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#### Nutrition review

#### 1.&3. -Monosaccharides---(C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>)

- Hexose
  - Glucose
    - Sugar in blood
  - Fructose
    - Food source: Fruits veggies, honey, and HFCS
  - Galactose
    - Food Source: Does not occur as a single monosaccharide in foods
  - Food source; Artificial Sweetners
- Sugar alcohols
  - Xylitol, mannitol, and sorbitol
- Pentos
  - Ribose (RNA) and Deoxyribose)

#### - Disaccharides

- Sucrose
  - Food source: Table sugar, sugar beet, sugar cane
- Maltose
- Lactose
  - Food source: milk
  - Enzyme: lactase
- Food source: Artificial sweetners

#### - Oligosaccharides

- Contain 3- 10 sugar units
- Raffinose stachyose
- Indigestible- byproduct---leads to flatulence
- Food source: include beans broccoli, cabbage, onions

#### - Polysaccharides

- Contains 100's to 1000's of glucose molecules
- Alpha or beta bond determine digestibility
- Food Source: Starch & glucose---Potatoes, beans, breads, rice, pasta

#### 4. - Condensation- compounds joined WATER RELEASED

5.

#### - Digestible CHO-

- Provide Energy
  - 4 k/cal/ gm
  - Primary fuel of CNS and red blood cells

- o Protein Sparing
  - o Glycogenesis
    - Production of new glucose from proteins if inadequate CHO
  - o Prevent Ketosis
    - Incomplete breakdown of Fatty acids ( need at least 50-100g CHO/day)
  - o Foodsource;
    - Starch
      - Storage form of CHO in plants
      - Plant starch
        - o Amylose- straight chain
          - 1-4 alpha bonds
        - o Amylopectin- branched
          - 1-6 alpha bonds
          - enzyme Alpha-dextrinase
      - Alpha bonds
      - Foods: potatoes, beans, bread, rice, pastas

#### Glycogen

- Storage form of glucose in humans/ animals
- Alpha bonds
- Highly branches
- Liver glycogen
  - blood sugar
- Muscle glycogen
  - Muscle use

- Indigestible CHO
  - o Promoting Bowel Health
    - Diverticula and diverticulosis
    - Colon Cancer
  - o Reducing obesity risk
  - o Enhancing blood glucose control
    - Soluable fibers
  - o Reducing heart disease risk
    - Soluable fibers
      - Reduce cholesterol absorption
      - Short chain fatty acids reduce synthesis
  - o Foodsource: Fiber
- Storage forms of CHO in plants-amylose(straight)-amylopectin(branched) animals- glycogen

- Alt. sweeteners- yield no energy- adi(100x less than can do harm)
- Mouth- salivary amylase- small intestine pancrease discharrides not fiber broken large intestine
- Absorption- aactive is glucose and galactos, facilitated is fructose, storage in muscle and liver and access to adipose
- Blood glucose regulation
  - o Lower glucose – insulin raise glucose glucogon, epinephrine, cortoson, growth hormaones and nonepinepherine
- Health concerns in high iber and high sugar intakes.
  - o Obesity, CVD, Dental
- Ketosis- incomplete breakdown of CHO
- Glycemic load- CHO intake
- Glycemic index- ratio of glucose vs sugar

## Lipids

- structure of fatty acids- glycerol and fatty acid chains
  - long, short, and medium chains
- tryglycerides- energy, fat, vitamin absorption
- phospholipids- membrane for diffusion- emulsion
- sterols cholesterol- sex hormones
- saturated fatty acids- solid at room temp- bad
- unsaturated- liquis at room temp- oils
- avacados- MUFA SAT coconuts, saturated
- digestion
  - o mouth lingual lipase
  - o stomach- gastric lipase
  - o liver – bile
  - o small intestine
    - CCK
    - BILE
- Essencial fatty acids-
  - Omega 3- APA, ELA, DHA
  - Omega 6 LA, AA, dihomo-gamma- lieolenic , ecosannoids
- Lipid transport
- Fat replacement- water, carbs, protein, and engineered fats
- Desirable lipid levels – no RDA, AMDR 20-30 %, limit saturated and trans
- IOM lvl- 2-4 tbs oil, no UL toxicity set,

## Prtein

- HCON(s)
- Amino acids- nitrogen, OH- sythesis bt peptide bond- DNA-RNA
- Essencial amino acids- taken by food
- nonessencial amino acids- body can produce
  - o transamination- transfer from acid to carbon skeleton
  - o deamination- losin amino acid, incorp to urea
- incomplete- inadequate amounts of 1 or moe essencia AA's