Guide to the Low Glycemic Index, High Fiber, Mediterranean Diet

This is not meant to be a “diet” in the strict sense of the word, but rather a way of life. The goal is make sure you are eating healthy, nutritional foods that will reduce your risk of heart disease, improve your cholesterol numbers, lower your blood sugar, help control your blood pressure, reduce your risk of cancer, and yet be tasteful and filling at the same time. And you can do all of this just by eating the right foods.

What are the various cholesterol particles involved in heart disease?

Before continuing, let’s try and define the various cholesterol particles that lead to cholesterol accumulation in the arteries, and make these particles easier to remember.

**LDL** - L for lousy, and you want these low. These are related to fat and there are two main sources: Liver - 90% or more of LDL is related to production of cholesterol by the liver (the exact amount produced is genetically determined); Diet - the other 5-10% is due to fat in the diet.

These are the particles that carry cholesterol from the liver out to the body to be used to make hormones, new cell walls, and cover the nerves. These particles, unfortunately, can also get into the wall of the your arteries, and with continued accumulation, lead to blockages and heart attack. That is why these particles are known as the “Bad Cholesterol” since they can transport the cholesterol into the wall.

**HDL** – H for healthy and you want these high. These particles help remove the built up cholesterol from the wall of your arteries and return it to the liver to be re-used or excreted. For this reason, these particles are known as the “Good Cholesterol” since they transport the cholesterol out of the wall of the artery.

**Triglycerides** – The production of these particles is to a large extent related to carbohydrates and sugar intake. These contain primarily Triglycerides which are used for energy, but also have a small amount of cholesterol. These also can get in the wall of the artery and lead to blockages so you want these low.

Why should I be on this type of diet?

The main reason is to reduce your risk of cardiovascular disease or, if you already have heart disease, to help prevent its progression. The other reasons are: to reduce your blood sugar, and to improve your cholesterol, specifically reduce your Triglycerides and raising your HDL.

How does this diet do that?

When people are told they have a cholesterol problem or heart disease, the natural tendency is to go on a low fat diet, replacing the fat with carbohydrates. In people who only have an elevate LDL (bad cholesterol) with normal Triglyceride and HDL levels, this is a reasonable diet and LDL will go down. In a large number of people, though - specifically those with elevated blood sugar, elevated Triglycerides and/or low HDL, pre-diabetes or diabetes – this is not the right diet. These individuals frequently have “insulin resistance” – their body has a blunted response to the effects of insulin –
and, as a result, has difficulty handling carbohydrates that rapidly release sugar. The accelerated digestion of these types of carbohydrates causes a rapid rise in blood sugar levels which can result in an increased production of Triglycerides and an associated fall in HDL. Over time, these rapidly spiking sugar levels after meals lead to increased insulin levels, weight gain, diabetes, and increased cardiovascular risk.

The way to avoid these sugar spikes is to ingest carbohydrates that raise the blood sugar more slowly.

The goal of our Mediterranean type diet is to select carbohydrates which cause a slow rise in blood sugar, so that the insulin resistant patient will not have an increase in Triglyceride production (or the associated fall in HDL). Furthermore, reducing these sugar spikes after a meal will reduce the risk of diabetes, cancer, and heart disease.

How can I tell if a particular food I select will rapidly raise my blood sugar?

There is a measure of how fast a food will raise your blood sugar after it has been ingested and it’s known as the Glycemic Index. The Glycemic Index (G.I.) is a numerical system of measuring how fast a given carbohydrate increases the blood sugar in the two to three hours after eating. The index is based against the blood sugar rise two to three hours after exposure to 50 grams of glucose. This level is arbitrarily called “100,” and other foods are rated against it. For example, if 50 grams of a test food raised the test subject’s blood glucose level by 70% as much as glucose did, it would be assigned an index of 70.

Glycemic grading:
Low GI: 55 or less
Moderate GI: 56-69
High GI: 70 or more

The most common “bad carbohydrates” – those with a high GI index that quickly raise the blood sugar level – are “the whites” (white or wheat bread, white rice, white potatoes), juice, desserts, soft drinks, and alcohol.

The most common “good carbohydrates” – those with a low GI index that slowly raise blood sugar – are whole grain products such as whole grain bread and brown rice, or foods high in fiber, such as fruit, vegetables, salads.

Therefore, low glycemic index carbohydrates are those which in general, have been minimally processed or refined, and are slowly digested. For an in-depth list of the Glycemic Index, see [www.mendosa.com/gilists.htm](http://www.mendosa.com/gilists.htm) for a list of just American foods go to [www.mendosa.com/common-foods.htm](http://www.mendosa.com/common-foods.htm).

What is the basis for this diet?

In a review of approximately 150 studies on the link between diet and cardiovascular health, 3 major dietary approaches emerged as the most effective in preventing cardiovascular events:

1. Replace the bad fats (saturated and trans-fats) with good fats (monounsaturated and polyunsaturated fats).
2. Increase consumption of omega-3 fats (another good fat) with either fish or plant sources, such as flaxseed.
3. Eat a diet high in various fruits, vegetables, nuts, and whole grains. Avoid
foods with a high glycemic index – foods with a large amount of processed carbohydrate that are rapidly digested and quickly raise blood sugar.

These 3 concepts form the basis for the Low Glycemic Index, High Fiber, Mediterranean Diet which can be summarized as “a good fat, good carbohydrate diet”.

This next section – The Food Menu - is a menu of foods that can be used for different meals. If you want more information, the section after that – Food Groups – gives a more detailed description of what the different food groups are and their role in limiting heart disease.

The Food Menu

This is a list of various healthy food choices for the different meals, and why they are preferred. An asterisk * after a food means it was previously discussed.

Breakfast

1. Fruit – combination of fiber and vitamins. The fiber in the fruit slows the absorption of sugar.
   - Any fruit, fresh or frozen.
   - Avoid dried fruit since it releases its sugar more rapidly. Raisins are less acidic than grapes so raise blood sugar more rapidly.
   - Avoid canned fruit, since the juice is high in sugar and has soaked into the fruit

2. Avoid fruit juice – releases sugar rapidly.
   - Vegetable juice such as V8 (low salt version) or tomato juice are good substitutes, or just have plain fruit.

3. Waffles/Pancakes – use the whole grain mix or oat bran forms, both of which will slowly release sugar. One example:
   - Fiber One Complete Pancake Mix.
   - Top them off with either fruit or sugar free syrup.
   - The sugar free syrups are made with sugar alcohol (occasionally with added aspartame or Splenda) and include:
     - Mrs. Butterworth’s Sugar Free Syrup, Maple Grove Farm Sugar Free, and Cary’s Sugar Free Syrup.
   - There are lite syrups with 22-25 grams of sugar per serving versus the normal syrup which has 37-50 grams.

4. Oatmeal – if this is ground into small particles, it will quickly dissolve into sugar when ingested (such as the instant forms), so the idea is that the larger the particle the better. Use the steel cut or old fashioned.

5. Low fat or nonfat milk – there is sugar in milk but it is absorbed more slowly since it is in the form of lactose, and the protein in the milk slows absorption by slowing
stomach emptying. Use the non-fat (skim) or 1% forms. Regular milk has 3% fat, so a 2% fat mix is still too high in fat.

6. Bread – would like to use low glycemic index breads. White bread, wheat bread, white and wheat rolls, croissants, and finely ground, whole wheat bread all dissolve immediately into sugar. Therefore try and chose breads that release their sugar more slowly (low GI brands) which include:

   o Whole grain bread
   - Choose breads made with the whole cereal grains, such as barley, rye, oats, soy, and cracked wheat.
     - Pumpernickel
     - Stone-ground whole wheat breads

   Commercially made low GI breads:
   - Alvarado Street Bakery 100% sprouted sourdough or barley
   - Trader Joe’s has several whole grain breads including Ezekiel bread
   - Whole Grain Natural Bread Company – this is sold in Safeway and Costco in multiple forms, including California Black (19 g of whole grain per serving), Healthy Nine Grain (23 g of whole grain per serving), Whole Wheat Bread (33 g of whole grain per serving)

   o Sourdough bread – the fermentation by the yeast creates a buildup of organic acids. The acidity slows stomach emptying thus slowing carbohydrate digestion.

7. Jam and Jelly – the natural forms have sugar and high fructose corn syrup added to them so they should be used sparingly. There are both low sugar forms and sugar free forms available, such as

   - Smucker’s Sugar Free Preserves (using Splenda)
   - Smucker’s Low Sugar (which reduces sugar content from 12 g to 5 g per serving).

8. “Natural” peanut butter – “regular” peanut butter brands often add saturated fat or partially hydrated vegetable oil (Trans fat) as a preservative and to prevent the oil from separating. The ingredients on the side of the jar will say “Trans fats 0”, but that is because they only have to say Trans fats are present if they are greater than 0.5 grams per serving. In addition, they add sugar. “Natural” peanut butter is the type with the oil on top, and has no hydrogenated fat or sugar listed in the ingredients. In fact, the only ingredients are peanuts and salt. When you buy natural peanut butter, put it upside down on the shelf overnight. When you go to use it, it is easier to stir the oil up from the bottom then put it down from the top. After you use it, store the jar in the refrigerator which will help keep the oil from separating. Brand suggestions are:

   - Laura Scudder’s Old Fashioned Peanut Butter
   - Adams Organic Peanut Butter
   - O (organic) Old Fashioned Crunchy Peanut Butter
   - Trader Joe’s Organic Crunchy Peanut Butter (which is excellent!)
   - Freshly ground peanut or almond butter is a nice alternative

9. Eggs – this is a great source of lean protein from the egg white. The yolk has both good and bad ingredients so the recommendation is no more than 4 whole eggs per week. You can have as many egg whites as you want.
• Egg Beaters
  • Mix scrambled egg whites with vegetables, low fat cheese, top with salsa

10. **Bacon** – this is high in saturated fat so want to minimize the portion size or use a substitute that is lower in fat, such as:
  • Canadian bacon – this is leaner with less saturated fat and more protein.
  • Turkey bacon.

11. **Low glycemic index breakfast cereals** – high in minerals and vitamins with slow absorption of sugar.

Breakfast Cereals:
Choose ones that mention whole grain if possible. Always read the side label.

Look under **Total Fat** – there should be no more than 1 gm of **Saturated Fat**.

Look at **Total Carbohydrate**. The more **Fiber** the better. The **Sugars** content should be no more than the **Total Carbohydrate divided by 4**. This makes it less likely that a lot of sugar was added, and more likely the cereal is low glycemic index in nature.

In this example, the Total Carbohydrate is 13 g. When divided by 4, it is approximately 3. Therefore, Sugars should be no more than 3 g, which they are.

Some suggestions for low GI cereals are:
- Oatmeal – this should not be instant which has been ground so fine, it immediately digests into sugar. Use steel cut or old fashioned.
- Muesli
- Kellogg's All-Bran, Special K, and Natural Muesli.
- Grape nuts
- Beware of the granolas. Many of these are loaded with sugar and bad fats (i.e. coconut oil). Always read the label and use the above guidelines.

12. **Low fat or nonfat yogurt** – all have somewhat low glycemic index values because the fat and protein slow the emptying of the stomach so there is a slower absorption of sugar. Artificially sweetened brands have even lower GI values and fewer calories.

13. **Cinnamon** – nice flavoring. May slow sugar absorption by slowing stomach emptying.

14. **Butter substitutes** – Would like to avoid using regular butter since it has too much saturated fat. In general, make sure any substitute you chose has no trans fat, no
partially hydrogenated oil, is low in saturated fat, and if possible made with canola oil. Several choices include:

- Olive oil itself, or a butter substitute made with olive oil - Olivio
- Promise, I Can’t Believe It’s Not Butter, Smart Balance
- Canola margarine (Canoleo Soft Margarine, Canola Harvest Non-Hydrogenated Margarine)
- Margarines that have plant stanols added to reduce cholesterol absorption: Benecol Light margarine, Take Control Light margarine.

15. Coffee – coffee has both good and bad ingredients but for the most part these average out. As in all things moderation is the key. More importantly is what you add to the coffee. Avoid cream, half and half, and creamers such as “Coffee mate” which can have a lot of sugar and even Trans fats. Suggest using low fat or skim milk, sugar substitute such as Splenda, or a low fat/low sugar creamer.

16. Low fat, skim, or light cheese – regular cheese has 30% fat, mainly as saturated fat, and can contain 6 to 9 grams of saturated fat per serving. Use low fat, skim, or light cheeses and keep the portion size down since these also have saturated fat. Suggestions include:

- Part skim or fat free ricotta cheese
- Parmesan cheese
- Feta – reduced fat or fat free
- Part skim mozzarella (string cheese) or a shredded low fat.
- Laughing Cow Light Cheeses
- Kraft has fat free (or 2% milk) sharp cheddar and American cheese.
- Cracker Barrel Reduced Fat Cheddar
- Others that are low fat or made from skim mild include mascarpone and pecorino

The point is that there are numerous types of tasteful reduced fat or fat free cheeses. Hard cheese in not low in fat, but it has a very strong taste so a little goes a long way. In other words, if you use it, keep the portion size small.

17. Tea – all brands are fine just be careful what you add to it.

18. Avoid those fruit (banana, blueberry, etc) muffins – even though these may be sold as “low fat”, they are made with white or wheat flour and quickly dissolve into sugar. This goes for other bakery products such as cakes, cookies, doughnuts, and pastries that are all made from highly refined (processed) flour.

19. Avoid the bagel and cream cheese combination – this has as much fat as a McDonald’s hamburger. Instead do a sourdough English muffin with low fat cream cheese which is much healthier.

20. Soy Milk – this is produced by soaking dry soybeans and grinding them with water. The protein content is similar to cow’s milk, around 3.5%, but it has a lower fat content than milk -2% with little saturated fat. Plain soy milk is unsweetened, although some soy milk products are sweetened. This is a reasonable choice instead of low fat or nonfat milk.
**Lunch**

1. **Bread** – low glycemic index brands: whole grain, stone ground whole wheat, sourdough.

2. **Vegetables** – high in minerals and anti-oxidants, but digest slowly because of high fiber content.
   - Tomatoes – these blend with all sorts of food. They are high in lycopenes which is a form of Vitamin A, is an anti-oxidant, and reduces risk of prostate cancer.
   - Canned vegetables – string beans, tomatoes, asparagus, carrots, and mushrooms. The problem with these is the high salt content so read the labels carefully.
   - Bottled vegetables – sundried tomatoes, grilled eggplant or pepper, marinated artichoke hearts, and mushrooms.

3. **Legumes (beans, dried peas, and lentils)** – these have a high protein content, and slowly digest due to their protein and fat content. These are high in fiber, vitamins, and minerals.

5. **Pasta or noodles** – all these are white flour for the most part, but the protein content and cooking them al dente results in a slow release/digestion of the starch so blood sugar rises slowly. Thicker pasta may dissolve slower than thin pasta. Suggestions are: spaghetti, fettuccini spirals or macaroni, whole wheat pasta. You can then add vegetables, a vegetable sauce, a tomato sauce, or just olive oil.

6. **Salad** – good minerals and fiber.

7. **Olive oil** – the olive oil is very healthy, having anti-oxidant and anti-inflammatory properties. The US FDA has permitted a claim on olive oil bottles concerning “the benefits on the risk of coronary heart disease of eating about two tablespoons of olive oil daily, due to the monounsaturated fat in the olive oil”. And as a fat, olive oil will slow stomach emptying thus slowing sugar absorption. You should use extra-virgin or virgin, since regular olive oil is missing many of the beneficial ingredients we want.

8. **Vinegar, lemon juice or lime juice** – all are acidic and will slow stomach emptying thus slowing sugar absorption. These are nice to use as part of a salad dressing. Squeezing a lemon on vegetables (rather than butter) or on other foods will slow stomach emptying which slows the absorption of the sugar in these foods.

9. **Nuts** – especially tree nuts (walnuts, pecans, almonds) will slow the rise in sugar absorption and are a rich source of fiber, antioxidants, folic acid, and good fats (mono and polyunsaturated fat). Can sprinkle over food (cereal, salad, or dessert) or have a handful of unsalted nuts as a snack once a day. Avoid macadamias since they are high in saturated fat.

10. **Rice** – white rice has been milled which removes all the covering (bran or fiber) so it dissolves rapidly into sugar, and should be avoided. The milling also removes a considerable amount of nutrients. Substitutes that do have outer coverings and retain much of their nutriment include:
   - brown rice and wild rice
   - Basmati rice
- Uncle Ben’s Long Grain and Wild Rice
- Uncle Ben’s Whole Grain Rice (Long Grain)

11. **Sushi** – although this is made with white rice, the vinegar used with it slows stomach emptying so slows the absorption of the sugar. Therefore, small portions are reasonable.

12. **Soups** – avoid the “creamy” soups due to the fat content. The “broth-based” soups are a great way to add vegetables or legumes to the diet. You can use a vegetable, chicken, beef, or fish stock to start. Look for brands with reduced salt content.

13. **Cheese** – would like to stay with the skim, low fat, or fat free cheeses if possible. Also consider low or nonfat cottage cheese.

14. **Lunch meats** – protein is important, but want to minimize the associated fat, so use lean protein. This includes turkey slices, chicken, lean ham, lean beef (97% fat free hamburger meat) or ground turkey. Consumption of **processed meats** (any meat preserved by smoking, curing, salting, or addition of chemical preservatives) such as bacon, salami, sausages, hot dogs or processed deli or luncheon meats has recently been associated with an increased risk of heart disease and diabetes so try and avoid these.

15. **Fish** – these are high in protein. They also have increased fat but it is primarily polyunsaturated fat, specifically omega-3 fat which is a very healthy fat. These can be fresh or canned. Suggestions:
   - Avoid shark, swordfish, King Mackerel, and tilefish due to high mercury content.
   - Tuna is more complicated in recommendations (see [www.edf.org](http://www.edf.org) for more specifics) but briefly:
     - Ahi, which is usually bigeye or yellow fin tuna, is very high in mercury. This is what is used in tuna sushi and should be very limited.
     - Canned tuna – there are two types:
       - 1. Canned albacore tuna (solid white albacore) – this is high in mercury so should not be eaten more than 3 times per month.
       - 2. Canned light (chunk light) is made primary from skipjack which has about 1/3 the mercury content as albacore. This can be eaten safely once a week or more.
   - Fresh or canned salmon – high in good fat (omega-3) and low in mercury so a good choice.

16. **Tortillas** – Four tortillas are made from white flour - which quickly digests into sugar – and lard or vegetable shortening. A better choice is yellow or white corn tortillas (ground corn treated with lime) which have no more than 1 g of fat. There are multigrain tortillas with 22 g of whole grain per serving but they can be high in fat (4.5 g with 1.5 g of saturated fat) so read the labels. The basic rules for selection are to use corn or whole grain not flour, no saturated fats, no trans fats, and hopefully the oil used is canola oil to make them.

17. **Condiments:**
   - **Mustard** – these are fine.
   - **Ketchup** – these have high fructose corn syrup added along with sugar so minimize the use.
- **Mayonnaise** – these can be very high in fat. The low fat versions are much lower in fat and taste good. These include:
  - Best Foods Light Mayonnaise – 3.5 g of fat versus the normal with 10 g.
  - Best Foods Low Fat Mayonnaise Dressing – 1 g of fat.

18. **Crackers** – preferably get the whole grain crackers. Make sure they don’t have partially hydrogenated oil in the ingredients. Look for labeling listing the amount of whole grain per serving. Several choices:
  - Triscuits – they have several forms of baked whole grain (whole grain soft white winter flour).
  - Kashi crackers – they have some nice whole grain including Heart to Heart with 28 g of whole grain per serving.
  - Crunchmaster – Multi-seed crackers with 19 g of whole grain per serving.

**Dinner**

Many of the possible foods that could be used for dinner have already been described above, but will be briefly mentioned here also.

1. **Salad** – the roughage is very helpful for digestion in general. The other purpose is to serve as a vehicle for olive oil*. The **salad dressing** should be olive oil which can be mixed with lemon or balsamic vinegar. If you are tired of those combinations, you can mix olive oil with a low fat dressing, but the basic ingredient of any mix you use should be virgin or extra-virgin olive oil.

2. **Soups**

3. **Vegetables** – all are “good” carbohydrates, supplying minerals, vitamins, and fiber.

4. **Potatoes** – the skin is fiber which can slow digestion, while the white portion is starch which is rapidly digested into sugar. On the typical baked potato, there is too much starch (white portion) for the skin (the fiber) to effective slow digestion. Suggestions:
   - Baked potato - remove much of the white starch portion (“hollow it out”) and eat the remainder with the skin.
   - Red potatoes – has skin but with less white/starch content
   - Yams or Sweet potatoes – lots of fiber to slow digestion.

5. **Chicken/Turkey** – you can cook it with the skin on to keep it moist, but then remove the skin before eating since it is loaded with saturated fat.

6. **Fish**

7. **Beef** – the goal here is to minimize the saturated fat, so use lean beef and keep the portion size small – 3 oz or the size of a deck of cards. Lean cuts of red meat include:
   - Chuck, round, sirloin, filet, or loin.

8. **Pork** – chose a lean cut to keep the saturated fat down. Suggestions:
   - Ham, preferably lean
   - Canadian bacon
   - Pork tenderloin (this is as lean as skinless white chicken meat), top loin roast, pork sirloin chop and roast
9. **Lamb** – it is hard to get lean cuts of lamb. These cuts are usually at least medium in fat and so you should limit the use of lamb. Suggestions:
   - Leg, Fore shank, Loin, Sirloin chop
10. **Pasta** - Careful with portion size and cook it “al dente”. The bigger concern is the *sauce* that goes on it. Avoid the heavy white sauces, and use the *red sauces* which have much less fat. Even just sprinkling olive oil over the pasta can be enough.

**Snacks**

All of these have calories so be careful with the portion size and the frequency.

1. **Fruit** - this is a nice snack, especially apples, oranges, bananas, berries, and grapes, since they are easy to carry with you. You can combine this with a wedge of light cheese (such as Laughing Cow Light Cheese).
2. **Sourdough English muffin with** small amount of jam or natural peanut butter
3. **Whole grain crackers or raw vegetables** (carrots, celery) combined with low fat cheese (such as Laughing Cow Light Cheese) or *hummus*.
4. **Low fat yogurt**
5. **Handful of nuts**
6. **Popcorn** – air popped or popped with olive oil.
7. **Hardboiled egg**
8. **Non-fat, sugar free yogurt**
9. **Apple with natural peanut butter on the halves.**
10. **Celery with wedge of light cheese**
11. **Baba Ghannouj (crushed egg plant) with raw vegetables.**

**Desserts**

Below are listed some simple solutions to dessert. In addition, each of the books listed under **Suggested Reading** at the end of this guide have a number of recipes for low fat, low sugar desserts.

1. **Fruit**
2. **Low fat yogurt** with nuts, or healthy whole grain cereal, or fruit, or combination of all.
3. **Low fat ice cream** – with dairy foods, a protein curd forms in the stomach and slows its emptying. Keep the portion size small. It’s even better if you get the “no added sugar” variety which has even less sugar and less effect on triglycerides. The “no added sugar” brands use *sugar alcohol* (not a sugar and not an alcohol) for a sweetener. This is a natural substance found in certain plants and fruits which is either absorbed slowly or not at all, so blood sugar rises slowly. Some of these brands may also add Splenda to further sweeten the ice cream.
4. **Sugar free jello**
5. **Pudding** – sugar free, low fat
6. Frozen fruit (bananas, strawberries, etc) dipped in sugar free chocolate sauce.

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www.wholegrainscouncil.org – this is a great internet site to learn more about whole grains. If you go to the header, and chose “Find Whole Grains”, then chose “Stamped Products”, it will give very long lists of various groups of whole grain products.

The Food Groups

This is a group by group discussion of the different food classifications, and their role in heart disease.

FATS:

Individuals depend on fat and carbohydrates for energy sources. If one significantly reduces fat intake, then there is a major shift to carbohydrate intake to supply one’s fuel needs, which can lead to an unmanageable increased sugar load in some patients. Therefore, instead of reducing fat, substitute monounsaturated fat or small amounts of polyunsaturated fat for saturated fat.

Different Classifications of Fats:

Saturated Fats:
These are the animal fats (red meat), and dairy fats. These have a high concentration of “bad fat” which can lead to an increase in LDL (bad cholesterol) and heart disease.

Monounsaturated Fats:
As found in olive oil, canola oil, certain nuts, and avocado. These fats are good for you and will help reduce Triglycerides and raise HDL. They also improve the function of the cells lining your arteries (endothelial cells) so they can keep cholesterol out of the wall.

Polyunsaturated Fats:
These have been separated into three kinds: Omega-3 fats; Omega-6 fats; and Trans fats.

1. Omega-3 Fatty Acids: These have beneficial effects. They reduce Triglycerides, increase HDL, improve endothelial cell function, retard cholesterol formation, prevent heart attacks, and reduce the risk of abnormal heart rhythms. Sources of omega-3 fatty acids include:
   A. DHA and EPA found in fish and other seafood. Land animals’ fats are largely saturated, while fish fats are usually about 30% monounsaturated and 40% polyunsaturated with increased levels of omega-3 fatty acids. Fish have saturated fat
but nothing like beef, pork, lamb and poultry.

B. **Certain plant products** have high alpha linolenic acid content which can be converted to omega-3 fatty acids. These products include **olive oil, canola oil, flaxseed oil, ground flaxseed, certain nuts, beans, and soybean products**. This is a good source of omega-3 fatty acids for vegetarians that do not want to take fish.

2. **Omega-6 Fatty Acids**: These naturally occurring fats are found in vegetable oil. Taken in moderation they are very beneficial and when used to replace saturated fats, can cause a drop of LDL levels. Unfortunately, HDL can also fall. This is a concern when omega-6 fats constitute more than 10% of the diet. Using monounsaturated fats for salad dressing and cooking can reduce the use of these fats. Another way to reduce their intake is to minimize the use of “low saturated fat” commercially produced food items - almost all of these fats are omega-6 fats. **Sources of omega-6 fats** include: safflower, corn, soybean, and sunflower oils, and fried foods.

3. **Trans Fats**: These are polyunsaturated fats, such as vegetable oil, which are liquid at room temperature, but have been chemically changed (hydrogenated) into butter-like solids. Trans-fats are very atherogenic. They increase LDL levels, decrease HDL, and make LDL more likely to get into the wall of the artery... These fats are listed on package labels as “*hydrogenated or partially hydrogenated vegetable oil*,” and are found in a number of commercially prepared foods including margarine, fried foods, commercially baked goods (cookies, crackers, cakes, pies, etc.) and high fat snacks (potato chips, corn chips, tortilla chips). These types of fat should be avoided or minimized. Producers are allowed to state “Trans fats 0” as long as the amount is <0.5 grams per serving, but they still have to list the presence of partially hydrogenated vegetable oil, which is trans fat.

**Recommendations:**

1. **Minimize saturated fat intake**. Go for lean cuts of meat, watching your portion size, and chose low fat or non-fat dairy products, such as nonfat or 1% milk, low fat cottage cheese, etc.

2. **Substitute with monounsaturated fat and omega-3 fatty acids.**
   - Virgin olive oil, approximately 2 tablespoons per day not counting what is used in cooking. Can mix this with balsamic vinegar (or a low fat dressing) and put over salad. Mix with lemon and put over vegetables. Dip whole grain bread into the virgin olive oil.
   - Use canola or virgin olive oil for cooking and as a substitute for butter and shortening.
   - Take a small handful of nuts in the late afternoon, especially walnuts and almonds.
   - Natural peanut butter with no added sugar or oil. (The kind that has the oil sitting on top in the jar). Also freshly ground peanut or almond butter.
   - Two or more fish servings per week.

3. **Keep polyunsaturated fats (omega-6 fats) under 10% of the diet.**

4. **Avoid trans-fats.**
Remember that monounsaturated fats are still fat and therefore, add calories to the diet. These provide 9 calories per gram compared to 4 calories per gram for carbohydrates. Note that the benefit of monounsaturated fats is negated if you take in so many calories-worth of them that you gain weight.

PROTEIN

Protein is very beneficial in the diet but should comprise no more than 25-35% of the meal. The problem with protein is the company it keeps, primarily the fat associated with it, such as in beef and dairy products.

Recommendations:
1. Occasional lean meat. Keep the portion small. (See food menu for more extensive discussion regarding types of meat)
2. Poultry with the skin removed (white meat only since dark meat like duck, for instance, is high in fat).
3. Moderate amounts of low-fat or non-fat dairy products such as milk, cheese, and yogurt. Limit use of high-fat cheese.
4. Fish and shellfish
5. Plant proteins, such as beans, lentils, and soy products.

CARBOHYDRATES

Points regarding Low Glycemic Index (GI) foods:
- Low glycemic index diet concentrates on carbohydrates that are slowly digested. High GI foods increase blood sugar and insulin levels when ingested. High insulin levels inhibit fat burning. Keeping insulin levels down is one of the keys to weight loss. Low GI foods do not increase insulin levels nor do high protein foods. These will keep insulin levels lower so that you tend to burn more fat which will assist in weight loss.
- Carbohydrates that are quickly digested and absorbed can stimulate appetite due to rapid rise and fall in blood sugar levels. Because low GI foods are digested and absorbed slowly, they reach lower parts of the small intestine, stimulating “satiety factors” that help people feel satisfied, making weight loss easier.
- People who follow a low GI diet have been found to have lower risk of developing diabetes, cardiovascular disease, and various cancers.

A word about grains: A grain is the seed of a cereal grass. It has an outer fibrous covering called the bran, an inner wheat embryo called the germ, and a carbohydrate rich center called the endosperm. The bran has fiber, vitamins, and magnesium. The germ has vitamins and healthy unsaturated fat. The endosperm is pure carbohydrate. The grain can be prepared in several ways: (1) Refined – the kernel
or grain is milled (processed) first cracking the wheat grain then pulverizing it with a series of rollers. As a result, the fibrous bran and the germ are separated from the starchy, carbohydrate rich center - the endosperm – leaving a flour mixture that is almost pure starch and when ingested immediately dissolves into sugar. Examples are white flour, wheat flour, and whole wheat flour. (2) **Stone Ground** – these are grains that have been milled, not with steel rollers, but rather stones and much of the grain is left intact or at least partially whole. Stone ground grains tend to release sugar more slowly. A good example is stone ground whole wheat bread. (3) **Whole grain** – these are products made from the entire grain kernel. The fibrous cover on the outside of the gain slows digestion so there is a gradual release of sugar. When looking for whole grain products, make sure they state such on the wrapper. Most bread labeled “whole wheat”, “multigrain”, “7-grain" is merely white bread dressed up to look like whole grains.

**Recommendations:**

1. Avoid processed/refined carbohydrates – the bad carbohydrates. Use carbohydrates with a low to moderate level on the Glycemic Index.

2. Frequent servings of fruit and vegetables every day.
   - These include almost all **vegetables**, except potatoes which have a high GI. Substitutes for potatoes include sweet potatoes (GI 46) or yams (GI 37). The skin of the potato slows the digestion due to the fiber content. The key is to reduce the amount of white (the starch) and eat the skin. Red potatoes which are small with lots of skin are a good choice. For a baked potato, carve out some of the white inside ("hollow it out"), then eat the remaining white and the skin.
   - Most **fruits** have a low GI value due to presence of soluble and insoluble fibers which slow digestion, and acids (which slow stomach emptying). **Low GI fruit** – apples, pears, all citrus and stone fruits (i.e. peaches, plums). Tropical fruits, such as pineapple, cantaloupe, and watermelon, tend to have an intermediate GI value, but in average servings the glycemic load is low. Berries have so little carbohydrate that their GI value is impossible to test.

3. Use only low glycemic index breads, cereals, and rice. Keep portion size of pasta low.
   - Whole grain or sourdough bread
   - Low glycemic index cereals
   - Pasta:
     - Pasta of any shape and size has fairly low GI values, if cooked properly. Cooked pasta should be slightly firm and offer some resistance when you are chewing it ("al dente"). This gives it a lower GI index than if overcooked. There is some evidence that thicker types of pasta also have a lower GI index, perhaps because they cook more slowly and are less likely to be overcooked. Be
careful with the portion size. Keep it less than 1/3 of the plate or one cup.
- Eden brand is whole grain. Dreamfield Pasta has a low GI index. Both are good.

**Rice:**
Chose brown or wild rice, and watch your portion size.
- Uncle Ben’s converted, long-grain rice (GI 50) or Uncle Ben’s long-grain and wild rice blend (GI 54)
- Koshihikari rice
- Brown rice - Lundberg brand has numerous types of flavored brown rice that are tasteful

4. Avoid fruit juice (high GI), but vegetable juice (V-8, Tomato) is okay.

5. Read package labels. Ideally, the percentage of calories from sugar should be less than 25% (sugar/carbohydrate ratio <1/4) of the total calories from carbohydrates.

6. Avoid simple sugars and desserts, such as cakes, pies, candy, cookies, and soft drinks. Avoid foods made with white or wheat flour (i.e. bakery goods). One point regarding alcohol . . . minimize intake (≤ 2 oz/d) since it has high sugar content.

7. **Fruits and Vegetables:** Most vegetable and fruits (but not fruit juices) have a reasonable Glycemic Index and slowly digest into sugar. These also provide a number of antioxidants as well as fiber. Dark green leafy vegetables are especially recommended, such as spinach or romaine for salad, because of their high folic acid content.

8. **Fiber:** Don’t forget to get your recommended 25-35 grams of fiber per day since fiber is filling and has very few calories. High fiber foods may help with weight loss. Soluble fiber, such as oatmeal, beans, lentils, and fruit lowers cholesterol levels since it binds with cholesterol in the intestines and prevents it from being absorbed. To avoid bloating and gas, drink plenty of water daily.

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**Suggested reading:** The books listed below can add further explanation as to why this type of diet is cardioprotective, and give even more details on the different foods recommended, along with some very healthy recipes.

1. *Eat, Drink, and Be Healthy.* Walter C. Willett, MD, Simon and Schuster, 2001
2. *The South Beach Diet.* Arthur Agatston, MD. Rodale. 2003