

LESSON 1: STUDENT HANDOUT

YOU ARE WHAT YOU EAT

You are what you eat. What does this mean? If you eat only celery, will you become a vegetable? Sometimes there are so many words used to describe foods and nutrition, it is difficult to make sense of them. In fact, we do use the food we eat to provide energy and also the building blocks for growth and development. Even after you are fully grown, your body, just like any other machine, needs to make constant repairs to injured areas and must replace cells that have died. To make sure that the structure of your body is correct and strong, you must provide it a regular supply of the right building materials. Foods are the building materials for the body.

There are six large categories of nutrients in food. These are carbohydrates, protein, fats, vitamins, minerals, and water. Each food you eat not only contains more than one nutrient, but also a different number of calories (*energy*). Fat, protein, and carbohydrates provide calories, or energy as well as building blocks. Vitamins, minerals and water are chemicals that are essential to the body's chemical machinery, but are not really sources of calories. Fiber is another important part of a balanced diet and a healthy digestive tract. It is not labeled a nutrient, however, since it is not digestible but remains in your digestive tract.

CARBOHYDRATES

Carbohydrates are sugars and starches. These substances are used by your body to create energy. After being eaten, they are broken down into glucose or sugars that are used as fuel. Carbohydrates are often described as simple or complex. Simple sugars are carbohydrates that are made up of only one or two molecules of glucose (*sugar*.) Simple sugars are found in foods like candies, soft drinks, fruit juices, and fruit. Complex carbohydrates are found in starchy foods like rice, potatoes, tortillas, and bread. Other foods which contain carbohydrates include carrots, corn, and bananas. These complex carbohydrates are made up of many, many molecules of sugar which are bound together.

Although simple sugars and complex carbohydrates are made up of similar molecules, they have different amounts of nutrition. Grains (*rice and wheat*), bananas, carrots, and corn also contain important vitamins, such as Vitamin A, and fiber. Fiber, often referred to as bulk, is the part of the food which cannot be digested. Fiber is important for digestive function, but also helps remove toxic substances and excess cholesterol. Simple sugars from foods that do not contain other nutrients, like candies or soft drinks, also provide energy, but do not meet any of your body's other nutritional needs.

PROTEINS

Proteins are a major component of most tissues including muscles, bodily organs, and cells. Body protein is made from building blocks of amino acids. The human body can make most amino acids and use them to build proteins. However, nine amino acids, called the essential amino acids, cannot be made by the human body. They have to be eaten on a regular basis for your body to maintain itself. Animal sources of protein like meat, fish, dairy products, and eggs contain all nine essential amino acids.

They are often referred to as complete protein. Vegetable or plant sources of protein like beans, nuts, and some grains do not have all nine essential amino acids. Fortunately, plant proteins can be mixed so that all essential amino acids are present in one meal. When beans and corn (*like corn tortillas*) are combined; all the essential amino acids are present. The same is true when beans and wheat, beans and rice, or nuts and wheat are mixed together. So, it is possible to have a completely healthy diet without eating meat. In order to have complete protein with each meal, it is important to get the right mix of vegetable proteins.

Animal and plant sources of protein also contain different amounts of other nutrient classes. Animal protein usually contains a relatively high amount of fat and very little fiber. Plant sources of protein have very little fat and a relatively large amount of fiber. Since fiber is very important in the diet and excess fat can contribute to having heart disease, it may be healthiest to eat small amounts of animal protein in combination with plant proteins. It is also possible to avoid fat by choosing skim or low-fat milk, low-fat cheese or lean meat.

FATS

Fats are also necessary for health. Fat is a component of all cell membranes, and is an important source of stored energy in your body. When you can't avoid skipping a meal, your body uses fat for energy. Unfortunately, the body requires protein at the same time and will use tissue, like muscle to feed itself. Fat in the digestive tract helps your body absorb the fat soluble vitamins. Although fats are important, not all fats are as healthy for you as others. Eating too much saturated fat can increase your cholesterol and raise your risk of heart disease. Saturated fats come from meat, dairy products, and some kinds of vegetable oils called tropical oils (*palm and coconut*). Unsaturated fats do not have as great an effect on cholesterol and do not increase the risk of heart disease as much. These fats are found in fish and in vegetable oils like olive, peanut, and corn oil. In general, it is a good practice to have most of your fat calories come from unsaturated fat. This means eating leaner meat, skim or low-fat milk, and avoiding fried foods. If food has to be cooked with oil, use peanut or corn oil instead of lard.

VITAMINS

Vitamins are important for the cellular machinery of your body. They are chemical substances that help the body use energy, build proteins, make cells, and repair injuries. Vitamins are divided into two general categories: fat soluble and water soluble. The fat soluble vitamins are A, D, and E. Vitamin A is necessary for eyes, bones, and skin. Vitamin D is necessary to make bones, teeth, and allows your body to use the calcium that you eat. Vitamin E is important for healing wounds and to fight against bodily toxins. The water soluble vitamins are Vitamin C and the B vitamins. Vitamin C is important for fighting infection and for using the stored energy in your body. It is generally found in citrus fruits and other vegetables like tomatoes and peppers. The B vitamins are important for building blood cells, nerve cells, and are vital for many of your body's chemical reactions. These are present in many meats and vegetables.

The amount of vitamins that are recommended on a daily basis are called recommended daily allowances. In general, a balanced diet can provide all the vitamins you

need without having to take vitamin supplements. If you have questions about the whether the food you eat contains the right amount of vitamins, it is useful to carefully examine food labels. Labels will tell you the proportion of the daily allowance present in prepared food. Fresh food, however, generally has a higher vitamin content than already prepared food. Some foods, like specially labeled cereals, are supplemented with vitamins so that you can be sure you are getting what you need.

MINERALS

Minerals are also essential building blocks for your body, but do not provide calories or energy. The foods containing essential minerals also contain other energy supplying material. Milk, for example, is an important source of calcium, Vitamin D, and protein. Calcium is the primary chemical component of bones and teeth. Iron is used in red blood cells to transport oxygen. Potassium and sodium are electrically charged chemicals that govern the electrical connections between body tissues. Other minerals are important to assist in other vital chemical reactions. Zinc, manganese, and selenium are essential for development of cells, healing, and all the body's immune reactions.

As with vitamins, most persons who eat a balanced diet will get an adequate supply of minerals without having to use supplements. Many people, especially African Americans, may have problems digesting milk and dairy products, our major source of calcium. If you cannot digest milk products, it is important to find a substitute for calcium. Bones cannot become strong without calcium. Having strong bones in old age is dependent on the strength of your bones when you are young. Other sources of calcium include dark green leafy vegetables like spinach and broccoli. Recently, some food producers have recognized the importance of calcium and have begun to add calcium to orange juice and other drinks. If you are concerned about your intake of calcium, you might want to choose these calcium enriched products over those that are not supplemented.

WATER

Water is essential for life. It is the single largest component of your body. Each and every day, you use water to metabolize your food, lose heat through sweating, and remove toxins in the urine. On average, an adult uses about 2 to 3 quarts a day just for perspiration and urination. In hot temperatures, with heavy exercise or with fever, your body requires more water than on a typical day. Without the right amount of water, your body cannot maintain the right temperature, blood pressure, or kidney function. Water is also the principal component of many foods, like milk, fruits, and vegetables. Other sources of water include juices and flavored soft drinks. Like the other foods among you must choose, the sources of water in your diet contain other nutrients. Water by itself is the best thirst quencher. In addition to water, fruits and vegetables also contain vitamins and fiber. Low-fat milk contains Vitamin D and calcium. Soft drinks contain large amounts of simple sugars (*and calories*) mixed with water, but no other nutrients. It is important to choose sources of water that will keep you well hydrated (*correct fluid balance*) contribute other nutrients, but not contribute too many calories or fat.