

Understanding Nutrition Labels

Mauro Di Pasquale, B.Sc.(Hons), M.D.

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Caveat: Many parts of this article need further explanations and have been or will be covered in more detail in separate articles. For example, information on how the intestinal microbiota produce energy as short chain fatty acids from mostly soluble fiber but also from some insoluble fiber and how this production affects energy metabolism and the use of body fat as a primary fuel.

Introduction

Nutrition labeling is mandatory for most packaged food in the United States and is regulated by the Food and Drug Administration (FDA) and the U.S. Department of Agriculture.

The nutrition facts panel typically consists of the following components:

- (1) serving size information,
- (2) calorie information,
- (3) percent daily value (based on a 2000-calorie diet),
- (4) nutrient information, and
- (5) a footnote of recommended daily values for standard 2000- and 2500-calorie diets.

Sounds pretty straight forward doesn't it. Unfortunately, it isn't. If you're confused by what's listed in food labels, especially the more complicated ones, you're not alone. [\[1\]](#), [\[2\]](#)

Studies have shown that with some help in deciphering them the Nutrition Facts label can be an effective educational tool to increase nutrition knowledge. [\[3\]](#)

In fact, I've found that most people don't understand enough about what's on food labels to make an informed choice of what's best for them.

The reason is two-fold. First most people don't fully understand the lingo used on the labels, and secondly label information pertaining to newer "low-carb" products are not well regulated by the FDA and are more challenging to understand.

Most people think they understand most of what's important on the food/nutrition labels - for example the number of calories and maybe even the amount of carbs, and fat and protein in the food or supplement. But they're wrong because it's just not that easy to understand and use the label information and what's not in the labels without some guidance.

The ability to read and evaluate food labels is not just a matter of choosing to eat healthy. To those of us trying to gain muscle mass and improve body composition choosing the right mix of foods can be critical to our success. And for people trying to manage chronic disease like heart ailment or diabetes, label reading can at times even be a life- saving matter.

An Overview of What to Look For

Knowing what to look for is the first step in understanding nutrition facts labels. The Nutrition Facts Label gives a lot of information, but the key is to know how to use this information to help you make the food choices that are right for you.

If you look on the FDA site you'll find information on how to understand and use the nutrition facts label. The illustration I'm using below is a sample of the older label for macaroni and cheese. The FDA added the colors to the label for illustration purposes.

Sample label for
Macaroni & Cheese

Nutrition Facts

1 **Start Here** →

Serving Size 1 cup (228g)
Servings Per Container 2

2 **Check Calories**

Amount Per Serving
Calories 250 **Calories from Fat** 110

3 **Limit these Nutrients**

	% Daily Value*
Total Fat 12g	18%
Saturated Fat 3g	15%
<i>Trans</i> Fat 3g	
Cholesterol 30mg	10%
Sodium 470mg	20%
Total Carbohydrate 31g	10%
Dietary Fiber 0g	0%
Sugars 5g	
Protein 5g	

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Quick Guide to % DV

• 5% or less is Low

• 20% or more is High

4 **Get Enough of these Nutrients**

Vitamin A	4%
Vitamin C	2%
Calcium	20%
Iron	4%

5 **Footnote**

* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

In 2018 the FDA changed the above label to a new label. The major differences between the older and newer label are on the right side.

Graphic below is from <https://www.fda.gov/media/135197/download>.

Original Label

Nutrition Facts			
Serving Size 2/3 cup (55g)			
Servings Per Container 8			
Amount Per Serving			
Calories 230		Calories from Fat 72	
		% Daily Value*	
Total Fat 8g			12%
Saturated Fat 1g			5%
Trans Fat 0g			
Cholesterol 0mg			0%
Sodium 160mg			7%
Total Carbohydrate 37g			12%
Dietary Fiber 4g			16%
Sugars 12g			
Protein 3g			
<hr/>			
Vitamin A			10%
Vitamin C			8%
Calcium			20%
Iron			45%
* Percent Daily Values are based on a 2,000 calorie diet. Your daily value may be higher or lower depending on your calorie needs.			
	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

New Label

Nutrition Facts			
8 servings per container			
Serving size		2/3 cup (55g)	
Amount per serving			
Calories		230	
		% Daily Value*	
Total Fat 8g			10%
Saturated Fat 1g			5%
Trans Fat 0g			
Cholesterol 0mg			0%
Sodium 160mg			7%
Total Carbohydrate 37g			13%
Dietary Fiber 4g			14%
Total Sugars 12g			
Includes 10g Added Sugars			20%
Protein 3g			
<hr/>			
Vitamin D 2mcg			10%
Calcium 260mg			20%
Iron 8mg			45%
Potassium 235mg			6%
* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.			

- 1 The serving size now appears in larger, bold font and some serving sizes have been updated.
- 2 Calories are now displayed in larger, bolder font.
- 3 Daily Values have been updated.
- 4 Added sugars, vitamin D, and potassium are now listed. Manufacturers must declare the amount in addition to percent Daily Value for vitamins and minerals.

As you can see both labels are meant to give you specific information on what's in each food product, information that you can use for healthy eating and achieving your goals. The nutrients on a label are ordered from what we should limit, such as fat, cholesterol, and sodium, to those nutrients we need to make sure we get enough of, such as dietary fiber, vitamin A & C in the older label and vitamin D in the newer one, calcium in the older label but potassium in the new one, and iron. However, as we'll see, while this information even in the new label, is useful it could be a lot better as it has significant limitations.

From Top to Bottom – What is on the Labels

First we'll cover the information you'll find on the food label. After that we'll look into how to read into what's not on the label.

Serving Size

When you're looking at the Nutrition Facts label on the food product begin your reading at the top of the label with the food's recommended serving size and number of servings per package.

You can easily be fooled if you're not careful. So be sure to compare the serving size to how much you eat. For example, serving size may be 1 cup and you may eat two cups. In that case you're eating double the serving size so you need to double the calories and other nutrient numbers, including the percent daily value.

Calories

Continue down the label to **total calories** and **calories from fat (not in the new label)**. Total calories, which includes the calories from fat – and from carbohydrates and proteins, are the number of calories per recommended serving.

Calories from fat is the total calories in one serving that come from fat. The reason that total calories from fat is listed in the old label but not in the new label, and in both labels not total calories from carbohydrates and proteins, is because of the emphasis in the last few

decades about the health effects of lowering fat in the diet that was emphasized in the old label but with changes on how fat impacts on health, not in the new.

Putting this information on the label allows people to easily monitor the amount of fat in their diets, with the general recommendation being that no more than 30% of daily calories come from fat. This translates to no more than 600 calories of an allowable 2000 calories should come from fat.

Knowing the total calories from a portion of food allows you to compare the number of calories in how much you will eat of the food to the total calories you need for a day. If you are trying to manage your weight, choosing foods that are lower in calories will help. Even small differences in calories per serving can add up over the course of a day.

Keep in mind when reading the rest of the label that:

- 1 gram of fat contains about 9 calories
- 1 gram of protein contains about 4 calories.
- 1 gram of carbohydrate contains about 4 calories.

Using some simple calculations, you can figure out how much of the total amount of calories comes from fat (multiply the number of grams by 9), protein and carbohydrates (multiply the grams of each by 4).

Percent Daily Values

The Percent Daily Value, listed in the right-hand column in percentages, is the percentage of each nutrient recommended to meet the needs of the average person each day in a 2000-calorie diet. This and is measured in grams and milligrams depending on the nutrient.

It basically tells you if the nutrients in a serving of food contribute a lot or a little to the recommended daily intake. The goal is to eat 100% of each of those nutrients every day. For example, if a serving of a food is listed as 25% of the daily value of protein, then that food provides 25% of your daily protein needs based on a daily intake of 2,000 calories.

Percent daily value is a useful measure of whether a food is high or low in specific nutrients. A food is considered a good source of a nutrient if the percentage is between 10% and 19%. If a food has 5% or less it's considered to be low and if it has more than 20% of the percent daily value, it's considered to be high in that nutrient.

Total Fat, Saturated Fat, Trans Fat, Cholesterol, and Sodium

Next down the line in food labels is information on nutrients that most people should limit, **total fat, saturated fat, trans fat, cholesterol, and sodium.**

Total Fat

This is the total amount of fat in a serving. While it's recommended that total fat be low, today the consensus is that between 20 and 30% of our daily calorie intake should come from fats, therefore the change in the new label to 10%). **However, this consensus is for ordinary people and not those who follow my phase shift diets and transform their bodies from being dependent on carbs to being mainly dependent on fats, including body fat, as their primary fuel.**

Saturated Fat, Trans Fat, and Cholesterol

Saturated fat and trans fats are considered bad fats because of their ability to raise cholesterol levels (as can dietary cholesterol) and increase the risk of heart disease. Saturated fat, which is found in greater amounts in butter, cheese, whole milk, whole milk products, meat and poultry, has in fact not shown to raise the incidence of heart disease. More on the benefits of saturated fat and red meat for those serious about exercise and competition in an upcoming newsletter.

Trans fats are used by food processors to increase the shelf life of processed food. Foods high in trans-fat include stick margarine, vegetable shortening, cookies, crackers, snack foods, fried foods and other processed foods. Since consumer awareness about trans fats has recently increased many food manufacturers are trying to decrease or eliminate trans fats from their products.

As of January 2006 food manufacturers in the US must list trans fats on all their products (see <http://www.cfsan.fda.gov/~dms/transfat.html>). If the product comes from outside the US and the amount of trans-fat is not listed, look in the ingredients list for words such as 'partially hydrogenated oils.' This indicates trans-fats are probably in the product.

Some dietary supplements, for example high protein/sports/energy/nutrition bars, and meal replacements, may contain trans-fat from partially hydrogenated vegetable oil as well as saturated fat and cholesterol. Because of this the FDA requires trans-fat levels be on the label if a dietary supplement contains 0.5 gram or more trans-fat per serving.

Cholesterol, while necessary for the endogenous production of many substances in the body including vitamin D and some hormones, can become a problem if it's too high.

Unsaturated Fats

In most cases, since it's not required by the FDA, polyunsaturated and monounsaturated fats, are not listed on the label. If they're not listed then you can get an estimate of how much total unsaturated fats (although not individual amounts) is in the food by subtracting the trans and saturated fats from the total fat.

Sodium

Sodium, mainly from salt naturally present in food or added, more commonly added to food, can contribute to fluid retention and high blood pressure and thus should be limited. Knowing how much sodium is in food can be especially useful for bodybuilders looking to limit their sodium intake during contest preparation, or alternately to sodium load.

Information on Carbohydrates and Protein

Information on the other two macronutrients is also found on the labels.

Carbohydrates

Carbohydrates are broken down into total carbohydrates (carbs), fiber, and sugars.

Total Carbohydrate

This is the amount of total carbohydrate per serving measured in grams. Carbohydrates are primarily found in starches, vegetables, fruits, sweets and milk. Carbohydrate counting is used in diabetes meal planning.

Total carbohydrates combine all the carbs in a food including fiber, sugars, starches, sugar alcohols and glycerin.

Dietary Fiber

This is the amount of indigestible (insoluble fiber) or partially digestible (soluble fiber) bulk from plant foods such as fruits, vegetables, whole grains, oats, nuts and seeds and is measured in grams. Foods high in fiber are shown to be beneficial for weight control, diabetes, high cholesterol and some forms of cancer. Foods with five grams of fiber or more are considered "high fiber" foods.

Sugars

These are part of the Total Carbohydrate content and are measured in grams. These contain sugars from natural, normally present in the food, and added sugars (the amount of added sugar has to be listed on the new label). You can also see which sugars have been added by looking at the ingredients list – for example, glucose, fructose, sugar, dextrose, maltose, high-fructose corn syrup, fruit juice concentrate, turbinado, maple syrup, molasses, barley, and malt. Other ingredients are treated like sugar and should be counted as carbohydrates by those on low carb diets. These include sugar alcohols, such as maltitol, xylitol, and sorbitol, and glycerin.

The added simple sugars, along with trans fats, should be avoided by anyone trying to improve health, body composition, and performance.

Keep Carbs in Context

If you're counting carbs you need to consider most of the total carbs in a product to arrive at the number you can use in your carb counting. There are a number of issues to consider especially since many manufacturers use various tricks to significantly understate their products carbohydrate content. For more information see the section below on Disguised Carbohydrates.

Protein

This listing, measured in grams, tells you how much total protein is in a single serving of a food. While there are differences in the biological value and effects of various protein sources, there is no distinction made for the type of protein or the source. Also, amino acids and peptides, including glutamine peptides are not included as they're not considered whole food proteins. **In my view this is a serious mistake as amino acids and peptides are the breakdown products of whole protein and as such should be listed and considered in the total protein count.**

Vitamins and Minerals

The only two vitamins on the old food label are vitamins A and C, presumably because of their historical importance to health. Both are measured in percentages since the idea is to take in 100% of each of these nutrients daily in order to prevent deficiency diseases. In the new label, however, they have been replaced by vitamin D and potassium. In my view they just should have added the two new ingredients and kept the ones on the old label. Both labels list calcium and iron. The new label requires the listing of the amounts of the vitamins and minerals in each portion.

Ingredient List

Although not shown in either the old or new labels, with nutritional supplements and some other products the label has to contain a list of the ingredients in each portion. The ingredient list gives you an overview of everything that's in the product. The ingredients are listed according to how much of the ingredient the food contains. Not only are the macronutrient ingredients listed but other ingredients such as spices, preservatives, artificial coloring and flavors are also listed on the ingredient list.

The ingredient list can help you determine whether the food is right for you, depending on your views on what you want and don't want to put in your body.

Label Information for Avoiding Allergies

The FDA, as of January 2006, requires food manufacturers to list common food allergens on food labels in simple terms that adults and older children can understand. Common allergens, such as milk, eggs, peanuts, wheat, soy, fish, shellfish, and tree nuts, although listed in the ingredients list, it must also be clearly state on food labels (after or adjacent to the list of ingredients) whether the products contain these allergens.

Beyond the Nutrition Facts Panel

Labeling Terms & Their Meanings

Besides understanding the food label, consumers, especially those on special diets, also need to be aware of nutrition claims posted on foods. Some food labels make claims that they're low in cholesterol or low in fat. But these claims have very specific meanings that most of us aren't aware of.

However, although these claims can only be used if a food meets strict government definitions, you have to be careful you don't misunderstand them. For example, the standard for "reduced or less" is always at least 25 percent lower than the reference or original food.

Although a label may say that the food is reduced fat or reduced sodium that only means that the amount of fat or sodium has been reduced by 25% from the original product. So, if the original product was high in fat or sodium the reduced product will be a notch lower but will likely still be relatively high.

Even if a food is low in fat, it can be high in sugar. Food companies also may make claims such as "no cholesterol" (meaning there is no animal fat used in making the product), but that says nothing about the fat content.

Here are some of the meanings according to government mandated definitions:

Sugar Free	Means that it has less than 0.5g per serving.
Reduced Sugar	Indicates that the product has at least 25% less sugar per serving.
No Sugar Added	Products are those that have had no sugar added during processing or packing. They do include products that already contain natural sugar such as dried fruit and juice.
Calorie Free	Means that the product is fewer than 5 calories per serving.
Low Calorie	Is an item that contains 40 calories or less per serving.
Fat Free	Is less than 0.5g of fat per serving.
Saturated Fat Free	Tells you that the product contains less than 0.5g per serving and the level of trans fatty acids is no more than 1% of the total fat.

Low Fat	Is 3g or less of fat per serving and if the serving is 30g or less or 2 tablespoons or less, per 50g of the product.
Low Saturated Fat	Informs the consumer that 1g or less per serving and not more than 15 percent of the total calories are from saturated fat.
Reduced or Less Fat	Can be used on the label if at least 25 percent less per serving than the original reference food.
Reduced or Less Saturated Fat	Is at least 25 percent less per serving.
Light	Means that the product has 50% less fat than the same regular product. Can also be used to mean one third fewer calories or 50% less sodium.
Lean	Means less than 10 grams of fat, 4 grams saturated fat and 95 mg of cholesterol.
Extra Lean	Means less than 5 grams of fat, 2 grams saturated fat and 95 mg of cholesterol
Cholesterol Free	Is any product that contains less than 2 mg of cholesterol and 2g or less saturated fat.
Low Cholesterol	Refers to an item that is 20mg or less and 2g or less of saturated fat per serving; and if the serving is 30g or less or 2 tablespoons or less, per 50g of the product.
Reduced or Less Cholesterol	Indicates a product has at least 25 percent less and 2g or less of saturated fat per serving.
Sodium Free	Is less than 5mg per serving.
Low Sodium	Means the product is 140mg or less per serving.
Very Low Sodium	Is an item with 35mg or less per serving.
Reduced or Less Sodium	Requires that the product be at least 25 percent less per serving.
High Fiber	Is any product that contains 5 or more grams per serving. High fiber claims must also meet the criteria for low fat or the level of total fat must be shown next to the high fiber claim.
Good Source of Fiber	Refers to products with 2.5 to 4.9g per serving.
More Added Fiber	Products must contain at least 2.5g more per serving than the original reference food.

The Food Label and Special Interests

Most of what we've covered so far will help you to decide on what's in the food you're eating and allow you to make healthy choices about food. The nutrients on a label are ordered from what we should limit, such as fat, cholesterol, and sodium, to those nutrients we need to make sure we get enough of, such as dietary fiber, vitamin A & C (old label) or vitamin D (new label), calcium and iron in both labels, and potassium, new label.

However, since the information on food labels is geared mostly to the average person on an average diet, how you use the nutrition facts panel depends on the type of diet you're on and your goals.

If you're looking to maximize body composition and/or performance, or if you're following a specific diet, then you're going to look and use the information that's on the food panel a little differently than Mr. Average. For our needs it would be useful to have more information on what's in the food or nutritional supplement than is now on both labels.

So, while it's always a good idea to minimize trans fats (with the exception of CLA) and sugars, the amount of other fats, proteins and carbs can vary dramatically depending on what diet you're following and what you're trying to accomplish.

For example, if you're following a low carb diet then your total fat level will usually be high, unless you're drastically cutting back on calories. And if red meat is an important part of your diet, then your saturated fat intake will be relatively high. But that may not be a problem because when you're low carbing saturated fat is treated differently than when you're on a high carb diet, especially one high in sugars.

Regardless of the type of diet you're on you should minimize your intake of sugars and trans fats and increase your intake of polyunsaturated and monounsaturated fats. Unfortunately, neither of the unsaturated fats is required to be listed on the food label although some companies do.

It would also be useful to have the number of calories from each macronutrient and subsections under that macronutrient. This would allow you to more accurately tailor the food for specific macronutrient requirements. For example, it would be useful to know how much of the fiber was soluble and how much was insoluble fiber. That's because while insoluble fiber generally has no useable calories, soluble fiber does.

Breaking down the macronutrients into subsections also allows you to see through some of the marketing ploys used by some manufacturers to give a false impression of what's in their products. Nowhere is this more needed than when discussing the carbohydrate content of food and supplements, especially low carbohydrate protein snacks, bars, and meal replacements. We'll cover this subject below under Disguised Carbohydrates.

The following chart is an example of what a more detailed food label should contain, as against what it now contains.

Under the label's "Nutrition Facts" panel, manufacturers are required to provide information on certain nutrients. The mandatory (underlined) and other components that could be listed, and the order in which they should (and in some cases must) appear are:

- total calories
- calories from fat
- calories from saturated fat
- total fat
- saturated fat
- trans fat
- polyunsaturated fat
- monounsaturated fat
- cholesterol
- sodium
- potassium
- total carbohydrate
- dietary fiber
- soluble fiber
- insoluble fiber
- sugars
- sugar alcohols (for example, the sugar substitutes xylitol, mannitol and sorbitol)
- other carbohydrates (the difference between total carbohydrate and the sum of dietary fiber, sugars, and sugar alcohol if declared)
- protein
- amino acids
- peptides
- vitamin A
- percent of vitamin A present as beta-carotene
- vitamin C
- calcium
- iron
- other essential vitamins and minerals
- Caffeine content (especially in various commercial drinks such as sodas and energy drinks)

Caffeine Content of Food and Drink

Another relatively unregulated area is the caffeine content of various drinks, mostly coffee and tea, carbonated beverages and energy drinks, and foods, mostly chocolate, especially dark chocolate, and coffee flavored yogurt and syrup. When caffeine is added to foods and beverage it must appear in the list of ingredients on the label. However, manufacturers aren't required to list the amount of caffeine.

Only a minority of companies voluntarily state the amount of caffeine in their product on their labels. The American Beverage Association issued Guidelines on the Voluntary Quantitative Labeling of Caffeine a few years ago. For more info go to <http://www.ameribev.org>. For a discussion of caffeine in energy drinks go to www.ameribev.org/science-policy-materials/download/46/.

This is a problem with carbonated beverages^[4] and especially the new crop of energy drinks, with the energy coming almost 100% from the caffeine (and related compounds) content even though it may have several other ingredients in the mix such as taurine, B vitamins, sugar, etc.

An average cup of brewed coffee has around 100 mg of caffeine. However, the caffeine content of coffee from retail outlets, including different sources of the same brands, can vary appreciably, mostly from 70 to 140 mg.^{[5],[6]} And even decaffeinated coffee contains significant amounts of caffeine.^[7]

For a list of the levels of caffeine in foods, drinks, OTC pills and medications go to http://www.erowid.org/chemicals/caffeine/caffeine_info1.shtml#1. As you can see from these lists the amount of caffeine in various beverages varies dramatically from those with a caffeine content of several cups of brewed coffee to relatively low levels.

Up to 400 mg of caffeine per day is considered safe for healthy adults.^[8] although an upper limit of 300 mg is recommended for some, such as women in their child bearing years.^[9] While these limits may seem to be high, if one looks at all the sources of caffeine, reaching unhealthy levels is easier than most people think.

For example, some of the energy drinks, in their bid to outdo each other, have raised caffeine levels in their products to the point where their use alone could be dangerous to health.^[10] For example a 20 oz bottle of a typical energy drink aimed for those that exercise (usually enough for one training session) contains up to 500 mg of caffeine. And it's not unusual for some to use two or three a day, either during exercise or simply at times of the day when their energy is flagging.

Disguised Carbohydrates

There are times when a carb is not a carb, and when something which isn't technically considered a carb is in fact a carb. The confusion mainly stems from the food and supplement industry.

The Food Label terms for carbohydrates as defined by the FDA can be confusing however some of the definitions are straightforward, such as.

1. Total carbohydrate: calculated by subtraction of the sum of the crude protein, total fat, moisture, and ash from the total weight of the food. " Sugars: the sum of all free mono- and disaccharides (such as glucose, fructose, lactose, and sucrose)."
2. Sugar alcohol: "the sum of saccharide derivatives in which a hydroxyl group replaces a ketone or aldehyde group whose use in the food is listed by FDA (mannitol, xylitol) or is generally recognized as safe (sorbitol)."
3. Other carbohydrates: "the difference between total carbohydrate and the sum of dietary fiber, sugars, and sugar alcohols if present."^[11] (reference for above 3 points) "
4. Glycerol, glycerin, and glycerine refer to the same substance. FDA nutrition labeling regulations require that when glycerin is used as a food ingredient, it must be included in the grams of total carbohydrate per serving declaration. Also, when the label of a food containing glycerin has a statement regarding sugars, the glycerin content per serving must also be declared as sugar alcohol.^[12]

As straightforward as these definitions are the manufacturers have succeeded in muddying the waters by introducing some new phrases to describe the carbohydrate content of their products.

The relatively new phrases "net carb," "low carb," and "impact carb" are not FDA definitions but rather created by companies so that you'll see their product on the shelves and be attracted enough by what they're saying that you'll buy the product.

To calculate the "net carb," companies subtract the grams of fiber, sugar alcohols, and glycerin from the total carbohydrates. The reason behind this, at least as far as these companies are concerned, is that the body does not digest fiber so it shouldn't be counted as part of the total carbohydrates, and that glycerin and sugar alcohols don't increase insulin or blood glucose levels like sugars and starches do.

However, the idea behind low carb diets for those interested in body composition is to maximize the use of body fat as a primary fuel and anything that interferes with that in a facile way (dietary fat and protein don't) should be suspect. The sugar alcohols, glycerin and even soluble fiber do just that and as such should be counted in as carbs.

While I'm sure that taking the strict definition of carbs suits the food industry and increases sales, they're deceiving the public as far as the usefulness of their products for those on low carb diets.

The only exception when considering the sugar alcohols or polyols may be erythritol, but I'm not so sure about the validity of the claims since the studies were funded by those with vested interests in promoting erythritol. However, it seems that erythritol is mostly absorbed in the small intestine and of the amount absorbed, most is excreted unchanged in the urine. Also, colonic bacteria seem not to be able to metabolize erythritol. so that secondary metabolites (see fiber below) such as short chain triglycerides are not produced. At this point, however, given that more research needs to be done on the long term use of significant amounts of erythritol, I would count 1 gram of erythritol as being equivalent to 0.2 grams of carbs - so that 5 grams of erythritol should be counted as 1 gram of carbs.

Fiber

The effects of fiber merits a special mention. Insoluble fiber, even though technically a carb, is mostly not absorbed and is much of it is excreted unchanged. As such, it doesn't provide any significant calories or impact on your systemic macronutrient mix. So insoluble fiber shouldn't be counted in either the carb or calorie columns.

Soluble fiber is another story and is somewhat of a gray area in the carb/calorie equation. Pectin, for example, undergoes vigorous "friendly" bacterial fermentation in the cecum and produces high levels of short-chain fatty acids. These short chain triglycerides are used up by cells in the colon and also absorbed systemically. Thus, about half of soluble fiber should be counted as carbs even though the calories come from short chain fatty acids.

But it's not just the calories. The problem with the short chain and even the medium chain triglycerides (see below) is that they're used by the body preferentially over the long chain triglycerides (which make up body fat) so that like carbs they can short change your metabolism away from burning the fatty acids that make up body fat. Thus, if you're looking to maximize body composition the use of short and medium chain fatty acids can be counterproductive.

I know that medium chain triglycerides (MCTs), are often used by athletes to enhance body composition, however, they can be counterproductive in low carb phase of my phase shift diets. MCTs, while having a protein sparing effect when on a high calorie diet high in complex carbohydrates, is counterproductive when on a higher fat, low carbohydrate diet.

The body, instead of using the long chain fatty acids that make up most of body fat, uses the MCTs - bypassing the metabolic processes that are set up to allow the body to burn its own fat and thus decreasing both the lipolytic effect of the diet and the transfer of fatty acids into the mitochondria where it undergoes beta oxidation and is preferentially (and this is the important word for becoming fat adapted instead of being carb adapted) used as fuel for the body.

The long chain triglycerides found in most foods allowed in my Anabolic, Metabolic, Anabolic Solutions, and Radical Diets, and which make up our body fat, have other advantages over MCTs. First of all the LCTs have greater protein sparing effects than MCTs.^[13] MCTs, unlike LCTs, have little inhibitory effect on the activity of enzymes involved in lipogenesis (increased formation of body fat).^{[14],[15]} As well, several studies have shown that LCTs increase lipolysis or the breakdown of body fat.^[16] Overall LCTs in contrast to MCTs, should result in decreased body fat levels, if used properly.

Hard to Digest Carbs

There are several carbs that are difficult for humans to digest and as such are not considered as carbs by manufacturers. For example inulin and oligofructose, storage carbs that are found in some plants, have just under 1/3 the effect of regular carbs on metabolism and as such can be taken into account at that level - for example 3 grams of inulin would be equivalent to one gram of carbs. The reason for this is that inulin and oligofructose have a $\beta(2 \rightarrow 1)$ bonds linking the fructose molecules. These bonds render them nondigestible by human intestinal enzymes but to some extent metabolized by the intestinal microbiota into short chain fatty acids.

Thus, inulin and oligofructose pass through the mouth, stomach and small intestine without being metabolized. As such, almost all of the inulin or oligofructose ingested enters the colon where it is totally fermented by the colonic microflora. The energy derived from fermentation is largely a result of the production of mostly short-chain fatty acids and some lactate, which are metabolized and contribute 1.5 kcal/g of useful energy for both oligofructose and inulin.

However, because most of these products are likely mostly absorbed into the portal vein and therefore enter the body proper, and because I consider lactate and short chain fatty acids as equivalent to carbs, this 1.5 calories per gram, out of a possible 4 calories per gram, has to be factored into your carb intake.

Conclusion

The bottom line is that several macronutrients and ingredients, including soluble fiber, sugar alcohols, carbs that are difficult to digest (such as the inulin and oligofructose, storage carbs that are hard to digest), alcohol, lactate, pyruvate and glycerol act like carbs and if they're not taken into consideration as being the equivalent to either full or partial carbs will sabotage the effects of low carb diets on weight and fat loss, and body composition.

Sample Food Lists

Fats

Saturated Fats Are Found In:

- Whole Milk
- Butter
- Cheese

-
- Ice Cream
-
- Red Meat
-
- Chocolate
-
- Coconuts
-
- Coconut Milk
-
- Coconut Oil

Monounsaturated Fats Include:

- Olives
-
- Olive Oil
-
- Canola Oil
-
- Peanut Oil
-
- Cashews
-
- Almonds
-
- Peanuts
-
- Avocados
-
- Most other nuts...

Polyunsaturated Fats Include:

- Corn
-
- Soybean
-
- Safflower
-
- Cottonseed Oils
-
- Fish

Trans Fats Are Found In:

- Margarines
-
- Vegetable shortening
-
- Partially hydrogenated vegetable oil
-
- Deep-fried chips
-
- Many fast foods
-
- Most commercial baked goods

Find the Right Fat

Aside from staying away from trans fats, try to get as much good fat as possible. The best fats are mono-unsaturated and poly-unsaturated that are found in many foods including:

- Vegetable Oils
- Nuts
- Fatty Fish

- Avocados
- Olives.

However, don't shy away from saturated fats even though you should include foods with the highest level of monounsaturated fat especially olive oil.

Butter or Margarine?

It's really a tossup. Butter has more saturated fat, which for people on my phase shift diets isn't a problem. As well, I personally prefer butter because I find it tastes better than margarine. On the other hand, some prefer margarine because it's easy to spread just moments after removing it from the refrigerator and they like the taste. If you go for the margarine, make sure it has zero or very close to zero trans fats.

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