

# NUTRITION AND HEPATITIS C

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## Introduction

Good nutrition is very important for anyone living with *hepatitis C*. Nutrients provide the building blocks for the body's physical structure—its cells, tissues, and organs. This includes that all-important organ, the liver. Wide varieties of nutrients are also needed to support the body's immune response to infection. While both of these roles are important for anyone, they are particularly crucial for someone living with hepatitis C.

The ongoing presence of the hepatitis C virus (*HCV*) means the *immune system* is always responding to it. Since an active immune system requires energy, there must be a steady intake of nutrients to provide that energy. In addition, the immune system must be able to create a constant flow of immune cells and chemicals to fight the virus. Those cells and chemicals, fundamental components of the body's immune response to HCV, are created from nutrients. This means that a steady supply of nutrients is absolutely necessary for viral control. Any damage done to the body by HCV must be repaired. This also requires a constant intake of the nutrient building blocks needed to make new cells. Finally, having proper amounts of nutrients may actually help prevent liver damage. There is also evidence that certain nutrients may help prevent *liver cancer*, a major risk for those living with *chronic hepatitis C*.<sup>1</sup>

There are two sources for the nutrients that meet all these needs: the foods we eat and drink, and micronutrient supplements including *vitamins*, minerals, amino acids, and fatty acids. It is important to know that supplements cannot substitute for a healthy diet. Gulping down handfuls of pills will not make up for eating a bad diet. On the other hand, even the best diet may not provide the amount of certain nutrients needed to protect and repair the liver in someone living with hepatitis C.

Only a steady intake of nutritious foods can provide the body with the nutrients it needs. Research continues to show us that newly discovered nutrients play critical roles in the body's immune function and in maintaining overall health. It is safe to say there are probably many nutrients yet to be discovered. You cannot depend on supplements to provide your basic nutrition needs because manufacturers cannot put into a tablet or capsule ingredients that have not yet been discovered. To ensure good health, it is critical to take in all the nutrients Mother Nature designed, not just the ones we have studied. In addition, whole foods contain countless components that help nutrients work better in the body.

Many studies have shown that certain vitamins, minerals, amino acids, and fatty acids may help improve the health of people living with hepatitis C. Although supplements can help provide higher than normal levels of certain nutrients that may be needed for liver protection and repair, only a healthy diet can provide the nutrient base that is absolutely necessary for good health. See *Chapter 14, Naturopathic Medicine* and *Chapter 16, Nutritional Supplementation* for more information on supplements.

## Healthy Food for a Healthy Body

The first step toward ensuring you are getting all the nutrients you need is to make the most of what you eat. This means eating a wide variety of whole foods every day, along with plenty of the water and other healthy liquids your body needs to function at its best. The most nutritious food is usually that which is closest to its natural state. Too much processing, refining, and overcooking can chip away at any food's nutrients. Eating the following types of nutritious food every day will help build good health into every cell of your body.

**Table 1. Nutritious foods for good health**

fresh or lightly cooked vegetables and fruits
raw or lightly toasted nuts and seeds
whole grains such as brown rice and barley
whole wheat breads, pastas, cereals, and crackers
mixed grain/nut/seed/bean combinations, eggs, poultry, fish, lean meat, and dairy products for good quality protein

Instead of struggling to follow complex dietary rules, it is easier for most people to just look at the overall picture and try to always choose healthy foods, while avoiding those that adversely affect health. Here are some simple guidelines to help you accomplish that.

### Carbohydrates

When you're choosing foods that are high in carbohydrates for your meal—breads, cereals, rice, pastas, and so on—choose mostly complex carbohydrates that have been refined as little as possible. These are the good kinds of carbohydrates that, along with the carbohydrates you get from fruits and vegetables, can provide a substantial portion of the energy you need every day.

**Fruits and Vegetables:** Add a wide variety of the vegetables and fruits to your meals that will help you get all the nutrients and fiber needed for healthy body function—including immune function. Try to eat at least 3 to 5 servings of vegetables and 2 to 4 servings of fruit each day.

- One serving of vegetables is approximately one cup of raw vegetables or one-half cup of cooked vegetables.
- One serving of fruit is approximately one-half cup of fresh, chopped, or canned fruit.

### Protein

Make sure you get plenty of the *protein* you need for a healthy body and a competent immune response. You can choose from a wide variety of foods that will contribute to your *total protein* intake, including lean meat, poultry, fish, beans, eggs, nuts, seeds, milk, yogurt, and cheese.

### Good Fats

Try to make sure that you get a moderate amount of only good fats every day, but keep the overall fat content of the diet relatively low. Researchers have shown that high fat intake is tied to an increased risk of progression to *cirrhosis* in those with chronic hepatitis C.<sup>2</sup>

### Sweets and Snacks

Last but not least, although an occasional sweet treat or snack food can be fun, most sweets and other “junk” foods contain few nutrients and often substitute for more healthy foods you might otherwise be eating. Limiting your intake of sweets and white-flour snack foods is a good way to improve your chances for a total daily intake of nutrients that is supportive of your good health.

An important and easy way to increase your daily nutrient intake is to go for variety and color. Each food is rich in certain nutrients, but not in others. Choosing a wide variety of foods will help ensure intake of all the nutrients nature can provide. You run the risk of limiting your nutrient intake if you tend to eat the same foods over and over.

Emphasizing color when you select a wide variety of foods is additional nutritional insurance. Think of it as “the rainbow theory of shopping.” When you are in the bread, pasta, cereals, and cracker aisles, choose brown, whole grain varieties

instead of white. White varieties contain processed grains, and processing removes most of the important nutrients found in the whole grain. When you are in the produce section, pick up a variety of colors: red, purple, green, orange, yellow, blue, etc. Any time you see natural color, you are seeing nutrients. The more your shopping basket looks like a rainbow of color, the better your diet will be.

## Adjusting Your Diet to Meet Individual Needs

Any dietary recommendations may need to be modified based on your individual needs and your current physical condition.

### Total Calorie Needs

Both your *metabolism* (the rate at which your body uses energy) and your lifestyle can significantly affect your calorie requirements. These individual characteristics make it difficult to come up with generic recommendations on how many calories someone needs each day. You may have a high rate of metabolism and an energy-demanding job such as construction work or an intensive daily exercise schedule, all of which increase your calorie needs. On the other hand, you may have been born with a very low rate of metabolism and have a sedentary desk job or a lifestyle that does not include much exercise, all of which lessen your calorie needs. Regardless of these individual variables, the total intake of food that you need daily is somewhat increased by chronic hepatitis C. Your immune system has an ongoing response to the virus and this response is constantly burning up calories.

### Protein Intake Adjustment

Since adequate protein is generally so important, it is easy to jump to the conclusion that more is better. However, in the presence of serious liver disease, too much protein can actually be dangerous. A damaged liver cannot process protein as well as a healthy liver. Too much protein can result in protein overload that may lead to *encephalopathy*, a brain condition that causes mental confusion and, in advanced *stages*, coma. If you have significant liver damage, it is very important for you to discuss your dietary needs with your healthcare provider to ensure that your nutritional needs are met without placing undue stress on your liver.

### Salt Intake Reduction

Another dietary change that may be very important for some people is salt reduction. *Ascites* is a complication of cirrhosis in which fluid accumulates in the abdomen. Too much salt in the diet can significantly worsen ascites.

### Adjustments for Those with HCV/HIV Coinfection

People coinfecting with HCV and *human immunodeficiency virus (HIV)*, may require additional dietary adjustments. For example, many people living with HIV have lactose intolerance, an inability to properly digest the milk sugar lactose. This results in gas and/or diarrhea when dairy products are eaten. People with lactose intolerance often need to reduce or eliminate milk and milk products (cheese, yogurt, ice cream, etc.) from their diet.

A reduced ability to digest and absorb fats is also common in HIV disease. This can be another cause of gas and/or diarrhea. Therefore, people living with both viruses may need to keep the fat content of their diets even lower than those who have HCV alone.

Finally, some of the drug regimens taken by many coinfecting people require additional dietary adjustments.

For all these reasons, it is very important to discuss the details of your personal situation with your healthcare provider, and ask for advice about dietary adjustments that may be needed. You and your healthcare provider will need to consider your health history, laboratory results, the state of your liver, and any other conditions such as diabetes or heart disease that may require dietary adjustments. For those who are coinfecting, you will also want to discuss all aspects of your HIV disease. Your healthcare provider may want you to make an appointment with a nutritionist or

dietitian who specializes in hepatitis C. A qualified nutrition counselor can help you create an individualized dietary program. Just make sure your counselor is truly knowledgeable about the nutritional needs of people living with HCV.

All that can be offered to you in this book is a generalized look at what we know about nutrition for those living with hepatitis C. Consider the information presented here to be a base of knowledge that must be modified by your healthcare provider based on all aspects of your current health status. A diet that has been adjusted to precisely meet your current health status and individual needs is ideal.

## Making the Best Choices in Each Food Category

With this in mind, we will now provide some specific suggestions on healthy choices for each of the important food categories.

### Carbohydrates

Carbohydrates are the main source of your body's energy so making good choices of *carbohydrate*-rich foods is very important. Carbohydrates are classified according to their structure as either simple or complex. Simple carbohydrates are found in sweet foods and sweeteners such as fruit, fruit juice, sugar, and honey. Complex carbohydrates are found in root vegetables such as carrots, beans, peas, winter squashes, and grains such as wheat, rice, corn, and oats. Most of the carbohydrates you eat should be the complex variety, along with a reasonable amount of simple carbohydrates, mostly from fiber-rich fruit.

Whole grains (those that are largely unrefined) provide vitamins, trace minerals, and fiber, all of which are important to the immune system and your overall health. One of the best ways to improve your nutrient intake is to substitute whole grains for the "white" foods that are common in our society. Although both are in the category of complex carbohydrates, the heavily refined white foods provide little nutrition.

Good complex carbohydrate choices are important to get the most from the foods you eat. For example, use brown rice instead of white. Eat whole grain bread instead of white bread. Be sure to read the label and make sure your bread is all or mostly whole grain, such as whole wheat or whole rye. If the label says, "enriched flour," "white flour," or "wheat flour," be aware that this really means nutrient-poor white flour. Use whole-grain pasta instead of spaghetti, macaroni, or noodles made from white flour. Eat whole grain rye, wheat, or rice crackers instead of white flour saltines. Again, do not be tricked by the name on the box; read the label carefully. Whole grain flaked cereals and whole grain hot cereals such as oatmeal have far more nutrients than the usual cold breakfast cereals.

Beans of all varieties are also excellent sources of complex carbohydrates and low-fat protein. Do not think of beans as a boring side dish. Make up a spicy bean dip, add them to a pasta dish, or sprinkle a tasty variety on your salad. And do not forget about corn and winter squashes. They are loaded with nutrients and can be a tasty source of complex carbohydrates from breakfast (whole corn grits) to dinner (baked spaghetti squash used in place of pasta in your favorite Italian dish).

Don't be confused by the recent controversy about carbohydrates created by the widespread promotion of high-protein, low-carbohydrate diets. Many people have been confused and developed the mistaken belief that carbohydrates, in general, are a problem. That is simply not true. Carbohydrates provide a large part of the fuel that powers your physical activity and keeps your organs functioning properly. Carbohydrates will always be an important part of the human diet. What is true is that all carbs are not created equal. The key for health is to choose carbohydrates wisely from the whole grains, fruits, and vegetables that truly support health rather than from the highly processed foods loaded with white flour and white sugar that provide little nutritional value.

By choosing the "good" carbohydrates, you will not only increase your intake of nutrients and fiber, but also generally be focused on foods with a moderate to low. The glycemic load is a measure that looks at the amount of carbohydrates in a particular food, combined with how rapidly those carbohydrates are broken down and, thus, the ultimate effect

that they have on your *blood sugar*. When carbohydrates are broken down, they will all have some effect on your blood sugar. Foods that are broken down the most rapidly raise your blood sugar the highest and are the ones of most concern. Diets with large amounts of such “high glycemic” foods have been tied to an increased risk for diabetes and heart disease. The “*glycemic load*” classifies foods according to their effect on blood sugar, and there are online lists available that show the specific *glycemic index* for many foods ([www.glycemicindex.com](http://www.glycemicindex.com)). However, the end effect on your blood sugar will be a result of not only a food’s glycemic index but also the total amount of carbohydrate in an average serving, and this is reflected in the glycemic load.

By choosing foods with medium or low glycemic loads, you can improve your chances for keeping your blood sugar at healthy levels. The Harvard School of Public Health provides a list of foods and their glycemic load at [www.hsph.harvard.edu/nutritionsource/carbohydrates.html#glycemicload](http://www.hsph.harvard.edu/nutritionsource/carbohydrates.html#glycemicload). However, if you simply focus your food choices on whole foods while avoiding the highly processed foods made from mostly white flour and white sugar, you will end up with a diet where most of the foods have moderate effects on blood sugar.

Other than potatoes (which have a high glycemic load), most fruits and vegetables are low glycemic load foods. Most whole grains (including whole-grain breads and pastas, oatmeal, and brown rice) are medium glycemic load foods. And unsurprisingly, most highly processed foods (candy, sugar-loaded drinks, and white-flour breads, cereals, and pastas) are high glycemic load foods. By avoiding the high-glycemic, nutrient-poor foods, those who are already living with chronic liver disease can significantly reduce the risk that they might also have to deal with other serious diseases such as heart disease and diabetes.

## Fruits and Vegetables

Fruits and vegetables are nature’s most abundant source of most vitamins and minerals, including the *antioxidant* nutrients that are particularly important for protecting the liver. In addition, they provide a great deal of the fiber that is important for your health. Including a variety of vegetables and fruits in your diet every day is one of the most important things you can do for good health.

Most experts recommend eating 5 to 9 servings of fruits and vegetables every day, with the high end of that considered optimal. Many people do not even come close to that amount. That makes fruits and vegetables an important area to emphasize for improving nutrient intake.

Fresh fruits and vegetables, lightly steamed or sautéed vegetables, and fresh-squeezed fruit and vegetable juices (preferably made with a juicer that retains the nutrient-loaded pulp) are the most nutrient-rich choices in this group because there has been little or no processing to degrade the nutrients. These fruit and vegetable options contain all of the vitamins and minerals nature intended. Cooking at high temperatures destroys *enzymes* and some nutrients. Therefore, including fresh or lightly cooked fruits and vegetables in your daily diet can be a particularly potent source of nutrients.

Whether raw, steamed, sautéed, or cooked into soups or sauces, the greater the variety of vegetables you eat, the better your chances of getting all the important nutrients you need. Avoid eating the same vegetables day after day. Choose from the entire produce section and include several helpings each day. Your choices are many! If you cook vegetables with onions, garlic, ginger, peppers, and/or tomatoes, you will add the healing nutrients of these ingredients to your body’s health store, too.

Several helpings of fruit each day are also important for your diet. Take advantage of the wide variety of fruits available in modern supermarkets. It is important to eat fresh fruit rather than just drinking fruit juice since juice often does not contain the fiber and pulp that provide many of the fruit’s most important nutrients. Do not forget that fruit is the best and most healthy dessert you can eat. Fruit is also a far healthier snack food than the common sugar and salt-loaded varieties.

**Increasing your fruit and vegetable intake to optimal levels can seem impossible to some people, but it may not be as difficult as you think.**

**One serving of fruit equals ½ cup of fresh chopped fruit.**

To reach the recommended 2 to 4 servings of fruit, just think in terms of trying to eat 1 to 2 cups of fruit each day.

**One serving of vegetables equals 1 cup of raw vegetables or ½ cup of cooked vegetables.**

To get your 3 to 5 servings of vegetables, think in terms of a mixture of raw and cooked vegetables that equals about 1 quart per day.

Eating the recommended amount of fruits and vegetables is not very difficult if you concentrate your food choices appropriately. Have a piece of fresh or stewed fruit as a dessert and for some of your between-meal snacks. Eat a couple of servings of vegetables with your main meal of the day, and include at least one or two other vegetable servings at another meal or as a snack. In the morning, sauté a mixture of vegetables such as onions, spinach, mushrooms, tomatoes, and potatoes and stir them into an omelet for a nutrient-loaded breakfast. Add a variety of vegetables to rice, barley, couscous or any other grains you are cooking. Bake some carrots or winter squash along with the chicken you're cooking for dinner.

Vegetables cooked into soup count as a serving or two, depending on how many vegetables you put into the soup and how much of it you eat. Making up a big pot of hearty vegetable soup can help provide vegetables for a number of meals. You can eat the soup over several days or freeze individual portions to use when other vegetable preparation feels too difficult. If you add beans, chicken, or fish to your soup, you will also be getting lots of protein. For days when eating seems like a difficult chore, getting good nutrition can be made easier by pureeing or blending soup in a blender or food processor so that it becomes an easily drinkable, liquid meal.

## Protein

Your body cannot survive without adequate protein. You need protein to:

- build and maintain cells
- keep muscles and organs healthy
- produce enzymes and *hormones*
- make the *hemoglobin* that carries oxygen to your cells
- maintain your immune system

When your protein intake is too low to maintain your protein stores, the immune system cannot function normally. A loss of immune function created by protein deficiency can cause a lowered resistance to infections, improper wound healing, and a lessened ability to control viruses including HCV. Too little protein can also result in weight loss, *fatigue*, and a decreased ability to respond to drug therapy.

The risk of getting too little protein in North America is quite low. Researchers from the Harvard School of Public Health note that almost any reasonable diet will provide the daily protein requirement. If you want to get technical, the average adult needs about nine grams of protein for every twenty pounds of body weight. For the average adult, that's about 70 grams of protein daily. You can look up the protein content of various foods. Many lists are available online including a very extensive list available for browsing or download from the USDA at [www.nal.usda.gov/fnic/foodcomp/Data/SR20/nutrlist/sr20a203.pdf](http://www.nal.usda.gov/fnic/foodcomp/Data/SR20/nutrlist/sr20a203.pdf). But again, it's highly likely that with adequate intake of food, you will get the level of protein you need for health.

In fact, in an era where high-protein diets have been heavily promoted, the greater risk may be getting too much protein. As already discussed, this is a case where more is not necessarily better, especially for those with advanced liver disease for whom processing too much protein may be harmful. The same is true for those with impaired kidney

function. If you have any of these concerns, it is best for a healthcare provider who knows the details of your health status to prescribe the exact amount of protein you need each day.

In general, the best recommendation is to eat moderate amounts of protein from a wide variety of foods each day. Proteins are made of building blocks called amino acids. When making protein choices, it is important to remember that we require all of the amino acids necessary for the body to build the proteins it needs. The eight so-called essential amino acids are those the body cannot make on its own. They must be obtained from your diet. The so-called non-essential amino acids are those your body can manufacture for itself, provided it has the necessary materials. To manufacture non-essential amino acids, the body uses other amino acids, vitamins, minerals, and enzymes. If any of these are in short supply, even the non-essential amino acids may become deficient.

Complete proteins contain all of the essential amino acids. Complete proteins are found in animal foods such as eggs, dairy products, meats, fish, and poultry. Essential amino acids can also be obtained through complementary proteins created by combining grains, nuts, seeds, and legumes such as beans, peas, and nuts. However, building tissue from complementary proteins requires more energy than building it from complete proteins. Therefore, if you have already experienced muscle loss and/or your appetite is low, it may be better for you to concentrate on eating animal foods that contain complete proteins.

On the other hand, plant foods are generally less expensive than animal foods. If cost is a concern, remember that including some combination of beans, peanut butter, peas, rice, corn, nuts, seeds, and other grains in your daily diet will give your body the protein it needs. Small amounts of animal proteins added to a mostly plant-based diet can ensure that such combinations work without increasing the cost too much. Always remember that eggs top the list for high quality, inexpensive protein.

Some good, concentrated sources of protein are:

- eggs
- poultry - skinless to lower the fat content
- fish - preferably deep-water, cold-ocean varieties since these are less likely to contain the liver-stressing toxins that fish from polluted waters may have
- complementary proteins found in mixed grain/nut/seed/bean combinations
- lean meat

Unless lactose intolerance is a problem, cheese and other dairy products can add to your protein intake. But remember that many such foods are high in fat. Adding things such as alfalfa sprouts, chickpeas or other beans, or sesame seeds to your salad or having beans as part of your meal can increase your protein intake substantially. Snacking on sunflower seeds will do the same. Just be careful not to overdo on seeds or nuts since they also contain substantial amounts of fat. With a reasonable combination of such protein foods in your three daily meals and occasional snacks, you should easily be able to eat the amount of protein you need.

## Fat

A moderate intake of good fats is necessary for your health. But fat intake should be limited in people living with hepatitis C. Fats should come from healthy sources, which means focusing on natural fats. The best fat choice is monounsaturated fat such as that found in extra-virgin, cold-processed olive oil (which is probably the best overall choice), as well as in canola oil, avocados, peanuts, cashews, almonds, and most other nuts;. Cold water fish (such as wild salmon and sardines) contain the heart-healthy omega-3 fatty acids that are another good kind of fat. Eating modest amounts of fish can provide the natural anti-inflammatory effects of fish oil, although it's important to avoid fish that may be high in mercury (swordfish, tilefish, shark, and king mackerel). It's best to limit saturated fats by choosing lean cuts of meat or low-fat dairy products.

Perhaps most important of all is to avoid the bad fats that are common in the North American diet. In particular, it is very important to eliminate partially hydrogenated fats from your diet. Hydrogenation is a process that uses heat and chemicals to change the structure of fatty acids in vegetable oils so that the oils are solid at room temperature. For example, hydrogenation is how liquid corn oil is converted into solid margarine. You will see partially hydrogenated fats referred to as trans fats. Trans fatty acids may contribute to blocking some of the body's normal chemical processes, including those related to fat metabolism. Trans fats have many negative health effects. In 1994, a group of Harvard researchers stated, "Federal regulations should require manufacturers to include trans fatty acid content in food labels and should aim to greatly reduce or eliminate the use of partially hydrogenated vegetable fats."<sup>3</sup> The U.S Food and Drug Administration recently acknowledged the importance of this issue. All foods are now required to have the trans fat content listed on the nutrition label.

Partially hydrogenated fats are found in countless foods. These include margarine, shortening, most standard breads, crackers, cookies and other baked goods, many condiments such as mayonnaise, most commercial salad dressings, and some processed meats and snack foods such as potato chips, corn chips, ice cream, and French fries. It is crucial to read labels carefully in order to eliminate these unhealthy fats from your diet. If the words "partially hydrogenated" appear anywhere on the label, do not eat that food. Seek out brands of foods that have eliminated these bad fats in favor of healthy, natural ones. When eating out, be aware that many fast-food establishments use partially hydrogenated oils in their cooking processes. If you just have to have a burger and fries, you are better off making them at home from healthy ingredients. Even in better restaurants, it is a good idea to ask what kinds of fats they use in cooking and what is in the bread they put in front of you.

In general, try to make sure that you are consuming fats that nature made. Green, cold-processed olive oil not only makes great salad dressing, it is also a wonderful spread on bread. You can even use it for sautéing garlic, onions, or vegetables, as long as you keep the temperature fairly low since it has a low smoke point. Nut and seed butters are another source of healthy and tasty fat, whether they are spread on bread or used in salad dressing. If you want a more traditional fat for cooking or spreading on your toast, plain old-fashioned sweet cream butter is definitely preferable to a partially hydrogenated margarine. Just be careful not to eat too much of any of these foods since your overall fat level needs to be moderately low to help reduce your chance of disease progression to cirrhosis.

When looking at possible ways to reduce fat, remember that much of it is hidden. Most meats (other than very lean varieties) and dairy products (other than those made from skim milk) are loaded with fat. Bacon, sausage, hot dogs, luncheon meats, and other similar products are very high in fat content. Almost all snack foods are also loaded with fat. This includes most chips, peanuts, nuts, many types of crackers, cookies, granola bars, candy bars, and many others. The fats found in salad dressings, peanut butter or other nut butters, and many sauces can add huge amounts of fat calories to your diet. Fried foods of all kinds (such as hamburgers, French fries, fried chicken, fried fish, fried or deep-fried vegetables) are often incredibly high in fat. Finally, the addition of fatty products such as butter, vegetable oils, mayonnaise, whipping cream, and sour cream can dramatically increase the fat content of any dish.

Relatively simple dietary and food preparation changes can significantly reduce the fat content of your diet. Some useful tips are noted in the following list. Any one of these can go a long way in increasing both the appetite-stimulating smell and flavor of foods while at the same time reducing the fat in your diet.

- Bake, broil, or grill your meats, poultry, and fish instead of frying.
- Use skim milk and skim milk cheeses and yogurt instead of whole milk and whole milk products.
- Avoid high-fat bread products such as croissants, doughnuts, muffins, and most cornbread. Use whole-wheat pita bread or low-fat whole grain breads instead. If you are making your own baked goods or sauces, use unsweetened condensed skim milk in place of cream.
- Avoid high fat sauces, gravies, and butter. Substitute herbs and other seasonings to improve the flavor of foods.
- Unfortunately, removing the fat from dishes often seems to remove a lot of the flavor to which we are accustomed. Try using salsas, roasted garlic or shallots, flavored vinegars, chicken broth, and various hot sauces to spice up low fat dishes.

- Thicken sauces or soups with pureed white beans, instant mashed potatoes, or cornstarch and skim milk instead of heavy cream.
- Make mashed potatoes using fat-free chicken broth instead of butter and milk.
- Avoid fried potatoes or other vegetables, substituting steamed or baked versions.
- Sauté foods like onions, garlic, mushrooms and so on using water or poultry broth instead of butter or oil. Alternatively, just “sweat” such foods by placing the chopped onions or garlic in a frying pan. Use moderate heat just until they begin to brown around the edges, and then pour in stock or vinegar to deglaze the pan.
- Prepare your own popcorn using grated skim-milk cheese and various seasonings instead of butter as the topping.
- Use toasted sesame oil or other strongly flavored oils when you want a little fat for flavor.

One caution in this discussion of fat is that you should not carry fat avoidance to an extreme. You want a whole foods diet that includes moderate amounts of good fats. You do not want a diet with no fat at all. In our concern to educate people about the need to lower dietary fat content, it is sometimes forgotten that fat is necessary at appropriate levels and in appropriate forms. Essential fatty acids are just that, essential. Both the omega-3 and omega-6 fatty acids are very important for human health.

When fat intake drops so low that the levels of essential fatty acids in the body are compromised, many negative health consequences can result. These consequences include skin problems, *neurological* problems, energy problems, and suppressed *immunity*. Fat provides the body’s storehouse of energy. Fat in the diet is required for the absorption of the fat-soluble *vitamins A, D, E, and K*. In your attempt to decrease your intake of unhealthy fats, be sure you do not eliminate the good ones in the process. Moderate amounts of healthy fats are essential for a nutritious diet. Both too much and too little fat are unhealthy.

## Sweets and Treats

A healthy diet involves limiting the amount of concentrated sweets, white-flour products, and high-fat nutrient-poor fast foods and snack foods in your diet. Many people consume too many junk foods and desserts that are often loaded with excessive sugar and fat. Then they are not hungry for all the nutrient-rich foods that they really need for health. The end result is a diet loaded with empty calories that does not promote good health. Try to make both sweets and fatty junk foods occasional treats instead of a major part of your diet.

## Healthy Liquids

Drinking plenty of healthy liquids is just as important as eating nutritious foods. Water is a dietary essential. Your diet must include plenty of water. The old adage about drinking eight large glasses of water per day (approximately two quarts) is actually a good beginning. However, because your size affects how much water you need, a better and simpler rule is to divide your body weight in pounds in half, and then drink at least that number of ounces of water every day. For example, if you weigh 140 pounds, divide that in half and drink at least 70 ounces of water (almost nine cups) each day. Many people drink far too little water thinking that they can substitute other water-based beverages like soft drinks and coffee. However, these drinks are not a substitute for pure water.

You need to drink plenty of fresh, pure water every day because without sufficient water, the body simply cannot function properly. Anytime you are running a fever, have diarrhea, are suffering from nausea and vomiting, or have daytime or nighttime sweats, you run the risk of *dehydration*. Dehydration describes the state your body is in when it does not have enough water. Under these circumstances, you should put drinking plenty of fluids at the top of your list of priorities.

It is especially important for those who are coinfecting with HIV to remember that the water you drink must be free of all disease-causing organisms. It is crucial for those with seriously compromised immunity (CD4 cells below 100) to ensure

the safety of water by boiling it or using a water purifier that is designed to kill or filter out bacteria, protozoa, and other disease-causing organisms. The risk of water-borne infections is too high to ignore this.

Many people find herbal teas to be an enjoyable addition to their list of healthy liquids. Make sure you consult with your pharmacist or healthcare provider to make sure the herbs you are drinking have no potential for liver toxicity and will not interact with any of your medications. Fresh fruit and vegetable juices are also healthy liquids. However, remember that many of the nutrients in vegetables and fruits are in the pulp. If you are preparing fresh juice, it is best to use a juicer that retains the pulp so that you get the most nutrient value from your juice.

Bottled fruit juices are another source of good liquids and are widely available. Be sure to pick the varieties with no added sugar. There are also canned or bottled juice spritzers that are sweet, cold, and carbonated. They have no added sugar and none of the chemicals that most sodas contain, but taste great and are just as fizzy as carbonated soft drinks. These spritzers do contain simple fruit sugars so they shouldn't be consumed in excess, but they are definitely preferable to standard soft drinks or so-called sports drinks.

Soups can also contribute to your fluid intake. Warm liquids such as soups, herbal teas, and roasted-grain coffee substitutes are not only nutritious, but are also less demanding on the body than icy cold drinks. Anything that is drunk icy cold requires some of your body's energy to warm it up. Drinking large quantities of very cold beverages can actually drain away calories your body needs.

## Diet Dangers

There can be hidden dangers lurking in certain foods and liquids. Both alcohol and salt (especially if ingested in excess) are bad for people with hepatitis C. The facts are simple.

Alcohol is highly *toxic* to the liver and can cause serious disease and/or death, even in those with no active viral infection. In people with HCV, alcohol intake has been linked to increased risk of cirrhosis, a more advanced degree of liver *fibrosis*, and a higher death rate. If you are considering *interferon-based therapy*, you should know that alcohol consumption has been associated with a decreased response to treatment.<sup>4, 5</sup>

Another hidden dietary danger is the large amount of salt (*sodium*) contained in the typical American diet. High salt intake is not healthy for anyone, but for those with cirrhosis, it can be particularly dangerous since it can lead to or worsen ascites. Anyone with ascites must be on a salt-restricted diet. It is estimated that every 1,000 mg of sodium consumed can result in the accumulation of approximately 1 cup (200 mL) of ascitic fluid. The more the salt content of the diet can be reduced, the better the chances of avoiding this excessive fluid accumulation. For people with advanced disease, liver experts recommend limiting sodium intake to no more than 500 mg to 1,000 mg daily.<sup>6</sup> This level of salt restriction requires careful shopping and scrupulous attention to food labels. Most fast foods and snack foods (especially chips, pretzels, and crackers) are dangerously loaded with sodium and must be avoided if you are on a salt-restricted diet. Even foods that might otherwise be considered healthy can be dangerously loaded with salt. For example, one cup of chicken noodle soup may contain an amazing 1,108 mg of sodium.

The only way to cut salt intake is to look at the sodium content of all the foods you are eating. Use food labels on prepared foods and a chart that shows sodium levels for other food ingredients to determine your total daily intake of sodium. One easy way to cut sodium intake is to avoid prepared foods. Since many people with high blood pressure are placed on low sodium diets, there are many cookbooks and dietary plans available to help you avoid salt. People with hepatitis C who have not developed ascites usually do not need severe sodium cutbacks, but moderating your salt intake is likely to be beneficial.

Another possible dietary danger is eating too many *iron*-containing foods. This is a particular concern for those who have had a *liver biopsy* showing an abnormal accumulation of iron. Iron is stored in the liver and is used by the body for many different processes such as producing *red blood cells*. Iron is also a very important component of the enzymes involved in energy production and the manufacture of *DNA*, the building block of life. Therefore, the human body requires some amount of iron. However, because of its ability to act as a source of substances called *free radicals*, iron can cause liver

damage in people with hepatitis C. This damage can lead to *inflammation* and scarring. See *Chapter 14, Naturopathic Medicine* and *Chapter 16, Nutritional Supplementation* for discussions of free radical damage.

Studies have shown that excessive iron may contribute to liver damage in people who have hepatitis C. A study in India with *hepatitis B* and *C* patients showed that a low-iron diet significantly lowered blood iron and *ALT* (a liver enzyme), especially in those who started with high iron levels.<sup>7</sup> Many iron-rich foods are also high in protein. Although it is not a good idea to sacrifice protein for the sake of a low-iron diet, it is fairly simple to avoid foods that contain very high amounts of iron or are fortified with iron while still getting enough protein.

In general, dietary iron is poorly absorbed. The iron from meats is better absorbed (10% to 20%) than the iron from plants (2% to 5%). If you already have a high iron level in your liver, it may be advisable to decrease your animal protein intake as a way to lower your intake of iron. You can substitute plant proteins for the animal proteins. Be aware that many processed foods are fortified with iron and can significantly increase your iron intake. Unless your physician has recommended iron supplements, it is best to avoid iron supplements.

As a final cautionary note, people with hepatitis C should avoid raw fish and shellfish. These foods can be contaminated with the *hepatitis A* virus. The chance of contracting hepatitis A from raw fish or shellfish is not worth the risk for people already infected with HCV, as the complications can be severe.

## Summary

A summary of dietary guidelines for people living with hepatitis C is rather simple. Try to avoid junk food and fast food. Avoid other nutrient-poor foods that are made with white flour or white sugar, deep-fried in chemically altered oils, overcooked, or loaded with chemicals.

Create your meals from whole foods using a wide variety of properly prepared fruits and vegetables, whole grains, and high quality protein. Include plenty of healthy liquids.

Put care and thought into what you put into your body so that every mouthful adds nutrients and increases your capacity to heal. If you have created each cell in your body from healthy foods and liquids, then there is no question that you will have dramatically increased your body's ability to resist the assault of any disease, including hepatitis C.

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