

Digestion Notes (pages 928-940)

Six Types of Nutrients to Maintain Homeostasis

1. Water

- 55- 60 % of your body is water
- Helps digest food and eliminate wastes, regulates blood volume and body temp
- Lose water through sweat, urine, and respiration

2. Carbohydrates

- Main source of energy for your body
- Simple carbohydrates = sugars in sugar cane, honey and fruits
- Complex carbohydrates = starches in vegetables, grains, and potatoes

3. Proteins

- Needed for growth and repair of body's cells and tissues
- Make up enzymes and hormones needed for cell metabolism
- Made of amino acids; your body only makes 12 of them; the other 8 come from food

4. Fats

- Provide energy for the body and are important in cell membranes, myelin sheaths (nerves) and hormones
- Body makes some fatty acids but you get the rest from the food you eat
- Saturated fats (solid @ room temp); Unsaturated fats (liquid @ room temp)

5. Minerals

- Inorganic material necessary for cells and in repairing tissues
- You lose minerals in sweat, urine, and waste
- Need to replace them by eating plants and animals

6. Vitamins

- Organic molecules that work with enzymes to regulate cell function, growth, and development
- Some are fat soluble (A,D,E and K) and are stored in fatty tissue
- Some are water soluble (B and C) and come out in your urine

Digestive System- mouth, esophagus, stomach, pancreas, liver, gall bladder, small intestine, large intestine, rectum, and anus

Digestion-process where large complex molecules in food are broken down into smaller molecules the body can use. Digestion BEGINS in the MOUTH!!!

- Takes place through the interaction of enzymes, stomach acid, hormones, bile from liver, and a network of nerves and muscles
- Nutrients are absorbed by the body and transported by the circulatory system and the lymphatic system to all cells

Mouth - Amylase from saliva breaks down starches (carbohydrates)

Esophagus - The tube from the mouth to the stomach. Food moves by peristalsis (muscle contractions)

Stomach

- Muscular sac that hold 2 quarts of food
- Digestive juices and enzymes turn food into chyme (semi liquid mixture)
- Protective layer of mucus lines stomach; replaces itself every few days

Small Intestine

- Remaining carbs, proteins, and fats are digested in the duodenum (closest to stomach)
- Enzymes and hormones from the pancreas, liver, and gall bladder flow through duct into duodenum to complete digestion
 - **Pancreas**-releases alkaline fluid to neutralize acid
 - **Liver**-filters blood but is also a digestive organ; produces bile to digest fats
 - **Gall Bladder**-stores the bile that the liver produces and releases it as needed

Absorption of Nutrients- Absorption is the process where nutrients move out of the digestive organs into the circulatory and lymphatic systems.

Small Intestine

- Has 3 main structures that absorb nutrients from chime
 - *Lining-ridges and folded; increases surface area
 - *Villi-found in folds of lining; small finger like projections that absorb nutrients
 - *Microvilli-found on top of villi; more surface area for absorption

Liver

- Nutrient rich blood leaves the small intestine and enters the liver
- Excess glucose is turned into glycogen and stored for future use

Water Absorption and Solid Waste Elimination

Large Intestine – (AKA- Colon) is 5 feet long

- Absorbs about 1 liter of water/day. Also absorbs some salts
- Remaining wastes form here (feces)
- Contains good bacteria which synthesizes vitamins B and K (needed for blood clotting)
- Contains e coli which is harmless until it starts to overproduce which reduces water absorption and causes severe diarrhea.

Rectum – the tube connected from large intestine to anus; it stores feces

Anus – Opening where feces leaves the body