CONCEPT: ESSENTIAL MACRONUTRIENTS

1. Carbohydrates

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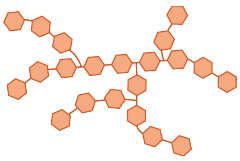
Simple Complex

- Supply _____ of energy our bodies need daily; break down into molecules called _____.
  - Stored as _____ in liver and muscles.



Carbohydrates			
Type	**Food Sources**	**Calorie Content**	**Recommendations**
 **Simple** 1 or 2 sugar molecules	• Fruits, dairy, pastries, sugary drinks.	___ cal / gram	• 130 grams / day • 45-____% total cal
 **Complex**	• Grains, legumes, tubers, vegetables, some fruits, nuts.		

Complex Carbohydrates

- Consist of (1) **starches:** _____ energy storage of plants; and (2) **fibers:** part of a plant _____ digestible by humans.

Fiber

- **Water soluble:** digestible by gut _____.
- **Insoluble:** promotes _____ digestion.

- ____refined complex carbohydrates contain ___ fiber and other nutrients.

EXAMPLE

What percentage of daily calories should make up carbohydrate intake?

a) 15-35% b) 35-65% c) 45-65% d) 35-45% e) 20-60%

CONCEPT: ESSENTIAL MACRONUTRIENTS

PRACTICE

Fruits and vegetables are a great source of complex carbohydrates.

a) True b) False

PRACTICE

Which of the following statements about fiber is *incorrect*?

a) Eating more fiber can help you feel fuller for longer.

b) Insoluble fibers are digestible by the bacteria in the colon.

c) Unrefined or whole grains have a higher fiber content than refined grains.

d) There are 2 types of fibers, one that is soluble in water and one that is not soluble.

CONCEPT: ESSENTIAL MACRONUTRIENTS

2. Proteins

Complete | Incomplete

2. Proteins

◆ Building blocks of _____, bones and other tissues; provide energy.

- Large molecules made up of chains of _____ acids.

Proteins			
Type	**Food Sources**	**Calorie Content**	**Recommendations**
 **Complete** (Animals)	• Meat, poultry, fish, eggs. • Milk, cheese, quinoa, soy.	___ cal / gram	• 0.36 grams* per 1 lb of body weight • 10-____% total cal
 **Incomplete** (Plants)	• Grains, legumes, vegetables, nuts.		

* Higher for athletes.

◆ **Complete:** contain all ___ essential amino acids.

◆ **Incomplete:** contain _____ of the essential amino acids.

- Consuming combinations of complementary proteins = _____ proteins.

EXAMPLE

For each food, identify as complete (C) or incomplete (IC) protein.

a) White bread _____ b) Soymilk _____ c) Broccoli _____ d) Walnuts _____ e) Salmon _____

PRACTICE

Clara is a bodybuilder and needs to consume more than average amount of protein to support muscle growth and repair. If Clara weights at 170 lbs., what would be the most likely recommendation for her daily protein intake if her main goal is to maximize muscle growth?

a) 60 g b) 35 g c) 68 g d) 170 g

CONCEPT: ESSENTIAL MACRONUTRIENTS

3. Fats (Lipids)

3. Fats

Saturated | Unsaturated

◆ **Triglycerides:** most _____ type of fat found in food and body.

- Provides _____ source of energy.

Fats			
Type	**Food Sources**	**Calorie Content**	**Recommendations**
 **Saturated** (Animals) Solid at room temp.	• Meat, poultry, dairy, coconut & palm oils.	___ cal / gram	• < ____% total cal
 **Unsaturated** (Plants) Liquid at room temp.	• Fish, grains, legumes, vegetables, nuts, oils.		• 20-____% total ca

◆ Saturated fats have been associated with a ____ risk of heart disease.

EXAMPLE

Foods from animal sources are:

a) high in saturated fats

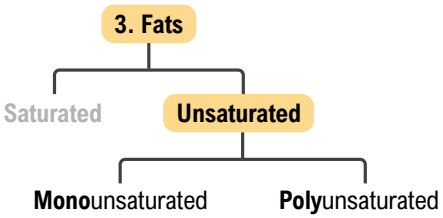
b) low in calories

c) should constitute 10-35% of daily caloric intake

d) high in unsaturated fats

CONCEPT: ESSENTIAL MACRONUTRIENTS

Types of Unsaturated Fats



◆ Categorized based on how many hydrogens are missing from *fatty* acids.

- **Mono:** ___ hydrogens missing.
- **Poly:** ≥ ___ hydrogens missing.

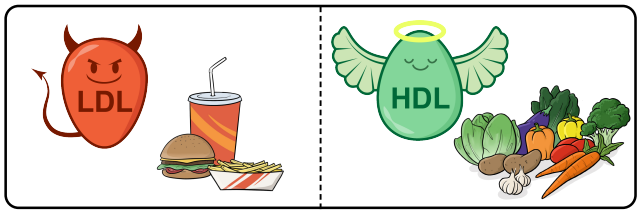
Fatty Acids
Components ("tails") of triglycerides.

Unsaturated Fats		
Monounsaturated	• Avocado, olive & nut oils.	• _____ when refrigerated.
Polyunsaturated	• omega-3: fish • omega-6: corn & soybean oils.	• _____ when refrigerated.

◆ **Trans Fats:** type of polyunsaturated fatty acids formed during _____genation process.

- ____ levels of **LDL** (bad cholesterol) and ____ levels of **HDL** (good cholesterol).

Hydrogenation
Process of adding hydrogens to unsaturated fats.



Cholesterol
Type of fat found in animal based food and synthesized by the body.

EXAMPLE

Label each food based on the predominant type of fat it contains:

saturated (S), unsaturated (US), monounsaturated (M) or polyunsaturated (P).

a) cheese _____
b) olive oil _____
c) coconut oil_____
d) salmon _____
e) walnuts _____
f) oat milk _____

PRACTICE

Trans fats are:

a) Considered to improve heart health.
b) Found in animal fats in large quantities.
c) Increase levels of both LDL and HDL cholesterols.
d) Created through the process of hydrogenation, which solidifies liquid oils.

CONCEPT: ESSENTIAL MACRONUTRIENTS

4. Water

- Major component in food and of the human body (____-____%).
  - Aids in body temperature _____ and food absorption.
- **Sources:** beverages, fruits and vegetables.
- It is recommended to consume 8-12 cups of water daily.
  - However, _____ water intake can have serious health risks.

EXAMPLE

What is the significance of water as an essential macronutrient?

a) It regulates body temperature due to its high heat capacity.

b) It does not contain any calories.

c) Slows down the digestion of fats.

d) Causes hydration when consumed in large quantities due to imbalance of fluids.

PRACTICE

Which of the following scenarios will most likely cause dehydration?

a) Drinking a really large amount of water in a short period of time.

b) Drinking one coffee in the morning and then only consuming fruits and vegetables for the rest of the day.

c) Drinking 1 cup of water on a really hot day while hiking.

d) Drinking a sports drink after intense exercising.