

The four basic food molecules

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A molecule is a group of atoms bonded together that represent the smallest unit of a chemical compound that can take part in a chemical reaction. (<http://www.dictionary.com>) In kitchen chemistry today, there are many types of food molecules such as minerals, vitamins, fiber, and water. But there are four molecules that people refer to as food, also known as the four basic food molecules, which can be used to produce energy which are carbohydrates, lipids, proteins, and alcohol which is not considered a basic nutritional component of food.

Protein is a compound that's made up of amino acids that are joined by peptide bonds. It is considered the most important molecule which can come in two forms, complete proteins and incomplete proteins. A complete protein includes all of the amino acids that we humans can't produce ourselves. An incomplete protein only includes small proportion of one or more amino acid.

Our bodies can make use all of the amino acids we obtain from food for synthesizing new proteins, but the inessential ones don't need to be supplied because our cells can make them. They play a big role to the structure and function of all living cells and viruses. Many proteins are enzymes or subunits of enzymes. They are very important in our food and our body. One major reason is because they form struts and joints of our skeleton or cytoskeleton. Although many people don't think proteins are useful and effective they are.

A lack of proteins can result in having symptoms such as fatigue which is tiredness and mental exertion, insulin resistance which is a physiological condition where your cells don't respond to the normal actions of the hormone insulin, hair loss, loss of hair pigment which your hair that should

be black becomes reddish black, loss of muscle mass where your proteins repair muscle tissue, low body temperature, hormonal irregularities or even death from not having enough proteins.

But be careful not to overdo it on proteins because even though you think having more proteins than usual is good it's not. Too much protein can cause problems like causing the immune system to overreact, liver dysfunction from toxic residues, and bone loss due to increased acidity in the blood. So All in all, get the right amount of proteins in your body to keep it healthy. Second, is a lipid which is also known as fats. They are a big group of organic compounds that are related by their solubility in nonpolar organic solvents. (<http://www.chemistry.msu.edu>).

All fats are insoluble in water which means they can't be dissolved and they have a density meaning most fats float on water. Most fats are mostly made up from triglycerides, and very little monoglycerides and triglycerides are mixed in. Products that have a lot of saturated fats are usually solid at room temperature and the products that have unsaturated fats are liquid at room temperature. Saturated fats include all animal fats like milk fat, coconut oil, cocoa fat, and vegetable oil.

Both vegetable and animal fats contain saturated and unsaturated fats while some oils contain fats that have a one double bonded carbon in the molecule which is also known as a monounsaturated fats while other fats have a high percentage of polyunsaturated fats which are fats that have more than one double bonded carbon in the molecule. Next we have Carbs which is the next most important molecule in your body because it is the main source of

energy. Carbs are polyhydroxy aldehydes, ketones, or compounds that can be hydrolyzed to form compounds.

There are two major kinds of carbohydrates; polysaccharides and monosaccharides. A Polysaccharide is a carbohydrate is molecules that consist of a number of sugar molecules bonded together whereas a monosaccharide is any sugars that cannot be hydrolyzed. Carbs that are composed of monosaccharide's break down under hydrolysis which can also be classified under disaccharides, oligosaccharides, or polysaccharides, depending on how many monosaccharide units are present. Carbs can also be called simple or complex carbohydrates but this depends on their chemical structure.

Simple carbohydrates only include sugars that are found in foods like fruits, vegetables, milk, and milk products. They also include sugars that are added during food processing and refining. Complex carbohydrates include whole grain breads and cereals, and starchy vegetables such as green beans, broccoli, peppers, cucumbers, carrots, mushrooms, or celery which are also good sources of fiber. Last, we have vitamins. These are organic compounds that are essential in our diet. They fall into two categories and those categories are fat soluble and water soluble.

The fat-soluble vitamins, Vitamins A, D, E, & K all dissolve in fat and can be stored in your body. The water soluble vitamins which are vitamin B & C need to be dissolved in water before your body can absorb them. Because of this, people's bodies can't store these vitamins and any B or C vitamin that your body doesn't is lost. So it is highly recommended that you have these vitamins every day. Vitamins help the immune system work; support normal

growth and development, and help cells and organs do their jobs. Not enough vitamins can damage your body and cause serious problems.

For example lack of Vitamin D can soften bones which can cause a person to become bow legged or maybe cause your bones to break easier, Pellagra which is a disease caused by a lack of niacin, or different types of anemia such as folate deficiency anemia, Vitamin B-12 deficiency anemia, and Vitamin C deficiency anemia. (<http://www.mayoclinic.com>). So Vitamins is another very important food molecule needed for your body to keep it maintained and healthy. To sum it all up, Carbohydrates, lipids, proteins and vitamins are all essential to our diet and our body. They keep our body functioning, healthy, and able to live our everyday lives.