Food Chemistry

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Food Chemistry Contents

content

- Introduction
- Carbohydrates

content

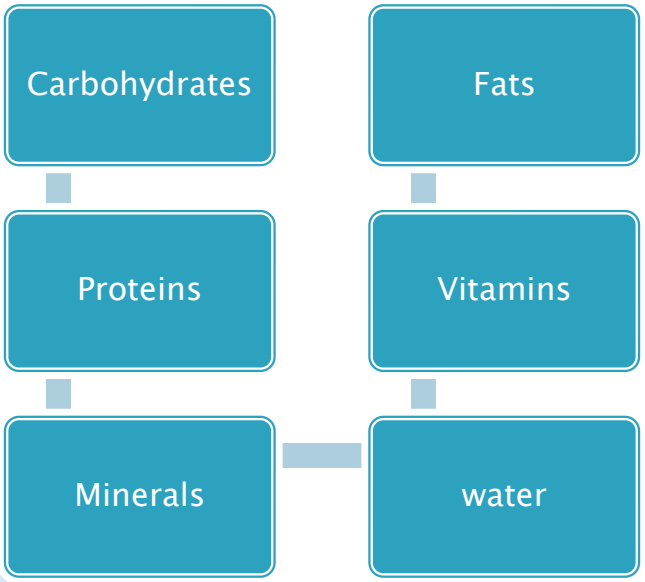
- Fats
- Proteins

content

- Vitamins
- Minerals

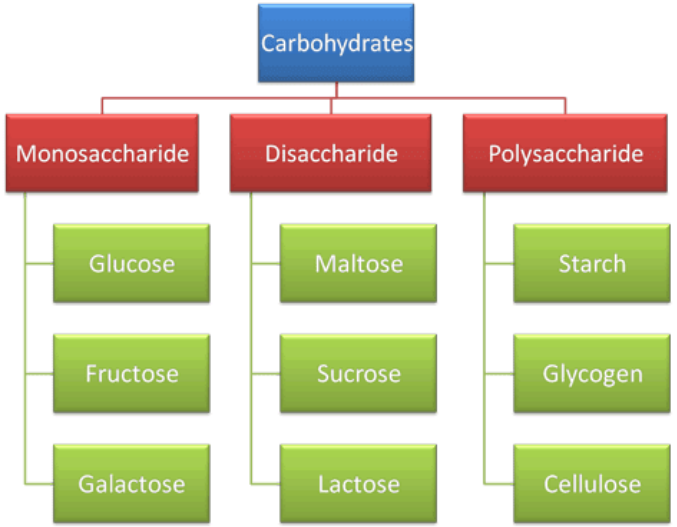
Introduction

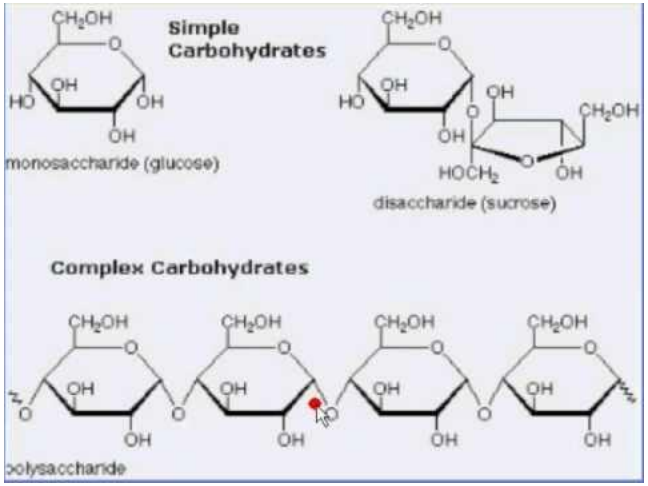
- Food Chemistry：The Study Of Producing, Processing , Preparing ,Evaluating and using food.
- The Study Of how your body uses the food you eat is *nutrition*.
- Substances that are found in food and needed by the body to function, grow, repair itself and produce energy are called *nutrients*.
- Our body needs over 50 different nutrients which can be divided into 6 classes :



Carbohydrates

- Made up of C, H and O in a 1:2:1 ratio
- **Functions :** (1)provide of body main source of energy (2)Provide bulk (3) Helps the body digest fats
- **Types:** (1) Simple – Sugars {basic – mono} (2) Complex – Starches And Fiber {Di , Poly }
- **Sources**: (1) Sugar – Honey ,jam (2) Fiber sources – fruits , vegetables , whole grains (3) Starch sources – breads , pasta



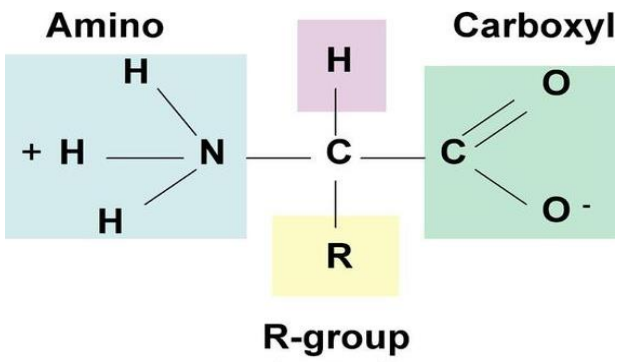


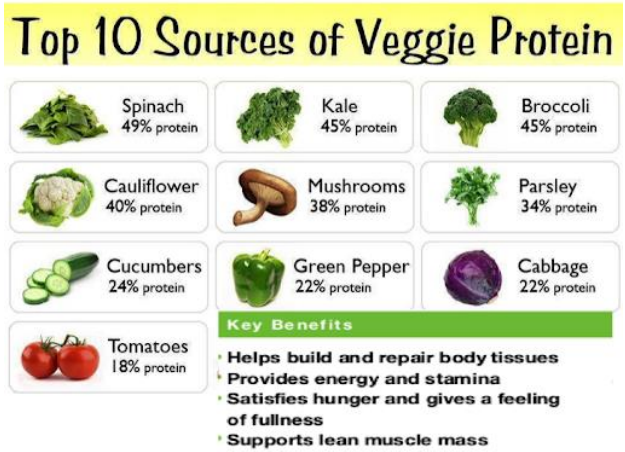
Fats

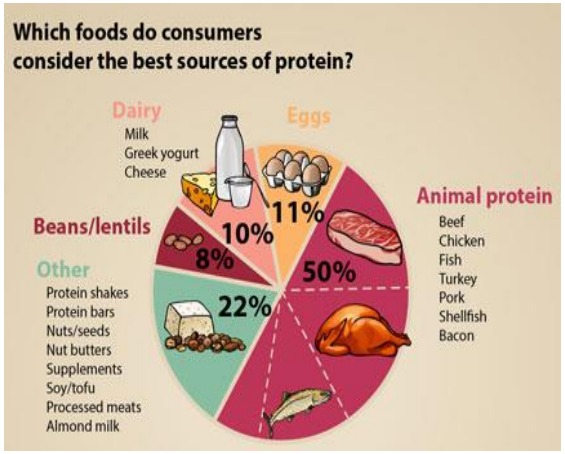
- Made up mostly of C and H with some O
- **Functions** : (1) Provides energy (2) Carries fat soluable vitamins (3)protects vital organs and provides insulation (4) provides essential fatty acids
- **Types**: (1) Fatty Acids (2) Cholesterol
- **Fatty Acids** : (1)saturated –raises, LDL (2)Polyunsaturated – decreases LDL (3) Monounsaturated– decreases LDL and increases HDL
- **Cholesterol** : (1)LDL – Bad Cholesterol (2) HDL – good Cholesterol
- Sources of Fats : (1)Cheese (2) Butter (3) Nuts (4) Meats (5) Dressings (6) Chocolate (7) Whole eggs (8) Fatty fish (9) Full fat yogurt
- (A)Saturated Fats from when each carbon atom in the fatty acid chain is joined to another carbon atom by a single covalent bond. Solid at room temperature (Ex:butter)
- (B)Unsaturated Fats from when there is a least one carbon-carbon double bond. Liquid at room temparature (ex: Olive oil)

Proteins

- Made up of C, H, O and N
- **Functions** : (1) Build and repair tissues. (2) Help body make important substances. (3) Regulate body processes. (4) Supply energy.
- **Types :** (1) Complete : contains adequate amounts of all essential amino acids. (2) Incomplete : Lacks some amino acids.
- **Sources :** (1) Meat – Complete (2) Milk – Complete (3) Eggs – Complete (4) Fish – Complete (5) Nuts – Incomplete (6) Legumes – Incomplete
- Proteins are polymer of amino acids







Vitamins

- Can be divided into two main catagories
- Fat-soluble vitamins : (1) dissolve in fats (2) can be stored in fatty tissues of the body
- Water-soluble vitamins : (1) dissolve in water (2) are not stored in the body

Water-Soluble Vitamins

Nutrient	Functions	Sources
Vitamin C	Helps wounds heal Helps fight infection	Broccoli, citrus fruits, tomatoes
Thiamin	Keeps nervous system healthy. Releases energy from food.	Pork, whole grain breads a d cereals.
Riboflavin	Helps cells use oxygen. Breaks down carbohydrates.	Cheese , eggs, milk , poultry
Niacin	Keeps nervous system healthy. Helps Cells Use other nutrients.	Dried beans and peas , peanuts

Fat-soluble Vitamins

Nutrient	Functions	Sources
Vitamin A	Keeps skin and mucus membranes healthy Prevents night blindness promotes growth.	Butter , dark green and yellow fruits an vegetables , egg yolk, liver , whole and fortified milk
Vitamin D	Builds strong, bones and teeth	Egg yolk , fortified buttwe , margarine and milk, the sun
Vitamin E	Acts as an antioxidant to protect cell membranes.	Egg yolk , liver , salad oils, whole grain cereals
Vitamin K	Helps blood clot	Cauliflower, egg yolk, organ meats

Minerals

- Minerals can also be divided into two categories :
- Macro minerals are needed in amounts of 100mg or more per day
- Trace elements are needed in amounts less than 100mg per day.

Macro-minerals

Nutrient	Functions	Sources
Calcium	Builds boners and teeth. Helps muscles and nerves work.	Dairy products , leafy green vegetables.
Magnesium	Helps cells use energy nutrients. Regulates body temperature.	Beans, dark green leafy vegetables, whole grains.
Phosphorus	Builds bones and teeth. Regulates bodily activities.	Protein and calcium food sources.
Sodium, Chlorine , Potassium	Control osmosis. Maintain acid base balance in the body.	Sodium and chlorine :Table salt. Potassium : Bananas

Trace-minerals

Nutrient	Functions	Sources
Fluorine	Helps teeth resist decay. Maintains bone health.	Fluoridated drinking water, toothpaste.
Iodine	Promotes normal function of thyroid gland.	Iodized table salt, saltwater fish and shellfish
Iron	Helps cells use oxygen.	Dried beans and fruits, egg yolk, lean meats, whole grains
Zinc	Helps wounds heal. Promotes normal growth.	Legumes, meat , poultry, seafood, whole grains.

Food labels = must be all packaged food as of 1990 federal law

- HOW TO READ THE NEW FOOD LABEL

LOOK HERE FIRST

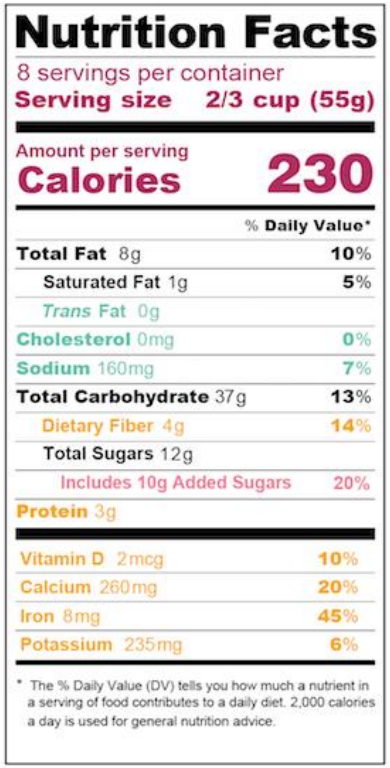
BALANCE WITH EXERCISE

1 Count Calories
- Look at the serving size, the number of servings, and the number of calories per serving.

2 Check these for heart health
- Choose foods that are lower in saturated fat and sodium.
- Keep trans fat to 0.

3 Is it nutritionally valuable?
- Select foods that are nutrient dense and a good source of fiber.

Tip...
Consider how added sugars fit your daily budget.



LIMIT THESE

CHOOSE WITH FIBER

LOOK FOR THESE

Thank You For Listening

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