/classification**

1) Water soluble vitamin

b. **Functions**

1. Immune function

a) Protects WBC from oxidative damage

2. Skin and blood vessel health

a) collagen formation

b) collagen is a key component of skin and many other tissues

3. Increases iron absorption

4. Antioxidant

a) Protects the lungs, LDL cholesterol

b) Regenerates Vitamin E

Vitamin B6 -

d. Antioxidants

1. Vitamins A, C, E, b-carotene, selenium

C. Dietary Recommendations for Decreasing Cancer Risk

1. *High fiber diet*

2. *High intake of fruits and vegetables*

3. *Low fat*

a. *Recommend 30% of energy intake*

4. *Moderate alcohol intake*

5. *Calorie Restriction*

a. *Obesity – excessive estrogen and other hormones*

b. *Total calorie restriction – less oxidative **stress***

6. Behavior Modification

a. *Definition: The use of empirically demonstrated techniques to improve behavior*

b. *Need to concentrate on the behavior, not the person*

c. *Identify the problem*

d. *Set realistic goals*

1) *SMART goals*

a) *Specific, Measurable, Attainable, Relevant, Time-Based*

e. *Define the obstacles that might keep them from changing their behavior*

How to estimate how many calories a person may need?

BMI - what is overweight?

- Greater than 30 is obesity

2. **Chromium** - Trace mineral. Used to enhance ability of insulin to move glucose from blood into cells

c. **Deficiency sign/symptoms**

1) Rise in blood glucose levels

e. **Dietary sources**

1) Whole grains

2) Mushrooms

3) Nuts

4) Cereals

f. **Special notes**

1) A common supplement is Cr-Picolinate

2) Claim enhance muscle mass & reduce body fat (no evidence)