Introduction to Nutrients

The Six Main Nutrients

-Our bodies depend on the interaction of six main nutrients in order to function properly from day to day. Those 6 groups of nutrients are:

1. Carbohydrates
2. Lipids (fats)
3. Proteins
4. Vitamins
5. Minerals
6. Water (the often forgotten nutrient)

*Macronutrients: they are needed by the body in larger amounts

*Micronutrients: they are needed by the body in smaller amounts

CARBOHYDRATES

Carbohydrates can be divided into two categories: SIMPLE Sugars and COMPLEX Sugars.

Simple sugars are quick sources of energy. Some examples are simple sugars are:

-LACTOSE (commonly known as milk sugar)

-SUCROSE (commonly known as table sugar, beet sugar, or cane sugar – occurs in vegetables and fruits

-FRUCTOSE (known as fruits sugar – contained in most plants, especially fruits and saps)

-GLUCOSE (sometimes known as blood sugar)

-MALTOSE(found in grains)

COMPLEX CARBOHYDRATES

Complex carbohydrates are made up of starch and dietary fiber.

STARCH – breaks down into simple sugars in the body (glucose). Starch supplies the body with long sustained energy. Examples include – potatoes, wheat, rice, corn, legumes

DIETARY FIBRE – It is the only form of carbohydrates that does not provide energy. It consists of non-digestible plant materials

FIBER

INSOLUBLE FIBER

-Will not dissolve in water
-Absorbs water like a sponge – provides bulk
-Promotes regular bowel movements
-Lowers the risk of colon cancer

SOURCES: Fruits, vegetable skins, whole wheat or wheat bran products

SOLUBLE FIBER

-Dissolves in water
-Increases thickness of stomach contents
-May reduce blood cholesterol levels (carries LDL cholesterol out of body).

SOURCES: fruits, vegetables, peas, lentils, and oat products

CARBOHYDRATES AND THE GLYCEMIC INDEX

A new system for classifying carbohydrates is known as the glycemic index. It measures how fast and how far blood sugar rises after you eat a food that contains carbohydrates

Foods that are converted almost immediately to blood sugar, causing it to spike rapidly are considered to have a HIGH GYCEMIC INDEX

Examples: Candy bars, sugar, sweetened beverages, french fries, refined cereal, jelly beans

CARBOHYDRATES AND THE GLYCEMIC INDEX CONTINUED…

Foods that are digested more slowly, causing a lower, more gentle change in blood sugar are considered to have a LOW GLYCEMIC INDEX

EXAMPLES: High fiber fruits, bran cereals, high fiber vegetables (not including potatoes), legumes such as chick peas, kidney beans, and black beans, white bread, and candy

RECOMMENDATIONS

1. Start the day with whole grains. EX. whole wheat or bran cereal
2. Use whole grain breads for lunch or snacks
3. Try other grains such as: oats and bulgur
4. Use whole wheat pasta or half whole wheat, half white

FATS

The main functions of fats are:

-to provide energy to the body

-to provide heat

-protects and insulates body parts

-transports vitamins A,D,E,K.

-supplies essential fatty acids to the body.

1. SATURATED FATS

-Usually solid at room temperature

-Tends to raise the amount of cholesterol in the blood

-Present in all animal foods and in tropical oils (coconut, and palm oil)

-Of the animal meats, fish tends to have the least amount of saturated fat

2. UNSATURATED FAT

-Usually liquid at room temperature

-Found mainly in vegetable oils – except tropical oils

-Tend to help lower the amount of cholesterol in the blood

3. TRANS FAT

**HYDRONATED OIL*

- Oil that has been turned into a more solid fat. In the process, it becomes more saturated. E.G. Margarine, and shortening

-During hydrogenation, the molecular structure of unsaturated fat changes to trans fatty acids

-They raise blood levels of "bad" cholesterol (**LDL** (low-density lipoprotein)) – risk factor for heart disease

-They lower the levels of "good" cholesterol (**HDL** (high-density lipoprotein) which protects against heart disease

CHOLESTEROL

-It is a fat like substance (not a fat) that helps the body carry out many processes.

-**your body makes all the cholesterol it needs**

-It is linked with heart disease so health experts advise eating foods low in cholesterol

-HDL is healthy cholesterol that the body needs

-LDL is unhealthy cholesterol that the body tries to get rid of.

Health PARTNERS

Good Cholesterol

HDL



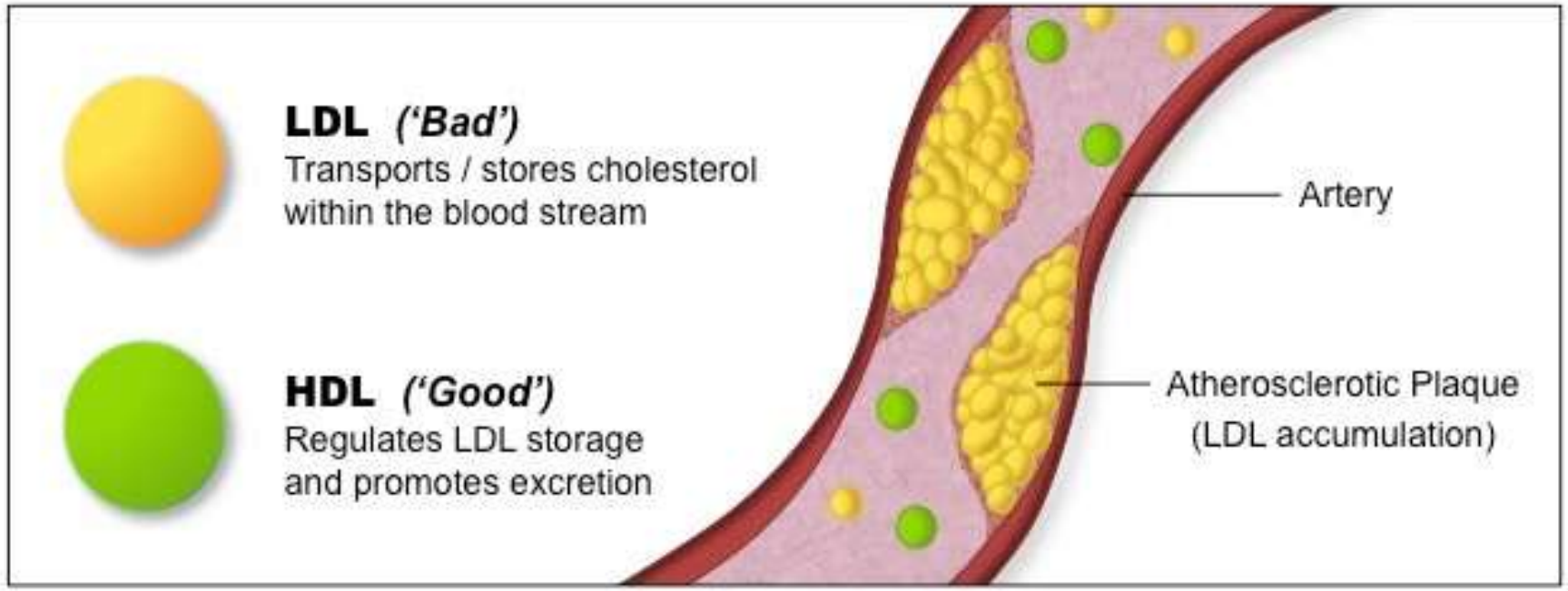


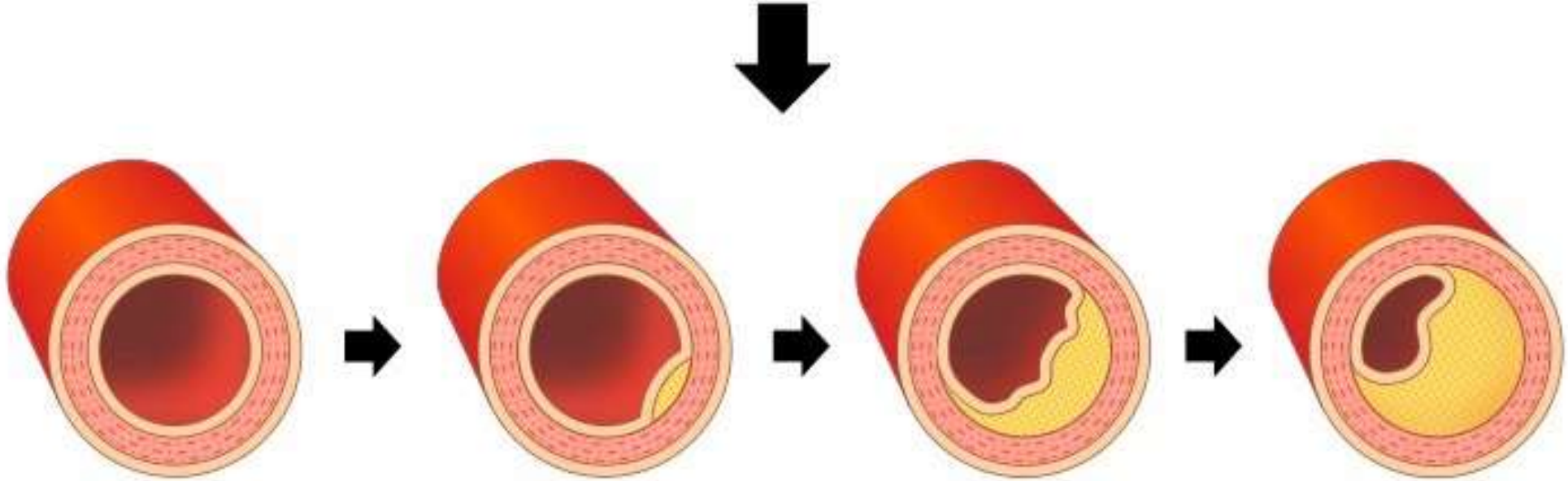

Bad Cholesterol

LDL







LDL ('Bad')
Transports / stores cholesterol within the blood stream
HDL ('Good')
Regulates LDL storage and promotes excretion
Artery
Atherosclerotic Plaque (LDL accumulation)



PROTEIN

Protein is one of the 6 basic nutrients and is essential for survival

3 reasons protein is needed by the body are:

a) Provides Energy

b) Builds and repair cells and muscle tissue

c) Maintains body tissue

*-amino acids are the chemicals that act as the building blocks for proteins. Proteins could not exist without the proper combination of amino acids.

-COMPLETE PROTEINS: A food that has all 9 essential amino acids. All animal proteins are classified as complete proteins (dairy products, meat products, eggs, etc.).

-INCOMPLETE PROTEINS: plant sources that contain some of the 9 essential amino acids, but not all of the essential amino acids. Examples of incomplete proteins include: legumes, seeds, nuts, and grains.

Vitamins

-Vitamins are chemicals that help regulate many vital body processes and aid other nutrients in doing their jobs. Your body requires small amounts of them (micronutrients).

-Vitamins A, D, E, and K are fat soluble, meaning they can only be absorbed into the body with the help of fat. Since fat soluble vitamins are stored in fat, they are stored in the body and can have a toxic effect if too much is stored.

-Other vitamins are water soluble, meaning they are vitamins that dissolve in water and are not stored in the body. Since these vitamins are not stored in the body, they must be replaced each day.

-Water soluble vitamins include: B1 (Thiamin), B2 (Riboflavin), B3 (Niacin), B5 (Pantothenic Acid), B6, B12, C, Biotin, Folic Acid.

Minerals

-Minerals are non-living substances that help your body work properly and, in some cases, become part of body tissues, such as bone (Calcium).

-Minerals are micronutrients and are only needed by the body in small amounts.

-Minerals include: Calcium, Chloride, Chromium, Copper, Fluoride, Iodine, Magnesium, Iron, Phosphorous, Potassium, Selenium, Sodium, Sulphur, Zinc.

Electrolytes

-Electrolytes are specific major minerals that work together to maintain the body's fluid balance.

-These major minerals include: potassium, sodium, and chloride.

-Electrolytes are usually found in Gatorade and other drinks that are designed to help athletes re-hydrate themselves after sweating.

-Your fluid balance becomes disrupted when you sweat, which is why athletes need to focus on hydrating themselves and restoring the electrolytes in their body.

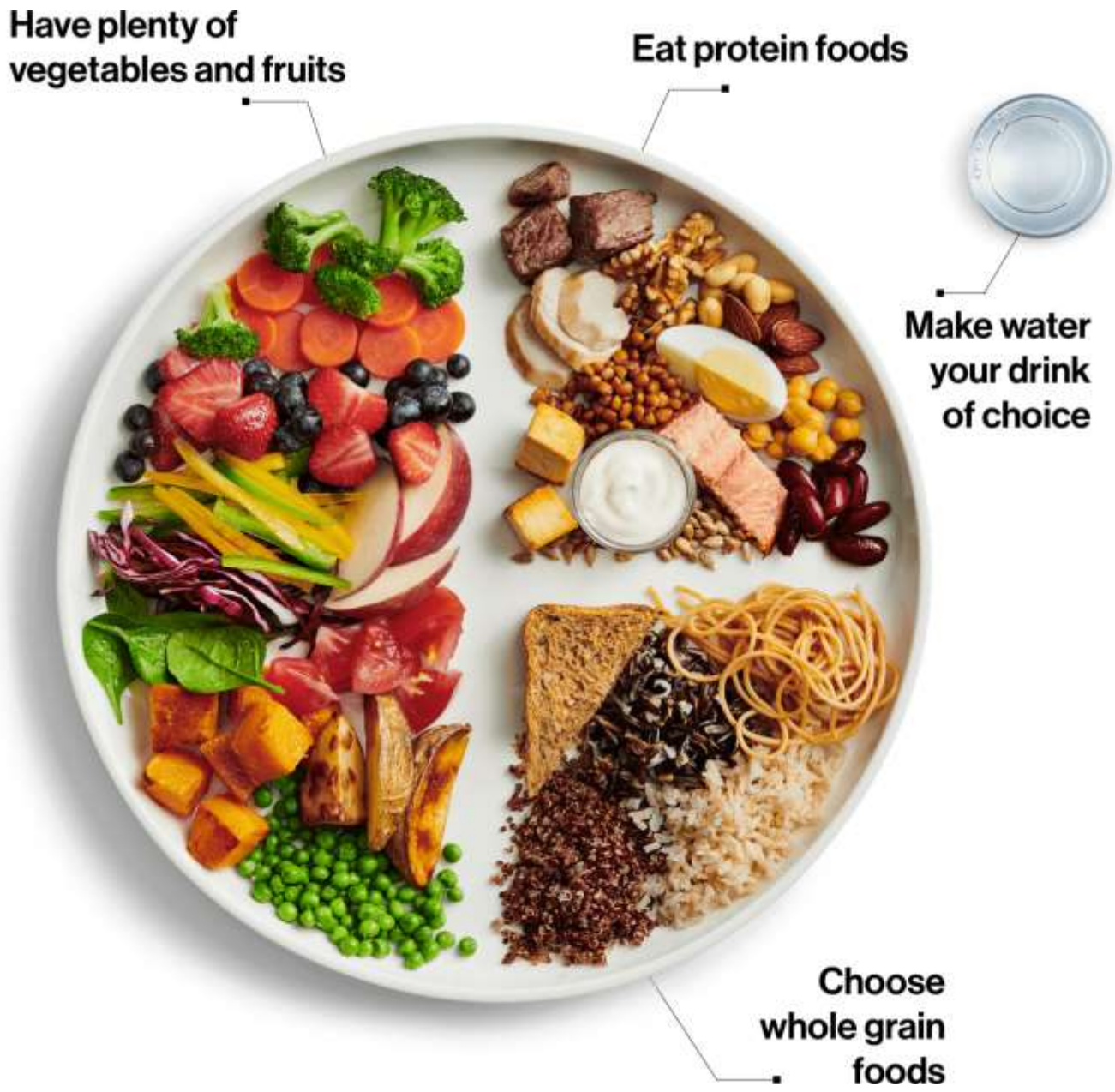
Water (Don’t forget me!!!)

DRI's: Dietary Reference Intakes

DRI = DIETARY REFERENCE INTAKE

A DRI is: a nutrition recommendation to help North Americans stay healthy. DRI's assess the nutrient needs of people of different ages, genders, and those with special needs (e.g. pregnant women)

Class activity: Identify different nutrients of these foods.



Eat a variety of healthy foods each day!!!