

# Nutrition: fat, proteins, and carbohydrates essay sample

[Nutrition](#)



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Many Americans can tell you what components make up their food. Looking at a nutrition facts label, they can tell you the content of fat, carbohydrate, and protein in the foods they eat. Many participate in low carbohydrate dieting, one of the most popular diets around. Others have opted for the United States Department of Agriculture's low fat diet, but neither understands the chemistry of the body or may have misinformation about these compounds. Not many Americans can tell you confidently what a fat, carbohydrate, or protein is chemically or how it works in the body. It can be confusing for the 65% of United States adults who are considered obese and everyone else to figure out what constitutes proper nutrition (Last & Wilson, 2006).

All three components share the qualities of being organic compounds, but their structures and functions are quite different. All three contain carbon, oxygen, and hydrogen. Carbon is an element common to all organic substances. This paper is intended to explain the differences in the basic organic compounds we eat and see learn how the body uses each one.

## Fats

Everyone dreads fat, we eat reduced fat foods, go on low-fat diets, anything to get rid of fat. Unfortunately, the answer is not to simply eliminate fat from your diet to eliminate it from your body. Technically, a fat is a "lipid with a glycerol head and one, two, or three fatty acid tails" (Starr, 2000). Looking at the nutrition facts on a food label, fats are often broken down into saturated, unsaturated, and occasionally polyunsaturated. These differences refer to the number of hydrogen atoms attached to the carbon backbone of a fatty

acid tail. A fatty acid with only single bonds is considered saturated.

Unsaturated means there is at least one opening, and polyunsaturated means there is more than one open bond site. Often we hear of triglycerides, which the prefix suggests, has three fatty acid tails.

Saturated fats are linked to heart disease and cancer. However, the body needs fat to function. Phospholipids make up cellular membranes, adipose tissue provides for insulation and organ cushioning. However, many nutritionists endorse a low fat diet, especially saturated fat, because there is high correlation between a high saturated fat diet and numerous diseases. Fat is not all bad, it is also stored for energy. A person's body will stow away energy for later use. A person must burn off the calories they eat in order to prevent over storing of energy, also known as obesity. Certain vitamins are fat-soluble only and if we had no fat, then we would be unable to break those vitamins down.

Recently, food manufacturers have placed new interest on the absence of trans fats in their products. A trans fat is surprisingly an unsaturated fat. It has the same chemicals as all other fats, but the only difference is it is connected differently. Consumers have been told to watch labels for “partially hydrogenated” ingredients, and this actually relates to trans fats as well. Trans fats are produced by the hydrogenation of plant oils. “Human metabolism requires essential fatty acids which are destroyed by the hydrogenation process by which trans fat is produced” (Wikipedia, 2006). Trans fats appear to serve no purpose, but even worse, have been found to raise LDL and lower HDL (Wikipedia, 2006)

## Carbohydrates

Everything from the USDA's food pyramid to the " Zone" diet tells us that most of our daily calories should come from carbohydrates. There are simple and complex carbohydrates that are all made of carbon, hydrogen, and oxygen. The simplest sugar is known as a monosaccharide, or also as glucose. When these molecules join with one another, they form disaccharides and polysaccharides. The simpler the construction, the easier it is for your body to break down the molecules for energy. Some of the more complex forms are stored for later energy in the form of glycogen.

The low carbohydrate diet seems to be one of the most popular probably because of the instant gratification, these dieters often enjoy quick weight loss. A person must limit carbohydrate intake to twenty grams or less for the first 2 weeks. Slowly add carbohydrates back into one's diet until you stop losing weight, and then reduce your number of carbohydrates until you lose again. The theory behind this diet is that the body burns carbohydrates for fuel before dipping into fat stores in the body. If there are no carbohydrates, body will burn fat for fuel. Although there have been accusations over the years of this diet being unhealthy for you, the evidence we have finds no big differences in low-carbohydrate diets than low fat ones. Consider these findings from recent studies:

" Low-carbohydrate diets have been controversial...because of concerns about the possible negative effects that high fat intake (particularly saturated fat) may have on overall health. However, these diets do not adversely affect lipid levels...In fact, in...comparisons with patients on

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traditional low-fat diets, patients on low-carbohydrate diets had lower triglyceride levels, higher high-density lipoprotein (HDL) cholesterol levels, similar low-density lipoprotein cholesterol levels, and lower A1C levels” (Last & Wilson, 2006).

“ Since insulin levels are low on this diet, the fat you eat cannot be stored.... your liver continues to convert some of the dietary protein into glucose. Any excess dietary fat is not stored but broken down by a process known as lipolysis (the opposite of dehydration synthesis) and excreted.... Metabolized fatty acids are broken down further into ketone bodies, which become the primary fuel of the brain in the absence of glucose” (Petscko, 2003).

## Proteins

“ Proteins are substances made from combinations of amino acids. Amino acids are chemical compounds containing nitrogen, carbon, oxygen, and hydrogen in distinct arrangements. Amino acids usually contain sulfur and sometimes phosphorous, iron, or iodine” (Protein Supplements, 2004).

Protein, unlike carbohydrates and fats, contain nitrogen. There are two kinds of amino acids, essential and unessential. The difference is that the human body manufactures some amino acids and those are considered unessential. The best way to get the proper amounts of the essential acids is to get protein from an animal source, especially milk and eggs, because their needs are most

similar to ours. The eight essential amino acids are isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan, and valine (Protein Supplements, 2004).

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In a way, proteins are the building blocks, right down to the cell's membranes and the cytoskeleton, which are the support and structure for the body. Proteins are much more diverse than that, though. Proteins make up enzymes and hormones, and they are used for energy. " Excess protein the body cannot use and protein breakdown products are converted to urea (an ammonia compound) and excreted in the urine" (Protein Supplements, 2004). Proteins are not intended for stored energy.

### Conclusion

The human body is amazingly efficient in breaking down, storing, and using the food it takes in. The processes become increasingly complex relative to the depth of which you examine the processes. Certainly, these are not the only nutrients the body needs, but these are the most basic, well-known components. Other essential compounds include vitamins and minerals. These essential nutrients aid and regulate many things in the body.

Since each part has its own unique uses and qualities, it cannot be good for a person to restrict any one of these groups for a long time. Short-term manipulation of these compounds can be useful for correcting health issues or losing weight. It is important to eat a varied balance of all three. I- informed person can make their own nutritional decisions with confidence, instead of being It is important to learn the differences in the basic organic compounds we eat and see learn how the body uses each one because a well-informed person can make their own nutritional decisions with out having to be at the mercy of someone else's' opinions.

## References

Fat. (2006) Biology Online. Retrieved July 22, 2006 from <http://www.biology-online.org/dictionary/Fat>.

Last, A., Wilson, S. (2006, June). Low-Carbohydrate Diets. American Family Physician. 73(11). Retrieved from ProQuest Databases.

Protein Supplements. (2004). Doctors Corner Internet Group. Retrieved on July 29, 2006 from [http://your-doctor.com/patient\\_info/nutrition\\_supplements/protein\\_supplements.html](http://your-doctor.com/patient_info/nutrition_supplements/protein_supplements.html).

Starr, C., (2000). Biology Concepts and Applications (4th ed.). Stamford, CT: Brooks/Cole Publishers.

Wikipedia. (n. d.) Trans Fat. Retrieved July 29, 2006 from <http://www.wikipedia.com>

\*\*\*The references are in APA format. I got an A for this entire class, although this instructor was a little scatter-brained and I never got a graded copy of this paper back from him.