

Compounds that compose the human body

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Compounds That Compose the Human Body There are five major groups of compounds that compose the human body. They are carbohydrates, lipids, proteins, nucleotides, and water. These are all very important to humans and without them we would not be able to survive. They have many functions that encourage a human cell and a human body to function. Carbohydrates include sugars and starches, contain carbon, hydrogen, and oxygen which appears in a ratio of 1: 2: 1. Carbohydrates are classified according to size as monosaccharides, disaccharides, and polysaccharides. The primary function of carbohydrates is to serve as sources of energy. Carbohydrates are some of the most numerous molecules in living organisms. They play a major role as food molecules in the cell, being broken down to produce energy.

Polysaccharides play an important role serving as energy reserves also. It provides a quick-release energy source that keeps us going between meals. Small amounts of carbohydrates are also used for structural purposes and others are attached to outer surfaces of cell membranes to guide cellular interactions. For many cells, sugars are the most important source of energy. Lipids are important because they function as structural components of cell membranes, sources of insulation, and a mean of energy storage. The lipid molecules are most well known as forming basic structures of cell membranes and as energy storage molecules as well. In this group of lipids, there are about three main types: true fats (triglycerides), phospholipids, and steroids. True fats represent the body's most abundant and concentrated source of usable energy. When they are oxidized, they yield large amounts of energy. They are stored chiefly in fat deposits beneath the skin and around body organs, where they help insulate the body and protect deeper

body tissues from heat loss and bumps. True fats are a storage form for excess food, they are stored energy. Any type of food consumed in excess need to be converted to fat and stored. Phospholipids although similar in structure to the true fats, are not stored energy but rather structural components of cells. Lecithin is a phospholipid that is part of our cell membranes and myelin provides electrical insulation for nerve impulse transmission. The third group is steroids and cholesterol is an important steroid. Cholesterol is another component of cell membranes and a form of cholesterol in the skin is changed to vitamin D on exposure to sunlight. All of the sex hormones like estrogen and testosterone are also steroids. So despite the links to bad effects, cholesterol is an essential substance for human beings. Proteins are very important in biological systems as control and structural elements. Proteins do almost everything in the body, from catalyzing reactions, fighting off foreign things, storing and transporting oxygen, to forming muscle, skin, hair, and a variety of other structural tissues. They exist in a multitude of forms, but almost all are constructed from a basic set of just 20 common amino acids. They account for over fifty percent of the organic matter in the body. The building blocks of protein are small molecules called amino acids. Proteins are classed as either fibrous or globular proteins. The fibrous proteins often called structural proteins appear most often in body structures. They are very important in binding structures together and for providing strength in certain body tissues. Collagen is found in bones, cartilage, and tendons, while Keratin is the structural proteins of hair and nails, the waterproofing material of the skin. Globular proteins are molecules that play crucial roles in virtually all biological process. Some of

these are antibodies, which help provide immunity, hormones, which help regulate growth and development. There are also others that are called enzymes, which are biological catalysts that regulate essentially every chemical reaction that goes on within the body. Enzymes are functional proteins that act as biological catalysts. Although there are hundreds of different kinds of enzymes in body cells, they are very specific in their activities, each controlling only one chemical reaction and acting only on specific molecules. The enzymes also promote blood clotting so if it were not for them, then there would be potentially large numbers of lethal blood clots. Nucleic acids are polymers composed of monomer units known as nucleotides. The main functions of nucleotides are information storage (DNA), protein synthesis (RNA), and energy transfers (ATP and NAD). They make up the genes, which provide the basic blueprint of life. They also direct your growth and development. They do all of this by dictating protein structure. Nucleic acids are composed of carbon, oxygen, hydrogen, nitrogen and phosphorous atoms. There are two major kinds of nucleic acids; they are deoxyribonucleic acid and ribonucleic acid. DNA is the genetic material found within the cell nucleus. It makes up the genes that an organism inherits from its parents, and these tell the cells which proteins to make. Each gene directs the production of a particular protein in the cell. The proteins, in the form of enzymes, then initiate and regulate all the chemical reactions within the cell. DNA also replicates itself ensuring that the genetic information in every body cell is identical. Then it also provides the instructions for building every protein in the body. RNA is located outside of the nucleus and this is considered the slave of the DNA. The RNA carries out the orders for protein

synthesis issued by DNA. Water is also very important for the functioning of a human cell or a human body. Without water, there would be no life on earth. Water makes up sixty to seventy percent of the human body, and is essential for several reasons. Water is a solvent so it is able to dissolve many substances. Nutrients and vitamins are dissolved in blood, which is mostly water and is transported to cells throughout the body. The excretion of waste products is also possible because they are dissolved in the water of urine. Water also has a very high heat capacity. It changes temperature slowly. So water will absorb a lot of heat before its temperature rises significantly. This factor helps the body maintain a constant temperature. This makes excess body heat evaporate sweat on the skin surfaces, rather than overheating the body's cells and raising our temperature so fast. Water is very important to all living things and the unique characteristics of it help our bodies to grow and function normally. These are the five major groups of compounds that compose the human body. They have many important functions all special and made just for humans. Their chemical structures promote and encourage a human cell and a human body to function normally and well. Without any of these things, we would not be able to survive nor would any other living organism on Earth. They help us greatly in our everyday lives but we just don't realize how they work and keep us strong, healthy, and unique human beings.