

HEPATITIS and AIDS

A PLAN TO RECOVER With Complementary and Modern Treatments

MORE ENERGY



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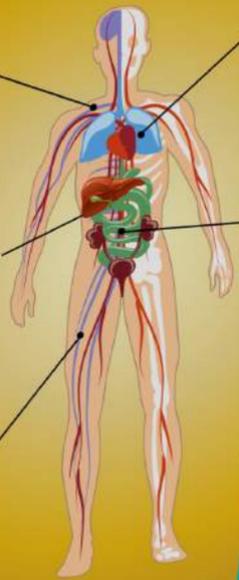
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LIFE ENERGY



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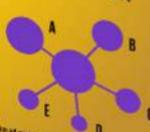
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GUT



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INFLAMMATION



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LIFE SPAN



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Dr Sandra Cabot

Hepatitis and AIDS
A plan to recover with
complementary and modern treatments

*This book will help those with
any chronic viral infection*

by
Sandra Cabot MD

Hepatitis and AIDS

A plan to recover with
complementary and modern treatments

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Note - This book is NOT intended to replace or be a substitute for the care and supervision provided by your own medical doctor. At all times you should remain under the care of your doctor. The suggestions and advice in this book are to be followed only in conjunction with your regular medical care. I am not saying that I have the cure for hepatitis C or B – this book is designed to be used as a guide to optimize your survival and quality of life and is not a substitute for medical treatment for any infection. The opinions expressed in this document are entirely my own and other doctors may not agree with them. Do your own research but remember that nothing can (or should) take the place of face to face medical care from your own doctor.

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Foreword

I am pleased that you have chosen to read this book to gain more knowledge of your health, which is your greatest asset. As a medical student in the late 1960s and early 1970s I became quickly aware of the limitations of drug orientated medicine to treat the cause of most chronic diseases. At Adelaide University in South Australia, I received a thorough medical education from excellent teachers and professors of the day for whom I had great respect and I was keen to become a medical intern at several of the large public teaching hospitals. I was exposed to many types of chronic diseases and would admit patients to receive lifesaving treatments for asthma, heart failure and liver failure and many more. Basically we would save these patients' lives by patching them up with multiple drugs and oxygen therapy. I saw the long term results of liver failure and dementia due to alcohol excess in many people. We had to detoxify many patients with acute delirium due to alcohol withdrawal. I saw women in the prime of their lives with severe strokes due to the potent oral contraceptives of the day. I saw diabetics have limbs amputated due to diabetes and/or heavy smoking. I saw many patients with mental illness who received large doses of anti-psychotic tranquilizers and suffered from side effects of these drugs.

Typically, patients with chronic disease would need to be readmitted to hospital every few months to be patched up again with the same drugs. The obvious thing to me was that we were not doing enough to treat the cause of their diseases. Why was this? Admittedly it was the 1970s and we did not have the sophisticated technology of today which has taken 50 years to evolve. But it was still frustrating to me to see these same patients readmitted to hospital gradually getting sicker and more dependent on numerous drugs. They would also be suffering with the side effects of drugs they needed in increasing doses.

Because of this frustration, my interest in treating the causes of disease was born. I decided that I was going to explore other healing disciplines that looked deeper into the patient's immune system and how we could support their innate genetic constitution to control inflammation.

So over a decade I sought out various expert naturopaths and doctors who used modalities such as herbal medicine, homeopathic remedies, vitamins, minerals, detoxification therapies and bio-identical hormones to help their patients. I was interested to see that the waiting lists for patients to see these doctors was always very long – I thought to myself - “they must be doing something better than the average doctor, with whom one could get an appointment within a few days.” I sat in with these doctors and naturopaths for many weeks and observed how they practiced. I read their books and I did courses on acupuncture, homeopathy and herbal medicine.

The first 7 years of my medical practice was largely concerned with gynecology and obstetrics but I managed to incorporate nutritional medicine for patients with hormonal imbalances and endometriosis. In the late 1980s the hepatitis C virus was identified and I started to see many patients with liver inflammation from this virus.

In the mid 1990s I became focused on researching and treating patients with liver disease and immune dysfunction and began to write about my findings and contribute to medical symposiums. I could see that there was an emerging epidemic of liver diseases and that many were due to poor diet, nutritional deficiencies, viral infections, immune dysfunction, alcohol excess and exposure to toxic chemicals. Although we have powerful existing and emerging new drugs to eradicate the hepatitis viruses, we still need to utilize nutritional medicine to maximize the chances of a successful outcome. I am proud to say that my Health Advisory Services in Sydney Australia and Phoenix Arizona and my website www.liverdoctor.com have helped thousands of people achieve better treatment outcomes and increased wellbeing.

You can e-mail my office for more help at e-help@liverdoctor.com

Introduction

This book is a guide for people with chronic viral hepatitis and it offers them practical and effective evidence based holistic medicine. Don't believe that you cannot be helped, as holistic medicine has the power to change your life. I have seen this in my own health and in the health of thousands of my patients over the 40 years that I have been a medical doctor. I hope that you can trust me as a guide in your journey to better health. My team is here to help you via my websites and Health Advisory Services in Australia and the USA.

This book is designed to act as a holistic resource for those who have chronic infections with the hepatitis B and/or C viruses and HIV, with the aims of achieving -

- A healthier liver that is able to withstand the potential damage inflicted by these nasty viruses
- A reduction in viral load (the amount of virus in your body)
- A reduction of viral replication
- A stronger immune system, which is your greatest health asset
- A reduction of your risk of liver cancer
- A reduction in symptoms, especially fatigue
- A better quality of life

Liver cell repair and renewal – this must be qualified, as if you have liver cancer or end stage cirrhosis I cannot guarantee this. I urge you not to wait until you have reached these stages when you probably need a liver transplant. If you have early or medium stages of cirrhosis it is usually possible to achieve considerable repair and renewal of your liver.

Many governments have funded support centers and websites with large amounts of free and up to date information and there are many excellent self help groups in local communities. So with all this free information available why have I decided to write a book about viral hepatitis and HIV? Well it's for several reasons -

- I have extensive clinical experience helping people heal their livers from all types of liver diseases and I have seen some excellent results using nutritional medicine

- I have not found a truly holistic guide to help sufferers of hepatitis and HIV that puts an easy to follow plan in one book
- I think there is a lack of knowledge available for hepatitis and HIV patients based on a narrow approach of clinicians who are mainly focused on drug therapies
- I have always believed in treating the underlying causes of disease and not just suppressing the symptoms with drugs. Nutritional medicine can effectively reduce inflammation so that these nasty viruses cannot wreak so much damage to the body; this will reduce the future risk of cirrhosis, liver failure or cancer
- Of all the infectious diseases I have ever come across, I have found that the general public, including my patients, are most confused by viral hepatitis. They often have no idea how one catches this extremely common disease and are somewhat vague on the value of vaccination, good hygiene and other preventative measures. When I tell most of my patients that hepatitis B is the most common sexually transmitted disease in the world, they look extremely surprised. I have had several young women who have come to see me for travel advice before they go to Asia and they have no immunity to hepatitis B and are unaware that unprotected sex in Asia is risky behavior for catching hepatitis B. Well it's not surprising as approximately 400 million people on this planet today are carriers of the Hepatitis B virus, with most cases found in Asia. Thankfully an effective vaccine against the hepatitis B virus is available and in many countries babies and young children are routinely vaccinated.

There are hundreds of millions of people living with the hepatitis and HIV viruses in their body and trying to exist with a reasonable quality of life. They often have debilitating symptoms that could be helped with an improvement in their diet and lifestyle and the use of nutritional supplements and herbs. Anti-viral drugs can bring an eradication of the hepatitis C virus and suppress the virus that causes AIDS; however the success rate of this depends upon many factors and for some people results in failure and a host of nasty side effects. Even if an eradication of the virus can be achieved with anti-viral drugs, the virus can hide in the body to attack its host another day when their immune system is weakened. Eradication of the virus is called "a sustained viral

response” to treatment, which means that the virus can no longer be detected in the blood; however the virus could still be hiding in other parts of the body such as the liver, cerebrospinal fluid or lymphatic system. We are dealing with stealth viruses that are hardy and clever at evading the body’s immune system. So our response must be to become clever and hardy ourselves so that we can win out over these viruses and prevent them from ruining our health. This book will give you the tools to do that.

Acquired Immune Deficiency Syndrome

The Human Immuno-Deficiency Virus (HIV) causes the disease known as AIDS. The acronym AIDS stands for Acquired Immune Deficiency Syndrome. AIDS is a later and more advanced stage of HIV infection.

Today HIV patients are living longer because of effective medications, but unfortunately many are aging more rapidly than they should. This causes memory and learning problems, as well as premature heart disease, osteoporosis and frailty.

In some HIV patients, MRI scans have demonstrated that their brains age quicker. For example, a 50 year old patient’s brain might look and function like that of a person 60 years of age or older. A study done on mice infected with HIV was carried out at the University of Nebraska Medical Center, Omaha and was reported in the Journal of Neuroscience. It proved that HIV infection of the nervous system leads to inflammatory changes and damage to brain cells. This is the first study to show loss of brain cells during the early stages of HIV infection in a mouse model.

In the late 1980s and early 1990s, HIV patients usually died within seven to 15 years of diagnosis, but with combinations of new drugs that were introduced in the mid 1990s, patients now live 30 years or more, and generally do well. The federal Centers for Disease Control and Prevention estimates that 1.1 million Americans have HIV or AIDS. Because HIV patients are living longer, it is vital to use effective strategies to prevent their brain disorders.

What could be causing the brains of HIV patients to age more rapidly?

It could be –

- The virus itself
- The interaction of several medications HIV patients must take
- The chronic inflammation in the brain caused by the virus

Chronic inflammation caused by the AIDS virus, or indeed any virus, is not a healthy situation to be in. Strategies to reduce this inflammation are vital and can reduce the damage caused to the various organs of the body, including the brain. Although people with HIV are fortunate to have more effective drugs to reduce the amount of virus in their bodies, they cannot rely on this to control inflammation. The same nutritional strategies used in this book to help those with hepatitis C and B, are able to be used in HIV patients, with the aim of preventing excessive inflammation. The earlier we diagnose these chronic viral infections the better it is and the sooner we can introduce these natural life saving strategies.

What is a virus?

Viruses are tiny organisms that have a central core of genes surrounded by a coat made from protein and/or fat. Viruses range in size from around 15 nanometers to 250 nanometers and there are a billion nanometers in a meter – thus you can see that viruses are very tiny and are much smaller than our own body's cells. The genetic material of the hepatitis viruses can be either ribonucleic acid (RNA) or deoxyribonucleic acid (DNA).

Viruses cannot support themselves and to survive they must infect a human cell where the virus lives off the cell's resources. Thus the virus becomes a parasite and damages the cell. Understandably the important functions that your cell was originally designed for (such as making energy, proteins or hormones etc) become second place to replicating the virus. No wonder chronic viral infections make us extremely tired, especially if the amount of virus in our body (the viral load) is high.

The virus hides itself in the genetic material situated in the nucleus of your body's cells and takes over control of these cells. The virus then directs your body's cells to make many more copies of it, so that the cells become factories for making more viruses. In essence, your cells are taken hostage and turned into virus factories.

Viruses love to replicate and huge numbers of viruses can be produced in our cells. Viruses also love to change their genes (this is called mutation), and by continually changing their identity, they escape detection and destruction by the body's immune system. Thus you can see that viruses are hard to destroy by any means. Because viruses live deep inside the center of our cells, any drugs used to kill the virus will also often damage our cells as well.

A virus that has genetic material made of RNA is known as an RNA virus or retrovirus. Examples of RNA viruses are the Hepatitis C Virus (HCV), the influenza virus, the SARS virus and the Human Immunodeficiency Virus (HIV).

These RNA viruses share many similarities; thus strengthening your immune system against the hepatitis viruses will also reduce your chances of getting severely ill from AIDS, influenza or SARS epidemics.

A virus that has genetic material made of DNA is known as a DNA virus – the Hepatitis B Virus (HBV) is a DNA virus.

What is Hepatitis?

Hepatitis is a general term used to describe inflammation of the liver. This means that there are too many inflammatory substances being produced in the liver, which damage the liver cells. Liver cells are known as hepatocytes - hence the term hepatitis. Your doctor will be able to diagnose hepatitis by doing a blood test to check the level of liver enzymes in your blood. If the liver enzymes are elevated this means you have some degree of liver inflammation (hepatitis) occurring.

What causes Hepatitis?

Liver inflammation can be caused by viral infections of the liver, excessive alcohol intake, toxic chemicals, incorrect diet, fatty liver, adverse reactions to some prescribed drugs or medications, autoimmune diseases and some diseases of the biliary system (the bile ducts). The most damaging viruses, which attack liver cells, are known as hepatitis A, B, C, D, E, F and G viruses. Other viruses, of both new and old varieties, can also attack the liver and cause inflammation of the liver cells.

Hepatitis B

Viruses very similar to the Hepatitis B Virus (HBV) have been found in all the Old World great apes and from a New World woolly monkey; this implies an ancient origin in primates for this virus.

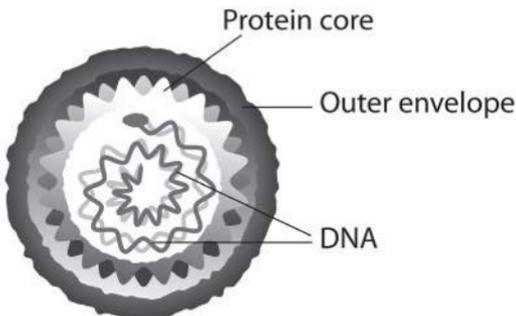


Image 1 - Physical Structure of the Hepatitis B Virus

What is Hepatitis?

The Hepatitis B Virus consists of an outer fatty envelope and a core made of protein. The protein core encloses the genetic material (double stranded DNA) of the virus

The HBV is one of the smallest enveloped animal viruses with a diameter of 42 nm.

How many people have hepatitis B?

Hepatitis B virus (HBV) is a highly transmissible virus which has infected humans for more than 1500 years. Despite the availability of a preventative vaccination, HBV continues to be one of the most serious and widespread diseases, causing over 1 million deaths annually. The HBV can cause many disease forms, ranging from a silent infection to acute self-limiting hepatitis or severe acute hepatitis, or chronic infection with variable disease activity. Chronic HBV infection (CHB) results in persistent liver inflammation and progressive fibrosis that may eventually lead to liver failure, cirrhosis, liver cancer and liver-related death.

Chronic hepatitis B virus (HBV) infection remains a public health problem, affecting more than 350 million people worldwide and is the most common viral infection of the liver.

I am amazed by these huge figures myself, especially knowing that this is an estimate! Even more impressive is the estimate that around one third of the world's living population (that's over 2 billion people!!) have been infected with the HBV at some stage in their lives – thankfully most have developed their own natural immunity and are no longer able to transmit the infection to others. But there still remains nearly half a billion people who are not immune and who carry this virus, which can cause serious liver disease. Currently nearly 25% of all carriers develop liver diseases such as chronic hepatitis, cirrhosis or liver cancer.

Despite the excellent vaccine we have against the HBV, the number of people infected with the HBV is predicted to increase because of-

- Increased migration of people from countries with high rates of HBV infection
- Increased travel to Asia as a tourist destination
- Infection of partners of people with HBV infection
- Increasing use of injecting drugs

- In Asia, especially China, and poorer countries, inadequate regulations and standards for blood donation and illegal blood donation

The incidence of HBV infection varies dramatically between countries – See Image 2 map



Image 2 - The incidence of HBV infection – Source: CDC

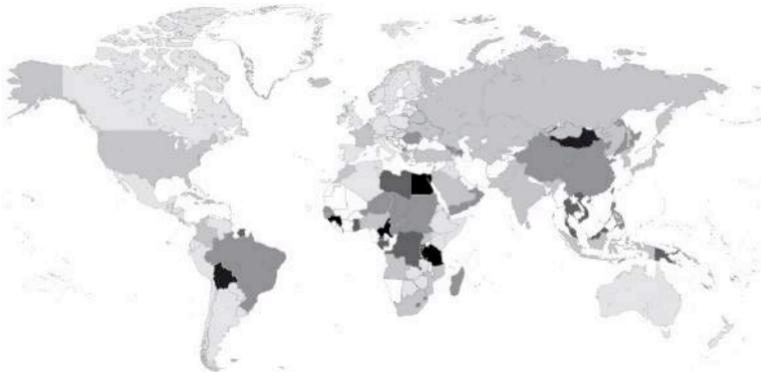
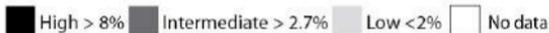


Image 3 - The incidence of HCV infection – Source: WHO



Hepatitis C - the hidden epidemic

Hepatitis C is a very common infection and worldwide it is estimated that over 200 million people are infected with the HCV — this gives an incidence of 3.3% of the world's population.

Infection with the Hepatitis C virus (HCV) is the fastest growing infectious disease in America, and this upward trend is set to continue. One out of every sixty Americans living in the USA is infected with the HCV, while in many parts of Asia infection rates are much higher than this. It is estimated that 5 million people in the USA have hepatitis C, however many of these people do not know that they carry this virus.

The HCV was first identified in 1989. The HCV contains genetic material known as RNA and there are 6 different genetic types - these are known as genotypes (genotypes 1 through 6). Genotypes 1a and 1b are associated with more severe liver disease and genotypes 2 to 6 are thought to have a better outlook.

The HCV is 10 times more infectious than the Human Immunodeficiency Virus (HIV), which is the virus that causes AIDS. In the 1980s and 1990s, AIDS was the major public health challenge for community based doctors, but since the year 2000, hepatitis C has acquired this dubious honor. There are approximately 4 times as many people infected with the HCV than there are with the virus that causes AIDS. The hepatitis C virus (HCV) is a very tiny RNA virus, which contains genetic material surrounded by a protein core. See Image 4. The HCV invades the human cells and takes over the cell's manufacturing structures to replicate itself. The human cell is thus converted into a factory for replicating hepatitis C viruses, which spread gradually throughout the body to the blood, lymphatic system, liver and the fluid around the brain and spinal cord.

Even if the virus is cleared from the blood it may be able to hide in other parts of the body. The Hepatitis C Virus is very clever and is able to make changes in its own genetic material. The HCV is continually changing its identity and this makes it extremely difficult, and often impossible, for the body's immune system to create a sustained attack against it. Because of this feature it can survive long term because it cannot be detected by the body's

immune radar; in this way it can be considered to be a stealth virus. For the same reason as of 2005 it has not been possible to develop an effective vaccine against the HCV.

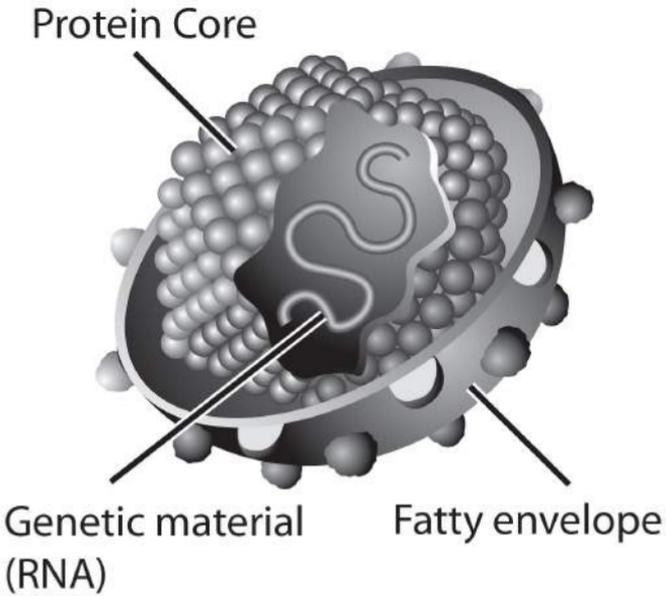


Image 4 - Physical Structure of the Hepatitis C Virus

Nutritional Medicine can heal your liver

Thank God that the liver is able to repair and regenerate itself because this is what enables many hepatitis sufferers to completely turn their life around. Because of this amazing design feature of the liver, there is always hope.

It is important to understand that anti-viral drugs are designed to eradicate the hepatitis viruses. This chemotherapy does not directly help the liver; in other words it will not directly improve liver function or promote liver repair. Thus even if you have used or will use this type of chemotherapy in the future, it is foolish to disregard the power of nutritional medicine.

Nutritional medicine can effectively improve liver function and stimulate the regeneration of new healthy liver cells, as well as repairing damaged liver cells. We have many testimonials from hepatitis C patients who have achieved this using our simple and practical strategies. This is evidence based medicine, as there is a huge amount of research that shows that the use of specific herbs, vitamins, minerals and foods can improve liver function and the immune system.

My nutritional program is most beneficial for ALL types of hepatitis including hepatitis C, hepatitis B, autoimmune hepatitis and liver inflammation caused by fatty liver. It is also beneficial for HIV patients.

You should always seek guidance from a doctor before trying anything and your response to treatment should be monitored by a healthcare professional. If you have any questions you can always contact our Health Advisory Service via e-mail at ehelp@liverdoctor.com or telephone my office in Arizona on 1 623 334 3232 or in Australia 02 4655 8855.

Why do we need nutritional medicine to fight Hepatitis?

The HCV can hide in various parts of the body, such as the liver, even when you cannot detect the virus in the bloodstream; thus a blood test will show the viral load is zero, which may give you a sense of false cure. If the HCV reappears in the bloodstream after

“anti-viral drug cure” then nutritional medicine is essential for a good outcome. According to two Spanish studies the HCV can remain in the liver even when a patient has an undetectable viral level in their bloodstream. In one of these studies reported in The Journal of Infectious Diseases July 2006, liver biopsies and blood specimens were taken from 12 patients who had HCV antibodies but had been negative for the HCV RNA (undetectable viral load) for 12 months. Despite their negative blood tests the HCV was found to be present in the liver in 10 of these patients.

The other study reported in the journal Clinical Infectious Diseases in November 2006, looked at 20 patients who tested negative for the HCV in their blood after interferon/ribavirin treatment. In 19 of these 20 patients, the HCV was still present in the liver tissue, as determined from a liver biopsy in these 20 patients. Thus you can see that even in the vast majority of “successfully drug treated patients” the HCV survives in the liver cells and waits for another time to attack you, especially when you let your immune system become weak and run down.

1. The HCV and the HBV can eventually become resistant to the anti-viral drugs which then become useless.
2. Research into vaccines against the HCV is still in its early stages and more funding is needed. According to the experts an effective preventative vaccine against the HCV is not likely to become available until around the year 2018.
3. Fatigue is a common symptom of infection with the HCV and the HBV. The liver provides the body with energy and if it is damaged, the liver cannot store glucose or make proteins effectively – thus the muscles become weak. Treatment with anti-viral drugs causes worsening of the fatigue, depression and insomnia. This is where nutritional medicine can really make a huge difference.
4. Thyroid problems often coexist with HCV infection and nutritional medicine can support thyroid function. The most important nutrients to support healthy thyroid tissue and thyroid function are selenium, zinc, iodine and vitamin D. Appropriate doses of these nutrients are found in Thyroid Health Capsules. Anti-viral drugs can induce thyroid disease, which then needs long term treatment in itself.
5. Infection with the HBV is a chronic disease that must be managed with nutritional medicine for life; otherwise it can lead to cirrhosis, liver failure and liver cancer.

6. Excess weight often results in fatty liver, which greatly reduces liver function and immune health. Fatty liver can coexist with HCV and HBV infection and will worsen the liver damage caused by these viruses. Indeed if you have a very fatty liver, the unhealthy fat inside the liver can cause more destructive inflammation than these viruses. Thankfully it is easy to reverse a fatty liver with nutritional medicine – see my book *Fatty Liver – You Can Reverse It*.
7. Diabetes speeds up progression of liver inflammation which increases the risk of cirrhosis. Overweight diabetics or poorly controlled diabetics often have a fatty liver and if they have infection with HCV or HBV as well, they can work wonders by reducing their blood sugar levels and losing weight. This is best done by following a grain free, gluten free and sugar free diet. For in-depth information see my book *Diabetes Type 2 – You Can Reverse It Naturally*.
8. Excess iron deposits in the liver can damage the liver and impair liver function. It is found in those with the genetic disorder of iron overload (hemochromatosis) or those with very high levels of inflammation. High levels of iron in the liver can coexist with HCV and HBV infection and will worsen the liver damage. In such cases it is vital to have blood removed regularly (venesection) and this will remove the excess iron from the body; this must be organized by a medical doctor.

To overcome all of these problems, anti-viral drugs can only play a limited role. To treat the underlying causes we need to turn to the power of nutritional medicine. Over the past two decades there have been enormous advances in information in the medical literature linking incorrect nutrition and deficiencies to disease states. Research gives great insight into the nutritional factors in illness. Dietary changes and the appropriate use of nutrients, juices and herbs will reduce the risk of chronic liver disease.

In many cases, it is impossible to eradicate the Hepatitis B virus from the body and patients find it difficult to tolerate drug side effects. It is therefore not surprising that sufferers are turning towards naturopathic therapies to fight these viruses. Natural therapies will not usually be able to eradicate these viruses from the body; however they will help to reduce viral loads. This approach is very successful and can keep these viruses in a dormant or less harmful state so that they do not damage liver cells.

Although nutritional medicine cannot promise to 'cure' HCV, HBV or HIV infection, by using the program in this book, many people have experienced a great improvement in their liver function and have reduced the risk of cancer, cirrhosis and liver failure. This program is best used as a way of life.

Weight Loss and Hepatitis C

Weight loss in overweight people with HCV infection will improve liver function. This was found by researchers in Queensland Australia who followed a group of people with chronic Hepatitis C and fatty liver. These patients were put on a 3 month weight reduction program and it was found that the weight loss led to a reduction in fatty liver, improved liver enzymes and reduction in fibrosis, despite persistence of the virus. ¹

Non-alcoholic fatty liver is a common but under recognized threat to health and longevity. It is not uncommon for overweight patients with hepatitis C virus infection to have a fatty liver. Supporting the function of the liver through using key herbs, amino acids and natural detoxifying agents can help the liver to perform its essential role.

For more information see my book *Fatty Liver – You Can Reverse It*.

Hepatitis C testimonials and interesting case histories

Tammie's Story

I hope you find this story inspiring. This has been written by a concerned Chicago mother who is in a fight for her daughter's life and liver!

My daughter, Tammie, at the age of 17, was diagnosed with endometriosis. Over the next 20 years, she was put on many medications and had numerous surgeries. Even after Tammie gave birth to 2 children, the endometriosis continued to wreak havoc with her health. In December 1999, she had her last laparoscopy and the decision was made to do a hysterectomy. About 10 days after this laparoscopy, Tammie developed a high fever and abdominal pain and was admitted to hospital with

infection (peritonitis). She received a total of 17 drugs within a 14 day period. About 3 months later, she developed allergies, which she had never had before. She would have allergic reactions to many things including bee stings, aspirin, yellow 5 dye and cottonseed oil, just to name a few.

About a year later when things started to settle down, Tammie underwent the planned hysterectomy and a year later she had her gallbladder removed. Periodically, she would have unbelievable allergic reactions until it was suggested that she see an allergist. Every time she received an injection to test for an allergy, she would have a violent reaction and it would be 3 to 4 weeks before she could go back to the allergist; obviously this would never work for her, as her underlying liver dysfunction was really the root cause.

Through a friend, I heard of a board certified immunologist who had a non-invasive way to treat allergies. This treatment was called NAET and was rather mysterious but was working and Tammie had no reactions whatsoever. The immunologist believed that due to the huge amount of drugs Tammie received following her last surgery, her immune system and liver function were compromised; this overload was causing all the allergic reactions. Finally, things were really settling down!

In March 2009, she had become so exhausted and pale looking and went to her family doctor. He ran a battery of routine tests and when the results came back, he said he needed to do one more test, but he was sure it would be negative. This extra test was needed after finding elevated liver enzymes in Tammie's blood. This new test was for the Hepatitis C Virus (HCV) and unfortunately, it was **POSITIVE**. He wanted her to be seen by a hepatologist (liver specialist).

Initially we took the route of the hepatologist at a university hospital in May 2009, who ran tests which determined that Tammie's **viral load (the amount of active virus in her blood) was 14.5 million**, which is considered extremely high. Her liver enzymes were abnormally high, showing liver inflammation. The type of HCV she had was Genotype 3.

The specialist suggested that Tammie have a liver biopsy. I was very afraid of post-operative complications and her inability

to tolerate antibiotics for 5 days, as well as her body's weak condition. He also presented a daily chemotherapy (anti-viral drug) treatment plan with capsules and 2 to 3 shots of Interferon weekly for a period of 12-24 months. When we questioned the possibility of allergic reactions to these strong drugs, he suggested that she could be admitted to the medical center for 3 months so they could monitor her for possible anaphylactic shock induced by the drugs. We asked about liver scans (such as ultrasound and MRI scans), which are risk free but we were told they were not necessary. We asked if there was any other treatment they could offer that was not so risky and unpleasant, but got no answers.

By this time, I had been checking on testimonials of people who had gone through this type of treatment and the side effects and reactions they had to tolerate. I knew Tammie with her severe allergies and weakened state was in no condition to be able to withstand these adverse reactions.

We wondered - How did Tammie contract the hepatitis C virus? Tammie had no obvious risk factors such as blood transfusions, body piercing, tattooing, or IV drug use. Thus the doctors attributed the HCV infection to her last laparoscopic surgery in 1999 and the fact she developed post-operative peritonitis. They told us that in about 30% of cases it is never determined how the individual got the HCV.

The specialist suggested we wait for 2 years until the new treatment drug came out, which could be better. But with no energy, pallor and extreme fatigue, waiting for 2 years was not an option we could afford to entertain. We made a follow-up appointment for October 2009. This was scary business.

As I researched things, I found there were around 300,000 million cases of infection with the HCV worldwide, with only 3.5 million cases documented in the USA. In the vast majority of Western countries the ONLY treatment offered was this chemotherapy plan of anti-viral drugs. Could it be the USA was not on top of this disease? - I felt so. I also wondered how doctors would cope with treating the new cases of HCV that were surely going to be coming in the future, with all the tattooing and piercing and people using drugs in the world today.

When I asked what the treatment plan success rate was, the hepatologist told us it was 40%. What he did not tell us was that

there was a 25% relapse rate, which means the cure rate comes down to 15% approximately and at what cost to the patient!

So, I searched the internet and bookstores and I found “The Liver Doctor” in Australia, Sandra Cabot MD who previously worked in OB/GYN, but became side tracked by liver research.

Dr Cabot appeared to have a total (holistic) understanding of the liver and its huge importance to the immune system, general health and longevity.

Dr Cabot and I communicated by e-mail, which was rather strange to start with, but the results speak for themselves. Following Dr Cabot’s advice from June 2009, my daughter changed her diet to eating organically, using foods with no additives and choosing cage free, grass fed poultry and meat. We found just the grocery store, which would be safe for her, Whole Foods Grocery Store. In July 2009, we started her on Dr. Cabot’s recommended supplements with the help of Dr Cabot’s associate, Victoria Taylor ND.

Because of Tammie’s allergies, we had to move very slowly, as she would have a rash or maybe bumps and we would back down, and then slowly move forward. Victoria had a complete understanding of these allergic reactions Tammie was going through. Each time a bump or a patchy rash would come, I was fearful that this would not work for Tammie but Victoria was so reassuring and confident that we could get through this; but it would take longer for Tammie to be able to tolerate the supplements at the strength she needed to be on. It was that reassurance from Victoria Taylor that kept us on track and also the results that began to appear in Tammie’s energy level and appearance and the slow but steady ability to increase her doses of supplements. Over a period of a few months, she was able to build up her tolerance and take the recommended supplement doses. Her energy level continued improving, no more naps after working or when riding in the car, her color came back and she no longer looked sickly. Tammie started to take an interest in her life again! So to me, a mom, this was a major improvement, but we also needed the blood work to prove Dr Cabot was on the right track.

We went back to the university in October 2009. The hepatologist was still insisting on the liver biopsy. I fought against it initially because Tammie needed time for her body to get better before

such a procedure was done, plus the good results that we were beginning to see made me even more reluctant to have an invasive biopsy. We needed new blood tests to provide the proof we were headed in the right direction. We were hoping for a change in the viral load of anything, one million less would have been terrific, as I felt this was going to be a slow steady process. The hepatologist finally agreed but told us because Tammie was not on a treatment plan, they did not feel a viral load test was indicated. Of course, I understood that nutritional medicine is a treatment plan!

Finally the results of Tammie's tests came in - they showed her viral load had dropped to 1.5 million in just these 4½ months. The specialist did not think this was great news because Tammie was not on their prescribed treatment plan.

But we were ecstatic! Her viral load had dropped by 13 million!

Three weeks later, on November 1st, Tammie was diagnosed with Swine Flu. She did not have the Swine Flu vaccine. Her family doctor wanted her on the anti-viral drug Tamiflu but it was too toxic for her. Dr. Cabot reassured us that it would take her about 3 to 4 months for a full recovery from swine flu. We added additional supplements and it did take the full 3 months until February 2010 for her to recover from swine flu symptoms.

Neither of us wanted to return to the university, as we knew they did not like the approach we had chosen. But I believed that Dr. Cabot's plan was the best for Tammie; it would help her get her whole body in a better place, she would get stronger and we were seeing positive results in her blood tests.

During this time, her family doctor was aware of the progress that Tammie had been making and said he would take over monitoring her and run whatever tests Dr. Cabot wanted. So a new viral load was run in July 2010.

Once again we were ecstatic – Her viral load was down to only 344,000 - that equals a drop of 14.2 million in a year!

A liver scan was done and blood liver enzymes measured. As a matter of fact, her family doctor has asked for a copy of Dr. Cabot's book, The Liver Cleansing Diet. What he was unaware of was that pending Tammie's results, he was going to receive a copy anyway!

In August 2010, Tammie's new results were faxed to Dr. Cabot and she too was excited about the tremendous drop in her viral load. The scan, however, revealed a mild case of "fatty liver" which is totally reversible through dietary adjustments; this should speed up her recovery even more so. Thankfully the liver scan showed no masses, no tumors and no cirrhosis.

I am aware that the HCV can be a precursor to liver cancer, which could result in a liver transplant. How could someone like Tammie, who cannot even tolerate antibiotics, get a transplant that requires huge doses of anti-rejection drugs; this would be a last resort option for Tammie.

We are on the right track!

The excellent progress, thus far, is overwhelming to us. Tammie is totally functional, energetic, has great color and optimism for her future. Without the program from Dr Cabot, the Liver Doctor, this would not have been possible. We have been so blessed to have found the Liver Doctor and her wonderful knowledgeable staff. We are sharing our good fortune and new knowledge with people in similar circumstances who are battling liver diseases such as hepatitis C and B and fatty liver. We are educating ourselves about the vital part the liver plays in the well-being of our body. Most of us know very little, and although the liver is designed to be robust – we cannot take this powerful organ for granted.

The greatest gift is the fact that the liver can regenerate itself given the proper diet and supplements. It is easier to make an informed decision when you know the facts and the options available. We have not reached our destination yet, as the journey still continues to get to a healthier liver.

Update from Tammie June 2011

Dear Dr Cabot Great news again!

Tammie just had repeat blood tests and her viral load is only 180,000! She has been back on track full force, eating well, taking supplements, juicing and getting adequate rest. In January 2011, her viral load spiked to 5.9 million because she had stopped taking the supplements you prescribed and she had stopped juicing. Isn't this amazing! Proper eating, supplementing and juicing are the real key here. — God Bless You All!

It works!!!!!!

By Pat Ann from New Zealand

Much to my dismay, I was diagnosed with Hepatitis C on June 6th and the test results indicated my liver enzymes were extremely high. Hepatitis C is a deceiving virus, as I still felt great and had lots of energy while exercising daily.

My older sister had been diagnosed with hepatitis C several years back and she has an enlarged liver, and her viral count is in the millions. I was told there had been several medical advances since my sister's prognosis and remained hopeful.

Before making a decision about drug therapy I started to research my condition via the Internet. Many sites posted testimonials from patients using Interferon and described how sick it had made them. Some websites suggested the number of successful treatments was much less than that described by the drug companies.

I continued to research nutritional and herbal solutions. I found stories about supplements and diets that seemed to lower the liver enzymes; this felt like the way to go for me. I started on some milk thistle and cut out all alcohol consumption in late June.

Then a miracle happened! My husband happened to run across "The Liver Cleansing Diet" book by Dr. Sandra Cabot at the airport bookstore. He was excited and called me from the airport to tell me about the book. I had to wait 3 long days until he returned. I read the book from cover to cover and it felt so right for me. This was the answer to my prayers. I learned about the power of the liver and its healing capabilities. I began my liver cleanse on the 2nd of July.

The book was always by my side, I followed the book exactly, and I felt my life depended on staying the course. Luckily I am self-employed and I could devote the time to buy the right food and prepare the wonderful recipes from the book. I pulled out our old juicer (hidden in the pantry for many years) and started making fresh juices from beetroot, ginger, carrot and parsley etc, all faithfully mixed with Livatone Plus powder. I followed the 12 steps in the Liver cleansing Diet book, felt great, and as a bonus,

I lost 20 pounds in weight. I even managed to get into the Levis I wore during high school! On 27 August I completed another liver enzyme test and my enzyme levels had dropped as much as 60%.

Liver Function Tests	June (Before)	August (After)	Normal Range
Total Bilirubin	9	9	(4-24)
ALP	57	61	(30-120)
GGT	231	49	(5-36)
AST	176	88	(5-45)
ALT	255	118	(5-45)
Total Protein	87	86	(66-87)
Albumin	43	49	(35-50)

I was really surprised and very, very happy with the results. I shared it with all my family and friends. I then went out and celebrated my achievement with some wine and a fatty dinner.

I wanted to continue on for another two months and get my levels down to normal. However, I did not fully commit to maintaining the program for the next two months. I felt I had done so well, that I was on a roll and thought I could bend the rules. That was my big mistake. I ate things with aspartame when I had sweet cravings. I would drink too many glasses of wine with friends instead of soda water with lime. The little voice in my head said, "Your results were so great, it is OK".

These were my results as 4 November two months later.

Liver Function Tests	June (Before)	August (After)	2 Mths Later	Normal Range
Total Bilirubin	9	9	11	(4-24)
ALP	57	61	68	(30-120)
GGT	231	49	72	(5-36)
AST	176	88	143	(5-45)
ALT	255	118	180	(5-45)
Total Protein	87	86	86	(66-87)
Albumin	43	49	45	(35-50)

When I saw these results I was devastated and I wanted to cry. I called Dr Cabot's Health Advisory Service for support and I was assured I just needed to get back on track and follow the guidelines that I had followed for the first 2 months and take the Livatone Plus. I am happy to say I have recommitted, I am excited and I am back on track. I have a target to get my liver enzymes normalized over the next eight weeks.

To Dr. Sandra Cabot and staff,

Thanks so much for providing me with solid support, quality products, and the liver book. I feel like your input has saved my life and will allow me to see my future grandchildren.

Kind Regards,

Pat Ann

To the Health Advisory Service Phoenix

I was diagnosed with chronic HCV in 1989 when I gave blood to Red Cross; they had just started screening for HCV

Subsequently my health progressively declined so that over the last 15 years I have had no quality of life. I have had extreme fatigue, fevers, low thyroid, nausea and depression. I decided against Interferon and Ribavirin because of the side effects and low cure rate. Through God and my husband, I found your book *The Liver Cleansing Diet* and on page 19, there was a testimonial of someone with the HCV and how your program had improved his health. There I was in the bookstore crying in public! I read your book in one evening from cover to cover and was inspired to try it.

The next day (mid December), we purchased a Power Juicer and started raw juicing and your diet. The first 8 weeks we did our best to follow your book in spite of travelling, plus it was Christmas, and we were celebrating with family and friends. After the first 8 weeks we did another 8 weeks and followed your program exactly. My liver enzyme results improved a lot.

We have become ambassadors of Dr Sandra Cabot and her *Liver Cleansing Diet Book*. We are using Livatone Plus and have all our family improving their diet in this way and I have experienced great improvement in my overall health.

I would like to say thank you many times for bringing hope into my life so I can be healthy enough to enjoy my life again! I would also like to thank your naturopath Christine Ki who is competent, patient and caring.

Regards

Mrs NC from Florida.

Letter sent to liver doctor

To all the healthcare workers at Dr Cabot's Health Advisory Service in Phoenix – a big thank you!

I am very grateful for the opportunity of meeting you. When my husband died 4 years ago, I was tested for the HCV, and I tested positive – this made me very anxious. I found the doctors all told me different things so I searched for books to help me understand this disease. I called Dr Cabot's office in Phoenix. Dr Cabot and her team have been answering all my questions and have been very helpful. They sent me books on raw juicing and liver cleansing at no charge! I believe they truly care for people who struggle.

I had bought books that claimed that "Milk Thistle" was helpful for people with the HCV and I have bought supplements that contained low doses and were not that pure. I changed to Livatone Plus, which contained a high dose of pure Milk Thistle combined with many other nutrients good for the liver. I continued to improve and so did my liver function.

Recently I was told that the HCV had left my body. I do not understand all the medical terminology but my kids and I cried with relief. I feel the Livatone Plus and all the expertise from Dr Cabot's team with their encouragement and information has helped my body fight and conquer this thing that scared me every day of my life. Now I wake up knowing I will live to see my kids marry and have families of their own. I thank God and Dr Cabot.

Please invest a little for your health. I have looked on every website and in many health food stores and Dr Cabot's program is the best available.

A grateful patient from Palm Springs California

Liver Tumor Case History from Dr Cabot's Clinic

Suzana came to my medical practice seeking help for recurrent discomfort over the area of the liver – meaning the right upper abdomen.

She brought along an ultrasound scan of her liver, which showed a lesion in her liver situated near the porta hepatis, which is the part of the liver where the blood vessels and bile ducts enter the liver. Thankfully this had a benign appearance and according to the radiologist's report looked like a type of liver tumor called a hemangioma, although it did have an atypical appearance. The radiologist had also reported that her ultrasound scan showed fatty changes in her liver consistent with fatty liver disease of mild to moderate degree.

The patient had been reassured by her local doctor that she did not have a cancerous or malignant tumor of her liver and that it was safe to leave it alone. Nevertheless Suzana continued to experience intermittent discomfort over her liver, as well as some indigestion and nausea.

Suzana had been on the oral contraceptive pill for 20 years and had recently ceased taking it, as she could not lose weight. I explained to Suzana that the long term use of oral hormones, such as the oral contraceptive pill, can cause tumors in the liver. A hemangioma is a very vascular tumor made up of a group of enlarged blood vessels and does not become cancerous.

I started Suzana on a liver tonic and a selenium supplement and told her to drink a large glass of raw vegetable juice every day. She was to juice cabbage, red radish, orange, lemon, mint, parsley, basil, coriander, apple and carrot. I also put her on a low carbohydrate diet excluding grains and sugar and told her to eat plenty of raw salads and fruits, legumes, fish, organic eggs, nuts and seeds.

I gave Suzana a request form for a repeat ultrasound scan of her liver to be done in 6 months' time, and a follow up appointment during which I would review her liver function and symptoms.

Well, when Suzana returned 6 months later she told me a fascinating story and one that I had never heard before.

She said that one day she experienced quite bad pain over her liver area and had to go to the toilet to have a bowel action. When she looked in the toilet bowl before flushing away her bowel action she was shocked by what she saw. She described a yellow brown gooey lump of material in the bottom of the toilet bowl that required several flushes of the toilet before it disappeared down the toilet drain. She said the mass in the bottom of the toilet bowl reminded her of molasses and she had never seen this before and said that it was distinct from her feces. After she had passed this gooey gelatinous mass from her bowels she felt much better and over the ensuing weeks she had no further pain over her liver area.

I reviewed her repeat ultrasound scan and lo and behold there was no sign of her liver hemangioma. Her liver scan looked perfectly normal.

My reaction was – wow! As it really was quite amazing to see her completely normal liver scan.

As I always say, of all the organs in the body, the liver is most able to repair and regenerate itself.

Hidden causes of fatigue in a woman with HCV

An attractive 38 year old single mother consulted me about her chronic hepatitis C infection believing that it was the only cause of her chronic fatigue. She felt like going to bed by 2 pm everyday due to her unrelenting exhaustion. She was not depressed and held an interesting job but could not keep up with the demands of her work and her young son. Twenty years ago she had attempted to cure her hepatitis C with Interferon injections, which unfortunately failed and the hepatitis C virus remained in her body. Her exhaustion was such that she was ready to give treatment another go.

I told her that we could look for other causes of her fatigue and treat these whilst waiting until the new anti-viral drugs became available. Several clues emerged as to why she was so tired. She suffered with psoriasis of the skin and scalp and her finger nails had widespread white spots indicating zinc deficiency. Her serum iron levels and body stores of iron (ferritin levels) were very low, even though she had a good diet, took multi vitamins and minerals, did not smoke and did not have heavy menstrual bleeding.

To me this all added up to undiagnosed gluten intolerance! Gluten can aggravate the immune system causing inflammation, which results in various autoimmune diseases including psoriasis. Psoriasis is an autoimmune disease, which attacks the skin and causes a purplish scaly itchy rash. Gluten intolerance does not always cause celiac disease but may still inflame the intestines in other ways so that digestion and absorption of essential nutrients is impaired.

This was happening in this woman and caused her deficiencies of zinc and iron as evidenced by her nails and her blood tests. Deficiencies of iron and zinc can cause fatigue and a weakening of the immune system so that it is less able to fight the hepatitis C virus.

I was pleased to be able to tell this patient that if she followed a strict gluten free diet, her fatigue would gradually diminish. The avoidance of gluten would enable her intestines to be repaired so the absorption of iron and zinc from her intestines would normalize; thus her body stores of iron and zinc would increase to normal. The avoidance of gluten in her diet would also clear up her psoriasis. I prescribed a supplement of zinc, selenium and iron and fish oil. She was quite happy with this diagnosis and was prepared to give it a go. After 6 months she was free of psoriasis and her mineral deficiencies were gone. Her fatigue was much less and her quality of life was much better.

Gluten is a protein found in wheat, rye, barley and oats and many processed foods are made with these grains as ingredients.

Red palms (liver palms) and the liver – what do they tell us?

One of my middle aged female patients has had very red palms for many years. She also complained of weight loss, muscle weakness, a racing heartbeat, fatigue and insomnia. She was very stressed and smoked cigarettes at night to cope with the stress. She did not understand why she was losing weight as she was eating more than normal. She had seen several doctors and they had checked her levels of estrogen and told her that all her symptoms were due to menopause. She had come to believe that menopause was an awful experience and began questioning her friends to see if they were experiencing similar problems.

I decided that we needed to look deeper and I ordered thyroid function tests and an ultrasound scan of her liver. I was not surprised to find that she had liver disease, although her liver enzymes were only slightly elevated. What the ultrasound scan did show was a liver enlarged with multiple cysts and I could feel her hard enlarged liver when I examined her abdomen.

Her blood tests for thyroid function showed a very overactive thyroid gland, which explained her weight loss, racing heartbeat, and insomnia and muscle weakness. Her blood tests revealed very high levels of the thyroid antibody known as TSH receptor antibodies and these were causing her overactive thyroid gland – this autoimmune condition is known as Grave’s disease.

I commenced her on a course of medication (called Neomercazole) to reduce the production of thyroid hormone by her thyroid gland. If I did not do this, she could go into heart failure with her heart racing so fast. I also told her to avoid gluten containing foods and to start using stress management techniques such as exercise and meditation and to avoid smoking cigarettes. I prescribed a liver tonic, NAC (N-Acetyl-Cysteine) and a selenium supplement to support healthy liver function and detoxification. She was so frightened and unwell, that she agreed to follow all my instructions to the letter.

When she returned 4 weeks later, the redness of her palms had decreased by 50% and she was very pleased by this, as she had always been embarrassed by her very red palms. Her thyroid function had improved and was now only slightly overactive. She will always have to take special care of her liver, as she has a mild case of polycystic liver disease, but with nutritional medicine she should do very well. She provides an interesting case history, which illustrates how two separate and unrelated diseases, were masquerading as menopause. I have never believed that menopause is a disease and if you keep your liver and thyroid gland healthy you should have no problems traversing the change of life!

Improving your liver improves your appearance!

The liver is an amazing organ with literally thousands of functions. But the two most important are –

- The liver regulates fat metabolism and thus is important in weight control
- The liver filters and cleanses the bloodstream removing toxic chemicals, unhealthy cells, cancer cells and micro-organisms that would otherwise attack your body

Thus the liver function has a tremendous impact on your weight and your immune system. These beneficial effects can slow down the rate of aging of our cells keeping us younger for longer, and who does not want that! Thus it's very worthwhile to look after your liver. If we are overweight our body will produce more inflammation thus speeding up aging. If our bloodstream contains excess toxins and unhealthy cells our body will produce more free radicals, which damage our healthy cells and speed up aging. Free radicals can attack the skin cells and collagen producing wrinkles and blemishes.

I have found that many of my patients notice a big improvement in their skin appearance simply by improving liver function. They have been able to reduce acne, cure rashes and dermatitis and fade brown aging spots by taking a good liver formula and improving their diet.

In the liver cells there are specialized metabolic pathways that turn dangerous toxins and drugs into forms that can be easily excreted from the body via the bile, sweat and urine. If the liver does not break these toxic substances down, they cannot be removed from your body; thus they build up and increase the rate of aging, as well as your risk of cancer.

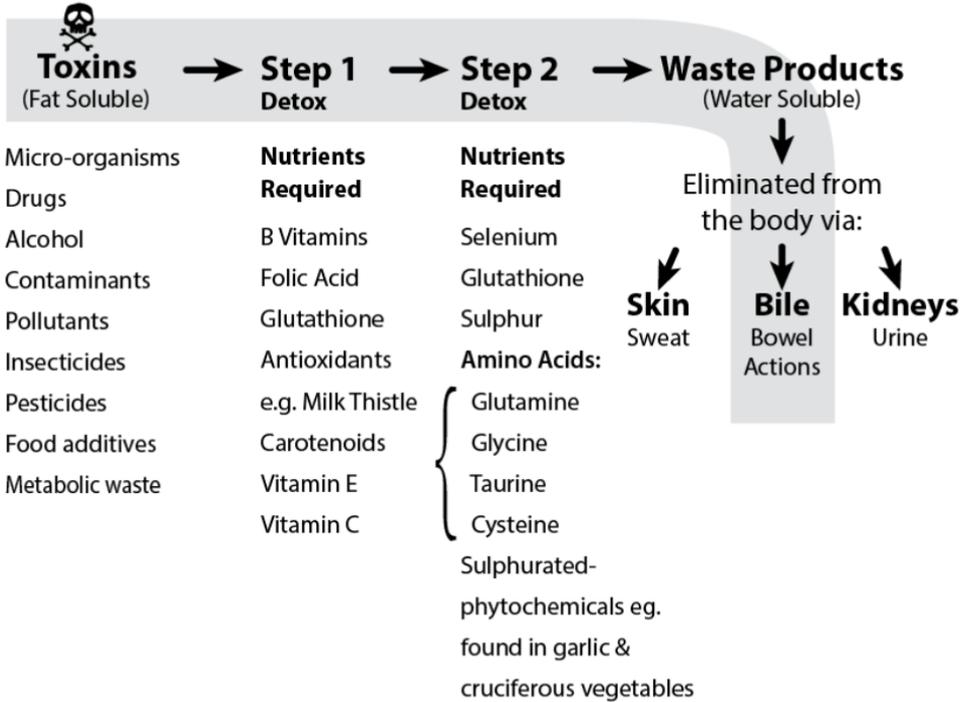


Image 5 - Detoxification Pathways in the Liver

Take a look at the detoxification pathways in the liver in Image 5 and see what nutrients the liver needs to breakdown toxins – it's quite a few and many people are low in these nutrients.

The ingredients in the Livatone Plus have been selected because they are the most essential substances to support and improve these detoxification pathways in your liver.

A Survival Guide for Everyday Life

When one is faced with the prospect of living with a nasty virus for the rest of their life, it can be devastating on a psychological level. One of the main reasons for this is that it is difficult to deal with uncertainty, especially when you feel powerless to change anything yourself. Well it does not have to be like this because you have the ability to protect your body from these viruses to a very significant degree, even if these viruses remain in your body.

I like to condense things down to vital strategies and for any chronic illness these are –

- Make it show positive results within 6 to 12 months
- Make it achievable for busy and/or stressed people
- Keep it simple and basic, as most people are not capable of making or willing to make, huge changes to a diet and/or lifestyle that they enjoy
- Keep it affordable especially for those on a budget
- Keep it honest with realistic expectations – for example we may not be able to eradicate the virus, but we can keep the virus in a less harmful and inactive state

Survival strategies for Hepatitis C and Hepatitis B sufferers

A 38 year old man with hepatitis C phoned the American office of our Health Advisory Service in Phoenix Arizona during October 2003 and complained to one of our naturopaths that he found our approach to hepatitis C too difficult. He was genuinely upset, as he wanted to improve his health quickly, because he had a very high viral load count and the virulent genotype 1 of the HCV.

He had the typical dilemma of whether he should take anti-viral drugs or not, in view of the awful side effects he was sure to endure. So he wanted to try nutritional medicine first to see if he could avoid the anti-viral drugs.

However he found the dietary strategies in the Liver Cleansing Diet Book, too strict, rigid and foreign for his lifestyle and tastes. He also thought that he would have to take 10 different

tablets/supplements to improve his chances of success, and he was unable to afford the cost of this. No wonder he felt angry, confused and powerless!

So here is my reply to this relatively young man -

- You do NOT have to make sweeping or huge changes to your diet and/or your lifestyle - only a few vital changes/additions are required.

It can be very challenging to change your diet and lifestyle, especially if you are asked to give up everything you enjoy all at once! The most important thing is your mental attitude and it needs to be a positive attitude that you can survive and feel well.

Do it little by little and take one day at a time and enjoy the improvement in your health that will follow!

Now let me tell you what you do NOT HAVE TO DO!

You do NOT have to:

- Eat only organic or expensive food. Many people with hepatitis have financial problems and cannot afford to purchase expensive organic foods and indeed this is not necessary. As long as you purchase fresh fruits and vegetables that are in season and consume these regularly you will achieve the desired result in improving your liver function and your immune system.
- Become vegetarian. You can enjoy seafood, red meats and poultry. It is advisable to eat only fresh lean good quality meats and poultry. Try not to consume excess amounts of preserved meats such as pizza meats, jerky, salami, provolone, sausages, hot dogs or hamburger meats, as these are often high in unfriendly bacteria and toxic preservatives.
- Avoid all fast foods. It is important to enjoy life and the stress of trying to be perfect will weaken the immune system and make you more likely to blow your new found good habits completely.
- Avoid coffee or chocolate, as these things in moderation are not a problem for those with liver disease. Some studies have shown that coffee improves outcomes and reduces the risk of cirrhosis in those with chronic HCV.
- Purchase an expensive juicer - if you are on a budget, a basic juice extracting machine will do the job very well.

- Take lots of different expensive tablets or supplements, and indeed taking too many will only overload your liver and produce expensive urine. The Livatone Plus™ formula has been designed to contain everything you need to support your liver function - and this is an ALL in ONE formula.

The vital strategies which you NEED TO DO ARE -

- **Include salads in your diet** - made with fresh raw vegetables such as tomatoes, shallots, sliced red onion, scallions, cucumbers, broccoli, lettuce, endives, radicchio, fresh green herbs (such as parsley, mint, cilantro, basil, thyme, oregano, dill, chives etc), celery, red radish, kale, avocado, shredded cabbage, grated carrots, grated beets, grated horseradish and ginger etc. You can use a dressing of cold pressed olive or flaxseed oil, organic apple cider vinegar and/or lemon and lime juice. You may also use a dressing of your choice. Try to have a large salad 4 days a week, or ideally every day. Try to eat foods rich in the natural mineral sulfur - such as onions, chives, garlic, leeks, shallots, scallions, and cruciferous vegetables (broccoli, Brussels sprouts, cauliflower and cabbage) and free range eggs.
- **Increase your intake of essential fatty acids** found in foods such as freshly ground flaxseed, chia seeds, hemp seeds, avocados, raw nuts and seeds, legumes, cold pressed vegetable and seed oils and oily fish such as salmon, sardines, mackerel, trout and tuna. Essential fatty acids will repair the membranes surrounding the liver cells and reduce inflammation. Omega 3 fatty acids also decrease your chances of cancer.
- **Drink raw vegetable and citrus juices** regularly. Include some fresh raw herbs in the juice such as mint, parsley, coriander, basil, thyme and oregano, as these herbs have powerful antiviral effects and liver healing effects. You will need a juicer with a slow grinding action to effectively juice herbs or wheatgrass. Ideally you should drink raw juice daily; however even if you make raw juices only two or three days a week, you will see tremendous benefits. Raw juicing is vital – you will need a juice extracting machine, which is a worthwhile investment. One time saving trick is to make a large quantity (approx. one gallon, 3.8 liters) of raw juice at one time and freeze it in glass jars or thick plastic containers immediately after making it. This enables you to have a supply of fresh juice every day with less stress for one to two weeks. The juice will retain its active healing properties if

you freeze it immediately after making it and drink it soon after it has thawed out. You need 6.5 ounces (200mls) to 10 ounces (300mls) of juice daily.

A basic juice to improve liver function can be made with equal parts of - orange, carrot, beet, tomato, lemon or lime, cabbage or kale - one week choose a purple/ red cabbage and the next week choose a green cabbage. Don't forget to include some fresh green herbs in the juice. Small amounts of garlic and/or ginger can be used in the juice if you so desire for extra anti-viral effects. Leave out any ingredients that you dislike or are allergic to.

It is good to use different combinations of vegetable and fruit juices and for delicious and powerful healing recipes I recommend that you get my book titled *Raw Juices Can Save Your Life*. Believe me it's true, raw juicing has turned around the lives of many of my patients.

- **Reduce your stress levels.** It is no secret in the medical profession that stress compromises your immune system, primarily by causing your body to produce more of the hormone cortisol, which in turn hampers the ability of white blood cells to fight infections. You can manage stress with exercise, meditation, yoga, rearranging your schedule to get more rest, or a combination of these and other activities. All that's really important is to find a system or a program that works for you, and then stick with it.
- **Ensure adequate sleep.** Getting the proper amount of rest on a regular basis is often easier said than done, especially for those of us with families and a hectic work schedule. Still, it is very important to make the effort. If you find that your personal situation oftentimes makes it impossible to get a good seven to eight hours of sleep each night, try making the time for a brief nap – even 15 minutes can work wonders – during the day. It's a fact that a rested body is a healthier and more energetic body.
- **Try to get some exercise.** It is extremely important to get your body moving – and get it moving now – if you want to have a healthy immune system. In the first place, exercise will help you shed any excess fat you might have. Excess body fat stores toxins that are damaging to your immune system. Exercise will also reduce stress, which we've already identified as a drain on the immune system. The beauty of exercise is that it covers any number of activities, from gardening to walking. If you can do

a form of exercise that gets you outside into the fresh air and sunshine, your body will benefit greatly: your brain will de-stress, your skin will make immune strengthening Vitamin D, and the extra oxygen is good for your lungs. You need to expose your bare skin to the ultraviolet rays of the sun in order for your skin to manufacture Vitamin D. Try to do some exercise on sunny days whilst wearing bathers, shorts or a skimpy top – your bare skin is a solar panel for making Vitamin D. If your blood levels of Vitamin D are low, you will be more susceptible to inflammation caused by viruses. Deep breathing and coughing exercises are also good to reduce abdominal congestion and to remove the buildup of excess mucus in your lungs.

- **Increase Your Water Intake.** Your body's cells require a lot of water to work properly, with the standard recommendation being that you drink 1.9 liters (64 ounces) each day. One of the easiest ways to do this is to drink a good size glass of water before each meal. Then, you will not only be able to get your daily requirement of water, but you'll also probably eat less as a result. Soft drinks (soda pop) are not good substitutes for water, as they can rob your body of nutrients that help your immune system fight infections and lead to a fatty liver.
- **Take a powerful liver formula** - the essential ingredients are milk thistle (silymarin), selenium, zinc, B group vitamins, including activated folic acid and methylcobalamin, NAC, vitamins C and E, and sulfur rich amino acids. Livatone Plus contains ALL these ingredients.

Note: Try not to smoke cigarettes or cut it way down to a very low level as soon as possible. If you are a heavy smoker, you are in a precarious position trying to fight a chronic viral infection. I strongly urge you to quit as soon as possible – get professional help, if needed. Hypnosis can work very well. The Zyban and Champix have helped many quit smoking. Light smokers (those who smoke five cigarettes or less a day) are far less vulnerable than heavy smokers, but anytime you inhale cigarette smoke you are doing damage to your lungs and immune system.

How to Fight Viruses with Nutrition

It is important to understand that your nutritional status greatly influences how your immune system will cope with any severe infection, the hepatitis and HIV viruses included. If you are deficient in important nutrients, the severity of an infection will be greater and carry a higher risk of serious and potentially life threatening complications.

My program will:

- Optimize the function of your immune system
- Increase your body's supply of natural interferon (a natural anti-viral protein produced by your own immune cells)
- Reduce the ability of the virus to replicate itself thus keeping your viral load down
- Make it much harder for the virus to damage your liver cells
- Reduce the risk of liver cancer
- Reduce the risk of cirrhosis
- Reduce the risk of liver failure
- Possibly save your life

What are the most important nutrients to help your immune system fight chronic viral infections?

The good news is that of all the organs in the body, the liver is most able to repair and regenerate itself. At the very least a significant improvement in liver function and wellbeing will always be achieved, provided you do not wait until end stage liver disease has set in.

Selenium – the most powerful anti-viral mineral

Selenium is the most important mineral for the immune system and the liver to function at their optimal level; indeed without adequate selenium in your body, your immune system and liver will remain vulnerable to attack. It's amazing to think that despite the profound importance of selenium to human health many people remain deficient in this life saving mineral. Selenium

deficiency is a widespread and serious problem in people of all age groups from the very young to the very old. Unfortunately there is a misconception that selenium deficiency rarely occurs in developed countries. However studies have shown that selenium deficient soils exist in large areas of the USA, New Zealand and Australia and dietary intake of selenium is steadily decreasing in many European countries. There is also a serious deficiency of selenium in the soils of sub-Saharan Africa, Russia and China.

What are the consequences of selenium deficiency?

- Higher morbidity rates in people with chronic viral hepatitis
- Higher morbidity and mortality rates in people with AIDS
- Higher viral loads
- Increased incidence of different types of cancer, especially lymphoma, breast, prostate, colon, lung, skin and liver.^{9,13}
- Frequent colds and flu
- Increased susceptibility to infections of all types^{20,21,22,23,25,26}
- Persistent infection of the cervix with the human papilloma virus (HPV)
- Incurable warts on the skin or genitals
- Severe and/or recurrent infections with the herpes virus – cold sores, genital herpes and shingles
- Increased severity of many types of liver disease
- Increased risk of thyroid disease, including thyroid cancer
- Increased allergies and chemical sensitivities
- Increased incidence of inflammatory problems
- Increased incidence of autoimmune diseases^{27,28}

The above consequences seem very serious; indeed most people get a shock that something as simple as the mineral selenium can be associated with such a diverse and significant range of common health problems. Let me assure you that medical doctors don't learn this at medical school ! But the healing power of selenium is not really that surprising if you understand how selenium works in the body and how it can even protect the deepest part of your body's cells – the nucleus which contains your genes (DNA).

Selenium is able to help in several ways

Selenium is essential for your immune system to fight all disease causing viruses effectively (including the hepatitis viruses and the HIV which causes AIDS).^{24,32,33,34}

Selenium acts on the genetic material of the virus (its RNA or DNA) and this has three highly valuable effects:

- Inhibits the ability of the virus to multiply (replicate)
- Reduces the ability of the virus to mutate into a more aggressive (virulent) form
- Increases the chances that the virus will stay inactive and not harm your body

I call selenium the viral birth control pill to describe just how important it is in helping us fight viral infections. A normally harmless (or low-pathogenic virus) can become much more destructive (virulent) in a person who is selenium deficient.^{25,26} Selenium-deficient mice infected with a mild strain of influenza virus developed much more severe and protracted inflammation of their lungs, compared to selenium-plentiful mice infected with the same virus.

A lack of selenium causes a decrease in the production of selenium dependent proteins that keep viruses under control. This is serious and can result in worse outcomes for people infected with many types of nasty viruses including polio, AIDS, influenza, the human papilloma virus (which causes cervical cancer) and hepatitis.

The most feared viral infection in the world is AIDS, which is caused by the Human Immune Deficiency Virus (HIV). Persons with AIDS have a higher requirement for selenium and unless they supplement with it, there will be a steady decline in their blood levels of selenium. This is probably because the immune system uses up the selenium more rapidly to help it fight the AIDS virus. Studies have shown that patients with AIDS who experience more rapid drops in their blood selenium levels do not do as well as those who don't – the rapid loss of selenium results in a greater chance of developing full blown AIDS and dying from it.

A study published in the January 2007 edition of Archives of Internal Medicine, found that daily supplementation of selenium in combination with anti-viral drugs assists in reducing viral load

and boosts the number of beneficial immune cells. The doses used were 200mcg of selenium daily and there were no side effects reported.²⁹

Selenium reduces inflammation

The basic cause of many different types of liver disease and other degenerative diseases is chronic uncontrolled inflammation. This inflammation is caused by free radicals attacking our cells. Excess free radicals cause serious damage to cells – they damage cell membranes and the DNA. This cell damage speeds up the aging process and increases the risk of cancer.

Exposure to environmental toxins, pollution, smoking, excess alcohol, stress, radiation, food intolerances, lack of sleep and viruses increases the amount of free radicals in your body. Selenium helps to minimize free radical induced damage. The anti-inflammatory effects of selenium are increased by taking it with vitamin E.

There are billions of people walking around who are unaware that chronic inflammation is attacking the cells of their body. One day symptoms will inevitably manifest and these people often get an unwelcome shock.

The rate at which we age is determined by how much chronic inflammation is present in our body. So you would think that doctors would explain to their patients how they can balance their immune systems to control this damaging inflammation. The truth is, they often don't have the knowledge or the passion to explain this to the many patients they see in a busy day. Furthermore modern day doctors have been trained to suppress the symptoms of inflammation with drugs. These drugs are only a temporary fix and often have nasty side effects.

A fascinating fact of physiology that you should know is that glutathione cannot efficiently protect the liver against inflammation if there is an inadequate amount of selenium in the liver. Glutathione can be compared to a "liver warrior" that fights to protect the liver cells from damage and selenium can be compared to the sword that the warrior needs – without a sword the warrior cannot fight!

Selenium reduces the risk of cancer developing

Laboratory experiments, clinical trials and epidemiological data have all proven selenium's role in cancer prevention.^{1,2,3,4,5,6,7,12,13,15}

Dr Walter Willett from the prestigious Harvard Medical School did a 5 year study which compared men who developed various types of cancer to men who did not get cancer and the major difference between them was their blood levels of selenium. The results of this study showed that the men with the lowest levels of blood selenium were twice as likely to develop some type of cancer as the men who had the higher blood levels of selenium. Similar studies have shown that people with the lowest levels of selenium were up to six times more likely to grow a cancer. Death rates in people who have cancer are able to be reduced by selenium supplements. Studies in Finland published in the mid 1980s found that people with the lowest levels of selenium and vitamin E had 11 times greater incidence of cancer. Thus if you are trying to prevent liver cancer, or you are fighting liver cancer, or any cancer for that matter, you cannot afford to be low in either selenium or vitamin E.

Selenium has been shown to stimulate death (apoptosis) in tumor cells, and a low selenium status predicts a poorer outcome in those with certain cancers. Geographic studies have shown that people who live in areas with selenium deficient soils and have a low selenium intake, have higher cancer mortality rates. A key cancer study conducted over 7 years found that selenium treatment was associated with reductions in total cancer mortality and in the incidences of lung, bowel and prostate cancers. Research has shown that men consuming the most dietary selenium develop 65% fewer cases of advanced prostate cancer than men with the lowest selenium intake.

Encouragingly, for cancer patients who are receiving chemotherapy, selenium supplementation can reduce the side effects of these drugs. After 2-3 months of selenium supplementation, the frequency of chemotherapy induced hair loss, nausea, abdominal pain, weakness and appetite loss are significantly lower than in those who do not receive selenium treatment.

Studies have shown that low serum selenium levels are associated with higher risks of various types of cancer, including liver cancer.⁴

Selenium supplementation is vital in those with all types of chronic liver disease, as it reduces the risk of liver cancer.²

An observation study of the liver cancer preventive effect of selenium supplementation was done in China. The 8 year follow up data showed reduced primary liver cancer incidence of 35.1% in selenized table salt supplemented people versus the non-supplemented population. On withdrawal of selenium from the treated group, primary liver cancer incidence rates began to increase. However, the inhibitory response to the HBV was sustained during the 3 year cessation of treatment.²

It takes quite a few months for the selenium to build up to protective levels in the important areas of your body, such as the liver and the immune system and thus a long term commitment to taking these supplements is needed.

Selenium helps to detoxify your liver

Selenium is a great detoxifier – this is because it is required for the production and action of glutathione peroxidase in the liver. Glutathione peroxidase is an antioxidant enzyme necessary for detoxification and protection of the liver against free radical damage.

Some studies have shown that selenium levels appear to be severely depleted in patients suffering with liver disease, especially cirrhosis and hepatitis.³¹

How much selenium should you take?

If you have a chronic infection with the hepatitis C or B virus, or HIV, or indeed any virus that is impairing your health, I would strongly advise you to start taking a regular supplement of selenium. You must be regular with this, as it takes time to overcome a selenium deficiency.

Safe and beneficial doses of selenium in adults range from 100mcg to 400mcg daily.

Many people will need to take more than 100mcg daily to get the best results, and many of the studies done on selenium used a daily dose of 200mcg to achieve good outcomes. The recommended daily intake (RDI) of 65-80mcg daily is contentious

and many nutritionists argue that the RDI should be raised to 200mcg for adequate immune function. Selenium supplements are not expensive.

If you are an adult with chronic hepatitis, I would recommend you take 400mcg daily of selenium for several months to build up your body's stores to optimal levels. Thereafter reduce to a maintenance dose of 200mcg daily. If you feel better on the 400mcg, and if your viral loads are lower on the higher dose, then you are safer to stay with the 400mcg daily for the long term. Those with a higher risk of liver cancer ([see "Hepatitis and Liver Cancer" page 149](#)) are safer to stay on the higher daily dose of 400mcg.

Generally speaking up to 600mcg daily is safe and you may need this dose for 4 to 6 weeks, if your viral loads are increasing rapidly and/or you are fighting a rapidly growing liver cancer.

The Recommended Daily Allowance (RDA) of selenium in Australia is woefully inadequate being only 45-55mcg for adult females and only 45-70mcg for adult males.

What is the best form of selenium supplement to take?

Humans obtain selenium from a variety of foods (plant and animal sources) and selenium exists in these foods in several different forms; each form has its own unique health promoting effects.

The three forms of selenium most active in preventing cancer are –

- Sodium selenite
- L-selenomethionine
- Selenium-methyl L-selenocysteine¹⁷

Let's look at their important differences –

Sodium Selenite more effectively increases genetic expression of the selenium-containing antioxidant enzyme glutathione peroxidase.

L-selenomethionine increases cancer cell death by apoptosis (cancer cell suicide), but only in cells with an intact "suicide" gene.
6,16

Selenium-methyl-L-selenocysteine induces apoptosis in mutated cancer cells that lack this suicide gene.

All three selenium compounds stimulate cell death in various types of cancer, but each compound is better at destroying some cancers than others. In general, the three selenium compounds complement one another in the ways they affect gene expression of proteins that control cancer prevention and suppression.

Because of these synergies between the different forms of selenium you can understand why all 3 forms of selenium taken together – namely L-selenomethionine, selenium-methyl L-selenocysteine, and sodium selenite are much more effective at killing off early or developing cancers in your body.

Note: Most people, including many medical doctors, do not know that selenium is available in several different forms which can complement each other.

Selenomune capsules contain a synergistic formula of 3 types of selenium combined with other essential nutrients. This formula enhances immune competence.

Each capsule of Selenomune contains

- Selenium 200mcg (as L-Selenomethionine, L- Selenocysteine and Sodium Selenite)
- Vitamin C (as Ascorbic Acid) 100 mg
- Folic Acid (as 5-methyltetrahydrofolate) 200 mcg
- Vitamin B-12 (as Methylcobalamin) 20 mcg
- Iodine (from Kelp) 150 mcg
- Zinc (as Zinc Oxide) 5 mg
- Manganese (as Manganese Sulfate) 1 mg
- Chromium (as Chromium Chelate) 20 mcg
- Molybdenum (as Molybdenum Chelate) 50 mcg
- Boron (as Boron Citrate) 0.1 mg
- Brewer's Yeast 500 mg

Can you get enough selenium from food?

The selenium content of food is directly related to how much selenium was in the soil where the food was grown.

Normally, selenium is found in Brazil nuts, organ meats, seafood, whole grains, brewer's yeast, garlic, kelp, molasses, onions and medicinal mushrooms (reishi and shitake mushrooms).

Although seafood caught in its natural habitat is higher in selenium, much seafood sold for human consumption is raised in fish farms and fed processed food pellets.

Selenium levels in the soil are unreliable; thus it is virtually impossible to obtain enough selenium through diet alone, especially if you are battling a nasty virus.^{8,27,28}

Apart from deficient soils and poor diet, other factors that may make you selenium deficient include –

- Exposure to heavy metals, such as mercury and lead
- Prior use of chemotherapy drugs to fight cancer
- Diseases of the intestines such as gastritis, Crohn's disease, colitis and celiac disease etc. People who are intolerant to gluten containing foods are more likely to be selenium deficient.

Can selenium become toxic?

Generally speaking, selenium is very safe, as it is an essential nutrient for all humans and animals; however just because it's good for you, does not mean the more you take the better off you will be. Like all nutrients we do not need to overdose and if you overdose on selenium, you can get side effects.

It is not easy to become toxic from selenium – you would need to eat huge amounts of Brazil nuts every day or take mega doses of selenium supplements. The toxic dose is generally considered to be 900mcg daily over a period of time – there is no reason to take these huge amounts! Generally speaking selenium overdose comes from industrial pollution.

A study in prostate cancer patients used as much as 3,200mcg of selenium daily for 12 months with no patients becoming toxic. I am not recommending such high doses, but it just goes to show you that selenium is very safe. Indeed it's far more dangerous to be deficient in selenium than it is to take too much!

The Food and Nutrition Board (FNB) sets the tolerable upper level for selenium at 400mcg daily in adults – this upper limit includes selenium obtained from food, which averages around 100mcg/day for adults in the USA, as well as from supplements.

Symptoms of selenium toxicity include mood changes, anxiety, brittle hair and nails, hair loss, digestive upset, nausea, vomiting, garlic odor to the breath, skin rashes and excess perspiration. These symptoms are easily reversible.

How to test for selenium deficiency

The amount of selenium in a person can be assessed by testing selenium plasma and urine levels and the selenium content of a hair sample. Human plasma should not contain less than 150 or more than 1,000 nanograms of selenium per milliliter of plasma. Urine levels should be 50 to 100 nanograms of selenium per milliliter of urine. Hair selenium levels should be more than 27 micrograms per gram of hair. The best measure of a person's long term selenium status is found by assessing the amount of selenium in their toe nails. This requires clippings of toe nails and is not a commonly performed laboratory test, except in research studies. It is however, a valuable test. ^{10,11,29,30}

Note: For extensive research literature about the life saving properties of selenium, visit www.seleniumresearch.com

For more information, call my Health Advisory Service and speak to a naturopath.

United States: 623 334 3232

Australia: 02 4655 8855

E-mail: ehelp@liverdoctor.com

Omega 3 fats

It is important that your diet is not deficient in omega 3 fatty acids because human cells are unable to manufacture them. Your brain contains huge amounts of omega 3 fats and they are vital for the nervous system to function well, so much so that a lack of omega 3 fats in the brain can cause depression and poor memory. There is good evidence that omega 3 fats can reduce the risk of many types of cancer.

If you don't eat oily fish, flaxseeds, walnuts, hemp seeds, chia seeds or take supplements of omega 3, it is highly likely that you are deficient in omega 3 fatty acids, and your immune system and liver function will suffer as a result. You will need to grind the flaxseeds into a powder to absorb the omega 3 fats from them.

There is no need to grind hemp seeds or chia seeds.

You must obtain omega 3 fatty acids from your diet. I take a liquid form of fish oil in a dose of one dessertspoon twice daily at the beginning of my meals. You do not have to take this high dose, and generally speaking 2 to 4 teaspoons daily is more than adequate. If you hate liquid, then take a good quality fish oil capsule (the cheap varieties are usually very inferior). You will need 2000 to 4000mg daily of fish oil.

Keep your fish oil in the refrigerator to keep it fresh. Many brands of liquid fish oil are citrus, lime or punch flavored, which makes them easier to take. Purchase liquid fish oil in dark colored glass bottles.

If you are vegan, or do not enjoy fish, you can obtain a vegan source of omega 3 fatty acids known as vegan DHA in capsule form. This is sourced from sustainable algae sources. It is made with a highly refined DHA oil derived entirely from algae cells in culture, and meets the rigid standards of vegan diets. This is ideal for everyone who wishes to supplement their DHA intake.

DHA (docosahexaenoic acid), is an omega-3 fatty acid, and is a major structural fatty acid in the brain and eyes. It's also a key component of the heart. Studies have shown DHA supports cardiovascular and brain function, healthy eyes and joint mobility. You can experience the benefits of DHA without the worry of ocean-born pollutants and mercury potentially found in certain fish. Vegan DHA capsules can also be used to augment the percentages of DHA obtained from omega-3 sources such as fish oil.

Omega 3 fats will reduce inflammation in your liver, strengthen your immune system, and reduce depression, and I strongly advise you to obtain plenty of omega 3 fatty acids from your diet and a supplement if your diet is not high in omega 3.

Zinc

The mineral zinc is essential for a strong immune system. You do not want to be zinc deficient if you are fighting a chronic viral infection. Zinc has proven anti-viral effects, and my own clinical experience and the research I've seen has convinced me that zinc can help to reduce the amount of liver inflammation caused by viruses.

The immune-strengthening effects of zinc include:

- Protection of cell membranes from cell damaging viruses and chemicals
- Stimulating the production of interferon (interferon is a natural anti-viral protein produced by your own immune cells)
- Increasing the body's production of white blood cells that fight infection and helping these cells to fight more aggressively
- Increasing killer cells that fight against cancer- zinc supplements have been shown to slow the growth of cancer
- Enabling the white cells to release more antibodies, which neutralize viruses

A study published in 2009 in *The Journal of Clinical Biochemistry and Nutrition*, concluded that zinc supplementation improved the long term outcome of those who had chronic hepatitis C and liver cirrhosis. A multi-center study in Japan enrolled patients with chronic HCV infections. Those patients who received zinc supplements with interferon therapy did better after 6 months of interferon treatments than patients who received interferon therapy but who did not receive zinc.³⁵

How much zinc should you take?

The recommended daily allowance for zinc is 15mg and on a long term basis the dose of zinc in supplement form should not exceed 50mg daily. Excess amounts of zinc in the form of supplements (more than 50mg a day) can inhibit immune function and lead to deficiencies in copper and iron. I generally recommend 25mg of zinc daily for those with chronic viral infections. Suitable forms of supplemental zinc include zinc oxide, citrate, gluconate and picolinate. Take zinc supplements with food.

Iodine

Iodine is a mineral required for human health and optimal immune function. Many people are deficient in iodine and are totally unaware of this. It is important that you are not deficient in iodine if you suffer with any chronic infection.

Iodine kills most organisms on the skin within 90 seconds; however its use as an antibiotic, antifungal and anti-viral agent has been overlooked by modern medicine. Iodine exhibits

activity against bacteria, molds, yeasts, protozoa, and many viruses. Topical iodine is capable of killing all classes of organisms from bacteria, tuberculosis, fungi, yeasts, and viruses.

Iodine is an excellent antibiotic, anti-viral and antiseptic and has few side effects and no development of bacterial resistance. Iodine is able to penetrate easily through the cell walls of micro-organisms and is a deadly enemy of single cell micro-organisms. Iodine can help us in ways that antibiotics can no longer do. Drug resistant micro-organisms continue to emerge and the number of patients susceptible to these infections is increasing. The body's ability to resist infection and disease is hindered by long term deficiency in essential vitamins and minerals including that of iodine, zinc and selenium.

The antiseptic properties of iodine can be used to sterilize surfaces in your home and workplace. The ability of many micro-organisms to mutate and become resistant to drugs is one of the main reasons we should return to iodine for use as a broad spectrum antibiotic, anti-viral and anti-fungal agent. Iodine provides us with a safe way to strengthen our own immune system against invading microbes while simultaneously correcting a widespread and critical nutritional deficiency that causes immunological unresponsiveness.

Good food sources of iodine are iodized salt, seafood and edible seaweeds. Iodine can be used externally and also taken internally in the form of kelp tablets, iodine supplements, Thyroid Health Capsules, Nascent Iodine or Lugol's iodine solution.

The supplement Selenomune contains iodine.

There are large areas of the world where soils are extremely deficient in iodine and one billion people are at risk of severe iodine deficiency. I have found that around 50% of my patients in Australia are deficient in iodine. The best way to test your body's level of iodine is with a urine test which measures the concentration of iodine in your urine.

Iodine status of patient	Urinary iodine concentration
Severe iodine deficiency	Less than 20 mcg/Liter
Moderate iodine deficiency	20 to 49 mcg/Liter
Mild iodine deficiency	50 to 99 mcg/Liter
Not iodine deficient	Over 100 mcg/Liter

Vitamin C

The importance of Vitamin C to human health was enshrined by the work of two time Nobel laureate Linus Pauling. Many other researchers have also proved the lifesaving properties of this powerful antioxidant vitamin.

It seems surprising then, that today there are so many people deficient in vitamin C, when it is so widely available in many raw fruits and supplement form. Vitamin C is destroyed by cooking and reduced by prolonged cold storage of fruits.

One of the world's leading experts on Vitamin C, Dr Thomas Levy, provides compelling evidence for its healing power in his book *Vitamin C, Infectious Diseases and Toxins: Curing the Incurable*. Dr Levy has found that vitamin C exerts a killing effect against all viruses provided enough vitamin C reaches the virus, especially in acute infections.

Unusually high doses may be administered orally as ascorbic acid or intravenously as sodium ascorbate. Intravenous vitamin C is a popular treatment for cancer, including liver cancer and although no double blind trials have been done, I have observed its positive effects first hand in several patients with liver cancer.

Vitamin C helps us to fight viruses by inhibiting the protein neuraminidase, which is produced by viruses and is needed to help them grow and duplicate themselves.

Other benefits of vitamin C include:

- Increases the ability of your immune system to kill viruses
- Increases the body's production of immune fighting chemicals such as interferon and nitric oxide
- Increases the immune cell's production of antibodies that inactivate viruses

Some people find the ascorbic acid form of vitamin C is too acidic and upsets their stomach and bowels. If this occurs you will probably find that the ascorbate or ester forms of vitamin C are better tolerated.

Use of Vitamin C

I suggest that you start taking 1,000 mg of vitamin C twice daily to keep your immune system strong. Keep a stockpile at home in a cool place and in a tightly sealed container. Also try to eat plenty of foods high in vitamin C such as citrus fruits, kiwi fruits, tomatoes, berries and bell peppers.

Is there any danger in taking large doses of vitamin C?

In patients with severe kidney disease (renal failure) or liver failure, the quantities of fluid with which vitamin C is administered, needs to be controlled by a doctor. If you have a past history of kidney stones, you would need to ensure that you drink plenty of water whilst taking high doses of vitamin C.

Vitamin D

Vitamin D deficiency is a huge problem and is widespread. It is often overlooked and not tested for in those who really need it.

There is an increasing amount of evidence to show a link between low levels of vitamin D and the inability of your immune system to fight off a viral illness. Vitamin D supplementation has been associated with improved outcomes for osteoporosis, immune disorders and cancer. Various studies have proven a link between low levels of vitamin D and a higher risk of cancer.³⁷

Vitamin D, which is made in large amounts in the skin when it is exposed to the sun, is actually a steroid hormone and not a vitamin. Vitamin D regulates hundreds of genes including some that involve the body's immunity and its defenses against viruses. Vitamin D also reduces inflammation and thus reduces muscular aches and pains, which are common in those with hepatitis or HIV.

In addition to skin manufacture from sunlight, vitamin D can be found in such foods as oily fish, canned fish, cod liver oil, liver, eggs, dairy products and fortified juice. It is also available in

supplement form, with the current recommendation being that you take between 400 and 1000 IU of vitamin D3 daily. Many people, especially those who avoid the sun or those living in cold countries, need much more than this and doses of around 5000 IU daily may be needed before you can get your blood levels of vitamin D into the higher desirable range. In people with a severe vitamin D deficiency, especially those living in cold climates or those with poor intestinal absorption of vitamin D, the use of vitamin D injections containing 600,000 IU, can be excellent and give a person all the vitamin D they need for 12 months.

Regardless of how you get it, make sure that you have an adequate amount of vitamin D in your body. It is easy to check your body's levels of vitamin D with a simple blood test; if your levels are below or at the lower limit of the normal range, please take a vitamin D3 supplement and get some sunshine on your skin. Recheck your blood levels after 3 months to ensure your vitamin D increases to the higher limit of the normal range. Make sure that you do not become deficient in vitamin D again.

Blood levels of vitamin D

It is vitally important to ask your doctor to check your blood level of vitamin D. The correct blood test to measure your vitamin D level is called 25(OH) D, also called 25-hydroxyvitamin D3.

Vitamin D can be measured in two different units of measurement and in the USA the units used are ng/mL. In Australia and Canada the units of measurement are nmol/L.

The normal ranges of vitamin D for blood tests reported by different laboratories and countries vary significantly and you will be surprised by the large range between lower normal and upper normal – see following table.

Lower Limit Vitamin D	Upper Limit Vitamin D
75 nmol/L	200 nmol/L
30 ng/mL	80 ng/mL

You don't want to be average here; you want to have levels of vitamin D that optimize your immune system to fight infection and inflammation. The optimal levels of vitamin D are higher than the average levels.

I recommend you take enough supplements of vitamin D3 and/or get enough sunshine to keep your serum vitamin D levels around 150 to 200 nmol/L or 70 to 80 ng/mL.

Vitamin D3 supplements are not expensive.

Excess vitamin D intake can cause elevated blood calcium levels; so don't overdose on it - it's not a case of the more the better. Get your blood level checked every 6 months to find the dose of vitamin D3 that keeps you in the optimal levels.

Vitamin K

Vitamin K is a fat soluble vitamin that is essential for human health and yet many people do not get enough of this life saving vitamin.⁹²

Vitamin K has many roles –

- It is essential for blood clotting so you do not bleed to death if you suffer trauma
- It is essential for strong bones
- It slows the calcification of tissues, thus reducing hardening of the arteries
- It can destroy certain types of cancer cells

There are 3 types of Vitamin K

Vitamin K1 is known as phylloquinone

Vitamin K2 comprises a group of vitamins called the menaquinones

Vitamin K3 (or menadione) is a synthetic form of vitamin K

Sources of Vitamin K

Vitamin K1 is present in green vegetables such as broccoli, kale, spinach and other leafy greens, soybean, and other plant oils.

Vitamin K2 is present in liver, butter, chicken, egg yolk, certain cheeses, and fermented soybean products such as natto. Intestinal bacteria in the intestines also synthesize it.

Foods rich in vitamin K must be consumed regularly as the liver stores only limited amounts.

Significant deficiencies of vitamin K are not common in people eating healthy diets.

Certain health problems can lead to vitamin K deficiency or an increased need for vitamin K; these include:

A poor diet

Intestinal diseases such as Celiac, Crohn's Disease, Ulcerative colitis, pancreatitis, gastric surgery, leaky gut or other problems that reduce nutrient absorption

Liver disease because this reduces vitamin K storage

Deficiencies of vitamin K can increase the risk of bone loss (osteoporosis), hardening of the arteries (arteriosclerosis) and cancer.

Bone Health

I encourage all people with low bone density (osteopenia or osteoporosis) to take a supplement of vitamin K 2.^{96,97} In Japan, vitamin K has been an approved treatment for osteoporosis since 1995.

Cancer Prevention

New research suggests that vitamin K may help improve survival rates for those suffering with cancer. Vitamin K1 appears to play a role in cell replication and can inhibit unhealthy cell growth.⁹⁵

Vitamin K2 encourages the suicide (apoptosis) of certain types of cancer cells (pancreatic, ovarian cells and leukemia cells). This new research means that vitamin K may one day be prescribed to direct cancer cells to stop their aggressive and unregulated growth.

Recommended Dosages of Vitamin K

The average adult ingests 59-82 micrograms (mcg) of vitamin K per day. This is less than desirable for optimal health. The Food and Nutrition Board of the National Institute of Medicine, sets the adequate daily intake as 120 mcg for men and 90 mcg for women. Greater amounts than this may help protect against osteoporosis and calcification of the arteries. Supplements containing from 25 mcg up to 10 milligrams (mg) of the vitamin are readily available.

The Food and Nutrition Board states that, "No adverse effects associated with vitamin K consumption from food or supplements have been reported in humans or animals."

Caution: Blood thinning drugs (especially coumarin drugs) are affected by vitamin K. Thus you should check with your own doctor before taking supplements of vitamin K if you are taking coumarin type blood thinning drugs.

Vitamin K2 Reduces Growth and Invasion by Human Liver Cancer Cells.

Vitamin K2 may be a promising therapeutic treatment for the management of liver cancer. Liver cancer is known as Hepatic Cell Carcinoma (HCC).

A study examined the mechanisms of the retardation of liver cancer cell growth induced by a form of vitamin K 2 known as MK-4. The results were very positive; the rates of venous invasion by liver cancer cells in the vitamin K–treated group were 2% at 1 year and 13% at 2 years; the rates were 21% at 1 year and 55% at 2 years in the control group who did not receive vitamin K ($P = .01$).

Oral administration of vitamin K2 was shown to reduce the ability of liver cancer cells to invade and spread via the veins in the liver (portal venous system). In this study, it was shown that vitamin K2 inhibits the invasiveness and growth of liver cancer (HCC) cells.⁹¹

The benefit of vitamin K2 was apparent only at high doses, which is consistent with the finding that high doses of vitamin K2 were needed to inhibit liver cancer cell (HCC) activities. This study was reported in the journal *Hepatology* and produced results which suggest that high-dose vitamin K2 treatment can function as an inhibitor of primary liver cancer (HCC) cell growth.⁹¹

Most of the present studies were performed using relatively high doses of vitamin K2. Several reports have showed that orally administered vitamin K2 is concentrated in the liver, and the concentration in liver tissues is at least 10 times greater than in plasma. Thus cancer cells situated in the liver might be exposed to higher concentrations of vitamin K2 because of more prolonged exposure and greater uptake. The data from this study indicates that vitamin K2 supplementation actually reduces the growth and invasion of liver cancer (HCC) cells.^{91,95}

Vitamin K 2 has no known adult human toxicity, which makes orally administered vitamin K2 a very promising treatment for preventing cancer and for keeping tumors inactive (dormant).

More clinical trials are in progress to evaluate vitamin K2 in patients with primary liver cancer.

In Summary

Vitamin K is best known for its role in the liver's synthesis of blood clotting proteins. New research, has demonstrated that vitamin K may play many vital roles in the body to ward off diseases. The role of vitamin K in preventing osteoporosis, softening the arteries to reduce cardiovascular disease and killing cancer cells is relatively new and unfortunately not all doctors are aware of this new research. Vitamin K has also been shown to improve skin health and reduce Alzheimer's disease and diabetes. Vitamin K has been recognized as an antioxidant with anti-inflammatory properties. Thus Vitamin K should be part of your tool kit to slow down the ageing process.

Colloidal Silver

Silver ions and silver compounds exert a toxic effect on some viruses, bacteria and fungi. Its germicidal effects kill many microbial organisms in the laboratory, but standardization of silver products is difficult. Despite these problems there has been renewed interest in silver as a broad-spectrum antimicrobial agent.

Various silver compounds, usually colloidal suspensions, have become increasingly popular as remedies for numerous health complaints, especially infections. Colloidal silver, although popular, is considered controversial, and is classed as alternative medicine. Although most colloidal silver preparations are harmless, there have been rare cases where people have consumed excess doses and the side effect of blue colored skin has occurred; this is called argyria. The early symptoms of argyria include blue-grey staining of the gums that eventually spreads to the skin or membranes particularly on the areas exposed to the sun: hands, forehead and nose. Avoid taking higher doses than those recommended on the label.

Silver is absorbed in the mouth and intestines in a matter of minutes; then it remains in the system for a few weeks and afterwards is safely eliminated through body excretions. Normal dosage does not present any risk to the user; furthermore, even if

you took more colloidal silver than you should have, don't worry about turning blue overnight. Generally speaking it takes months of over administration of colloidal silver to develop argyria.

I have seen several patients who have found colloidal silver very helpful. If you do decide to take a course of colloidal silver to help your immune system fight the hepatitis viruses or the AIDS virus, I think this is safe and indeed may help you, but there is no conclusive evidence. Do not take colloidal silver for prolonged periods without checking with your healthcare practitioner, as you do not want to develop argyria.

Table of immune-boosting nutrients

Nutrient	Food sources	Immune benefit
Vitamin C	Citrus fruits, blackcurrants, capsicums (bell peppers), kiwi fruit, guava fruit, all types of berries, tomatoes Supplements of vitamin C 1000 to 3000mg daily	Anti-viral effect Increases action of immune cells (such as natural killer cells and phagocytes) Increases T lymphocytes Antioxidant which reduces inflammation Increases natural interferon
Zinc	Whole grain cereals, seafood, red meat Supplements of zinc 15 to 25mg daily	Anti-viral effect Reduces fluid leakage in the tissues Increases natural interferon
Selenium	Brazil nuts, mushrooms, mussels, tuna, haddock, sunflower seeds, kidneys Supplements of selenium 200 to 400mcg daily	Anti-viral effect Reduces viral replication Increases immune cells Immune strengthening Reduces many types of cancer

Nutrient	Food sources	Immune benefit
Vitamin E	Nuts, especially hazelnuts and almonds, fresh wheat germ, wheat germ oil, avocado, sunflower seeds, sweet potatoes. (Note these foods must be fresh and kept at cool temperatures or the Vitamin E will be destroyed) Supplements of Vitamin E 100 to 500 IU daily	Protects membranes of the immune cells Increases population of immune cells, especially T lymphocytes Increases virus fighting chemicals such as interferon Reduces formation of scar tissue in the liver, which can lead to cirrhosis Antioxidant which reduces inflammation

NOTE: Synthetic Vitamin E is not as good as natural Vitamin E and has lower biological activity. Synthetic Vitamin E is called DL-alpha tocopherol, and although much less expensive than natural D-alpha tocopherol, it is not active in the body.

Avocados are the richest fruit source of vitamin E.

Vitamin D	Sunshine, oily fish, fish oil, cod liver oil, liver, eggs and full fat dairy products. Supplements of vitamin D3 1000 to 5000 IU daily	Strengthens the immune system Reduces the formation of cancer cells Anti-inflammatory effects
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Carotenoids such as lutein, lycopene, zeaxanthin and beta-carotene. Beta carotene is a pre-cursor to vitamin A	Carotenoids are the pigments (colors) in vegetables and fruits. These are found in all yellow, red and orange colored fruits and vegetables and dark green leafy vegetables	Antioxidant which exerts anti-inflammatory effects Protects cell membranes Reduces the risk of cancer
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Nutrient	Food sources	Immune benefit
Iodine	Culinary seaweeds Iodized salt, seafood especially oysters Supplements to provide 160 to 320mcg of iodine daily Selenomune Capsules Thyroid health Capsules	Broad spectrum antibiotic and anti-viral Essential for strong immune function Preventative effect against cysts Reduces the risk of some cancers

Note: doses of supplements vary according to your health requirements, dietary intake and digestive function.

Liver and Digestive Health

Liver Formulas

There are hundreds of liver formulas and tonics sold all over the world and indeed they have been used with great benefit in China and Europe for thousands of years.

I wanted patients to be able to take everything they needed in one formula thus avoiding the expense and uncertainty of having to swallow multiple individual supplements.

This inspired me to develop the Livatone range of liver tonics, which have multiple herbs and antioxidant nutrients in the correct amounts all combined together in one capsule or powder. The Livatone formulas became a registered trademark so patients could know that they were getting my original formulas with proven and safe ingredients.

Subsequently several liver tonics appeared on the market with similar names such as Liver Tone or Livertone etc., but they are very different formulas to the original Livatone formulas and they do not have my name on them.

For more information see www.liverdoctor.com or phone our friendly and professional naturopaths in Phoenix Arizona on 623 334 3232 or in Australia on 02 4655 8855

Livatone Plus

Livatone Plus is a powerful liver tonic that combines the pure extract of the herb milk thistle (St Mary's Thistle) with -

All the B group vitamins including activated folic acid (folinic acid) and methyl-cobalamin (B 12); these are essential for healthy liver function and detoxification

The most important liver amino acids glutamine, glycine, glutathione, NAC and taurine, which are needed for efficient liver detoxification and liver protection

An effective dose of the important antioxidant vitamins namely vitamins C, E and natural beta-carotene

The minerals selenium and zinc; these promote detoxification in the liver and reduce liver inflammation.

Livatone Plus is a powerful synergistic formula that has been designed to support the detoxification pathways within the liver. Specific nutrients and herbs can stimulate the repair and renewal of damaged liver cells. They also enhance the liver's ability to break down toxic chemicals via the Step One and Step Two detoxification processes. – see Image 5 [Detox Pathways](#) page 35

Ingredients in Livatone Plus

Glutamine

This amino acid is high in organic sulfur and is required for the Step Two liver detoxification pathway which breaks down and eliminates drugs and toxic chemicals. Glutamine is converted in the body into glutamic acid, which along with the amino acids cysteine and glycine, is converted into glutathione. Glutathione is an extremely powerful liver protector.

N-Acetyl-Cysteine

This amino acid is a proven liver protector with a long history of clinical trials and is the main precursor of glutathione.

Taurine

This amino acid is essential for the production of bile. The liver uses taurine to eliminate toxins and drugs from the body through the bile. Taurine helps the liver to excrete excessive cholesterol out of the body through the bile and thus is an aid for weight control. Taurine is called the detoxifying amino acid and is continually required by the liver.

Glycine

This amino acid is required for the synthesis of bile salts and is used by the liver to detoxify chemicals in the Step Two detoxification pathways.

Antioxidants

Livatone Plus contains the most important liver antioxidants NAC, vitamin E, vitamin C, carotenoids, selenium and zinc.

Livatone Plus also contains green tea extract which has antioxidant properties.

Antioxidants prevent free radicals from oxidizing the cell membranes in the liver, which prevents cell damage. During

the liver detoxification of toxins and drugs, large amounts of free radicals are generated in the liver; antioxidants are needed to prevent these from causing liver damage. Vitamin E has been proven to reduce scarring in the liver, which can lead to cirrhosis.

B Group Vitamins

Livatone Plus contains all the B group vitamins – namely vitamins B1, B2, B3, B5, B6, B12, Folic Acid, Biotin and Inositol. These vitamins are essential for the production of energy in the liver and many people with liver problems feel excessively tired. The liver is the metabolic factory of the body and thus optimal function is vital for you to feel continually energized. Many people who consume excess alcohol or suffer high stress are deficient in B vitamins; this increases their risk of liver damage.

Vitamin B12 (in the form of methylcobalamin) and activated folic acid (folic acid) are required for the liver to perform methylation, which inactivates excess estrogens and toxins, which can otherwise build up and cause cancer.

Interestingly many strict vegans are deficient in Vitamin B12 and the amino acid taurine; this can result in liver dysfunction.

Livatone Plus contains broccoli powder. Broccoli is a cruciferous vegetable, which contains liver healing substances (such as indoles, thiols and sulfur compounds).

Milk Thistle (also known as St Mary's Thistle)

The clinically effective dose of the herb Milk Thistle has been proven to reduce liver damage in many European clinical trials. The active component of milk thistle is called silymarin and 420mg of pure silymarin is required daily to get good results during the initial stages of taking a liver formula. The length of time you need to take this dose for depends upon the state of your liver.

Milk thistle has been used for more than 2000 years to treat liver diseases and is a safe nontoxic herb. Milk Thistle does not cause any side effects and its young fresh leaves were once eaten as a food in Europe.

The silymarin in Milk Thistle protects the membranes of the liver cells and stimulates the production of new healthy liver cells

to replace damaged liver cells. Silymarin can improve protein synthesis in the liver and helps the liver filter to remove dangerous toxins.

There are so many excellent references on Milk Thistle and we have listed some for you. ^{38,39,40,41,42,43,44,45}

Research shows that silymarin from Milk Thistle protects against glutathione depletion and increases liver glutathione, thus supporting liver detoxification and protection from free radicals. Milk Thistle stimulates the production of bile, which is important since bile acts as a way to excrete toxins into the intestines. This has been demonstrated in a study when Milk Thistle, combined with vitamin E, reduced signs of fatty liver. ⁴⁶

Modern pharmacological technology has enabled all these ingredients to be combined together in powder or capsules; this makes it much easier to take and much more affordable.

This combination of high dose pure silymarin and all the required vitamins and minerals and amino acids, is called Livatone Plus. Begin with one capsule twice daily or one teaspoon daily for 2 weeks. Thereafter increase the dose to two capsules twice daily or one teaspoon of the powder twice daily. Maintenance doses vary from 2 to 4 capsules daily. It is best taken with food.

The powder can be stirred into fresh juices or water and although the B vitamins give it a characteristic smell, it is not unpleasant to take. The capsules are best taken with food, but if you forget, it is acceptable to take them on an empty stomach.

Choosing a liver formula

When you have a compromised liver it is vital to take a formula that contains an effective dosage of the active proven ingredients. The ingredients should be standardized and pure so you know that you are getting the correct dosage.

So when choosing your liver formula, choose wisely and check the types and the amounts of the ingredients in the different formulations available - you may get a surprise! Some liver formulas contain a large selection of herbs but they are only small amounts and they do not have any antioxidant vitamins, minerals or amino acids at all.

It's also good to get professional advice when choosing a liver

formula. For more information call our Health Advisory Service in the USA on 1 623 334 3232 or in Australia on 02 4655 8855.

It is also important that the liver tonic you decide to take is –

- Made in a laboratory that has obtained Good Manufacturing Procedures (GMP) certification and FDA approval
- Made in a laboratory that is audited by an independent not for profit body such as The National Science Foundation - see <http://www.nsf.gov/>
- Analyzed by a laboratory to validate the identity, purity and amounts of its contained ingredients
- Under stability studies to test that its active ingredients last as long as their stated shelf life (expiry date) on the container
- Free of artificial binders and fillers

Livatone Plus satisfies all these criteria.

Note: Some other forms of liver products on the market contain silymarin mixed with lecithin. This is most commonly diluted with phosphatidylcholine which comes from lecithin. This is usually 2 thirds phosphatidylcholine and only one third silybin. This would provide only 80mg of silybin per capsule. This is often promoted as being superior to products which contain pure silymarin and I do not agree with this.

Livatone Plus has been tested in a clinical study of patients with fatty liver and was found to be safe and effective. More information on this study is available at <http://www.liverdoctor.com/liver/fatty-liver-study/>

Liver formulas are helpful if you –

- Have a chronic viral infection of the liver
- Are using prescription drugs – these must be broken down by the liver and many people are taking several drugs every day, which greatly increases the workload of the liver
- Are using over the counter drugs, especially pain killers or acetaminophen (paracetamol) - these must be broken down by the liver and can be particularly liver toxic, if excessive or daily doses are used. The combination of acetaminophen with coffee is especially toxic for the liver in those with hepatitis B or C.⁴⁸
- Drink ten or more glasses of alcohol a week - over 18 million

Americans abuse alcohol, making it one of the most common causes of liver disease in America.

- Smoke cigarettes
- Consume excess sugar, fast foods, chemical food additives and/or microwaved cooked foods
- Live in a major city – where you are exposed to automobile exhausts, factory smog, crowded dirty places, water chlorination, fluoride and heavy metals etc.
- Are over 45 years of age - as you get older the various tubes and ducts leading from and to your liver, as well as the internal liver filter itself, often become dirty and/or clogged. They become laden with unhealthy fats, toxins, gallstones, sludge, hardened tissues and waste products of metabolism
- Drink soda pops and/or diet sodas containing artificial sweeteners, especially the sweetener aspartame – see www.dorway.com
- Are exposed to toxic chemicals and pollutants such as - insecticides, some antiperspirants, solvents, glues, aerosol sprays, some detergents, ammonia, hair dyes, nail varnish etc.
- Have high cholesterol and/or triglycerides
- Have skin problems

There are many other reasons that would make it wise to take a liver tonic on a regular daily basis or at the very least, twice a year for a two month course each time. This is especially true in the 21st century when the world has become increasingly polluted and crowded, and liver infections are increasing.

Your liver processes most of the millions of pounds of toxic chemicals and drugs released into the environment every year. An overload of these toxins can easily wear out your liver and leave you prone to developing a range of health problems.

Be careful with pain killers, especially acetaminophen (paracetamol), which can damage your liver. It is well known that overdosing on this popular painkiller can cause liver damage and death via liver necrosis and acute liver failure. A study, in the Journal of the American Medical Association, reported the highest recommended dose of Tylenol® (acetaminophen or paracetamol) can quickly increase liver enzymes in healthy adults. Elevated

enzymes are the first sign of liver damage. If you drink alcohol or have kidney problems, the risk of liver damage from paracetamol is increased significantly.

Your liver is under attack 24 hours, 7 days a week, so it's vital to support its functions and reduce its risk of damage. If you have a clean and unclogged liver, you will have extra years of energetic living to enjoy.

N-Acetyl Cysteine (NAC)

N-Acetyl-Cysteine (NAC) is an amino-acid derivative (small protein) with over 40 years of scientific research to back it up. NAC's powerful health benefits derive from its ability to restore intracellular levels of glutathione (GSH). Have you heard of glutathione? If not you need to know about it because it is the body's most powerful naturally produced internal antioxidant.

Glutathione helps the liver to protect you against toxicity, and it is most needed by those with liver disease. The stress of chronic liver disease depletes glutathione and this is why supplementing with its main precursor NAC, helps those with liver disease to protect against ongoing liver damage.

NAC is a modified form of the sulfur-containing amino acid cysteine. NAC replenishes intracellular levels of glutathione (GSH), which restores your cells' ability to fight damage from free radicals known as reactive oxygen species.

NAC may be able to help those with chronic degenerative diseases, including liver disease, lung disease and impaired glucose control.^{98,99}

Today researchers are now realizing just how vital glutathione's actions in the body are, and how many chronic disease conditions are associated with glutathione deficiency. According to Stanford University's Dr. Kondala R. Atkuri, "NAC has been used successfully to treat glutathione deficiency in a wide range of infections, genetic defects and metabolic disorders, including HIV infection and Chronic Obstructive Pulmonary Disease. Over two-thirds of 46 placebo-controlled clinical trials with orally administered NAC have indicated beneficial effects of NAC measured either as trial endpoints or as general measures of improvement in quality of life and well-being of the patients."

NAC has been shown to increase blood glutathione in HIV-infected patients with low levels of glutathione due to their chronically damaged immune system. NAC's ability to replenish intracellular glutathione and reduce free radical damage provides significant protection against DNA damage and thus cancer development.

NAC neutralizes toxins and pollutants including heavy metals that accumulate in the liver, kidneys and fatty parts of the body.

Restoring glutathione levels with NAC supplements makes liver cells more able to protect themselves from ongoing damage caused by fatty accumulation, viral infections, drug induced damage, alcohol excess or autoimmune inflammation.

How can we get more glutathione in our body?

Oral glutathione supplements are available in some health food stores and pharmacies and do not require a prescription. The main problem is that glutathione is not well absorbed from the gut, as it is broken down by digestive enzymes before it has a chance to be absorbed. For this reason it is far more effective to take its precursor (building block). NAC is the most important precursor to glutathione synthesis. NAC is easily absorbed from the gut and is rapidly turned into glutathione.

Approximately 150 milligrams daily of glutathione is obtained from the average diet, mainly from fruits and vegetables. However the majority of glutathione is manufactured within the cells of the body, especially within liver cells. It is interesting to know that around 80% of the glutathione produced in the liver is transported to the blood stream to be used by the kidneys for detoxification. Thus increasing glutathione levels is good for the liver and the kidneys.

For people with severely depleted levels of glutathione in their body, taking glutathione intravenously would be best, but this is impractical. The practical solution is to take NAC, the main precursor to glutathione - so the body's cells can make their own glutathione.

How is NAC taken?

NAC does not require a prescription and is taken as an oral supplement in doses of 600 to 2400 mg daily. NAC is taken two

to three times per daily, or as recommended by your healthcare provider. NAC is best taken away from food.

NAC is given intravenously in hospital emergency departments as a lifesaving treatment for acute poisoning with paracetamol (also known as acetaminophen). Overdoses with paracetamol are the number one cause of acute liver failure in the United States. Large doses of paracetamol overwhelm the body's glutathione stores, which causes irreversible damage to liver cells. Treatment with NAC quickly restores protective levels of glutathione, thus preventing irreversible liver failure. In paracetamol (acetaminophen) overdose, NAC is administered intravenously to detoxify the drug before it destroys large numbers of liver cells and causes fatal liver failure.

With over more than 40 years of use in a wide range of medical disorders, NAC has been proven to be safe even at very high doses and for long-term treatment. Studies have demonstrated the safety of 1,800 mg per day for 142 days, and 2,800 mg per day for 3 months. The most commonly used doses range from 600-1,800 mg daily and clinical studies have found that doses of up to 2,000 mg/day are safe.

Many researchers have come to the conclusion that a deficiency of liver glutathione is one of the leading factors that allow liver disease to progress. The liver cells of people with chronic liver disease are continually overworked as they fight toxins and free radicals and it is mainly glutathione which can protect them from severe damage or cell death. Researchers proved that glutathione given in high doses intravenously to patients with severe fatty livers resulted in marked improvement in their liver blood test results.

Here are a few recently published trials on NAC:

Published in the November 2006 journal *Apoptosis*, one trial investigated if NAC could inhibit liver cell death in acute severe liver failure. Based on an animal model, the researchers concluded that NAC shows a liver-protective role for this type of liver failure.

Published in the January 2008 journal *Liver Transplantation*, a retrospective study found that children treated with NAC for acute liver failure had a better outcome than matched controls not treated with NAC.

The evidence linking glutathione depletion with a poor prognosis in those with liver disease is now clear-cut.

Cautions with NAC

There are no known contraindications to NAC. It can cause mild abdominal discomfort in which case the dose should be divided over the day or reduced.

Intestinal Health

A large part of the immune system is found in the small and large bowel and consists of healthy bacteria, which break down toxins and fight the bad bacteria. If you have an unhealthy population of bacteria, parasites and fungi in your bowel this will lead to toxicity and inflammation in the bowel. Toxins can recirculate back to the liver via the portal venous system that drains the intestines and this will increase liver inflammation. If you have symptoms of irritable bowel such as bloating, irregular bowel actions, excess flatulence, abdominal pain or constipation, then you need to improve the condition of your bowels.

How can we improve the amount of healthy bacteria in our bowels?

- Increase the amount of raw and cooked vegetables and fruits in your diet. This will promote growth of healthy bacteria and reduce inflammation
- Take a broad spectrum probiotic formula such as Floratone that contains a range of healthy bacteria to re-populate the intestines
- Take a powder containing glutamine and colostrum if you have bowel damage such as gastritis, peptic ulcers or colitis
- If you have parasites or unhealthy bacteria in your bowel there is a good formula called Parasite Cleanse, which contains natural antibiotic herbs – see www.liverdoctor.com
- Avoid the overuse of antibiotic drugs, as they can be quite damaging to the bowel because they destroy the good bacteria as well as the bad bacteria in your intestines. After you finish the course of antibiotics there is a resurgence of fungi and unhealthy bacteria in the gut, which weakens your immune system. It can take many months to recover from this and the more antibiotic drugs you take, the worse your intestines will become.

Use natural antibiotics such as raw and cooked garlic, thyme, oregano, rosemary, horseradish, vitamin C and olive leaf extract to fight infections.

Antibiotic drugs are very over prescribed by doctors in this day and age and this is causing huge problems for community health.

Anti-viral Foods and Recipes

Many plants contain anti-viral compounds, but there has been little testing to confirm how many of these compounds exist in each plant and which viruses they kill. There is, however, laboratory evidence that indicates specific foods can block or kill viruses. Historical usage also counts; for instance, thyme and lemon have long been used to fight viral infections.

Overall, my studies point to the fact that a diet rich in various types of natural plant foods is basically an anti-viral diet. All the foods covered in this book have been identified as containing [anti-viral compounds](#) and many have been shown to improve immune and liver function.^{54,55,56}

If you want to reduce the risk of the HCV, the HBV and/or the HIV damaging your immune system and liver, use the foods recommended here on a regular basis. These foods will also help those infected with other viruses such as Epstein Barr virus, cytomegalovirus, glandular fever and herpes.

Some of my recommended foods, notably medicinal mushrooms and sea vegetables (seaweeds), are an acquired taste and I hope you will gradually begin to enjoy them. If a particular food does not agree with you, or if you simply don't like the taste, you can either try it prepared in a different way, have smaller quantities mixed in with the foods you do like, or avoid it altogether because there is a wide variety of foods with anti-viral activity.

I have endeavoured to list these foods in order of "immune importance," but I have also considered the overall health value of the food. I am convinced that eating a wide range of the foods listed here, in as natural a state as possible, will help to reduce the severity of any chronic viral infection. It is important to note that I am not recommending that eating only one anti-viral food each day will help treat hepatitis, so don't pick just one food you like and eat enormous quantities. A well balanced diet is always the best diet.

Any list of anti-viral foods would have to include –

- Citrus fruits, especially lemons and limes
- The onion family: onions, garlic, leeks, shallots and chives which are high in sulfur
- Green leafy herbs: mint, parsley, cilantro, basil, thyme and oregano
- Medicinal mushrooms
- Sea vegetables (seaweeds)
- The cabbage family which includes radishes
- The carrot family
- Coconut flesh, full cream coconut milk and virgin cold pressed coconut oil
- Tomatoes
- Whey
- Blackcurrants and their juice
- Tea
- Walnuts
- Pomegranates
- Flavonoid rich foods, such as citrus fruits and their white pith, and buckwheat
- Lignan rich foods, such as whole ground flaxseeds
- Highly colored fruits and vegetables, which are high in antioxidants; these are much more powerful if they are fresh and in season and have been ripened naturally

Medicinal Mushrooms

A number of medicinal mushrooms are now sold as extracts, tablets or powdered remedies, and if you use these be guided by the label dosages because they come in varying concentrations. I prefer to use these mushrooms as foods. I focus on shitake and reishi mushrooms because they are well researched. They are sometimes available fresh, but you will find dried products in supermarkets, health food stores and Asian shops.

Immune strengthening effects of mushrooms

In Japan, shitake is classed as a general tonic and used medicinally for all diseases involving low immune function. Shitake boosts immune cell function and has anti-viral activity. The reishi mushroom is a longevity remedy and has a wide ranging and beneficial immune activity.^{50,51} Other medicinal mushrooms include maitake and cordyceps, but in many countries these are usually available only in supplement combinations.

How to use dried medicinal mushrooms

These dried medicinal mushrooms are leathery, so you need to soak them in tepid water for about 20 minutes; then slice them finely with kitchen scissors to add to rice, casseroles, stews, soups and stir fries. Aim to use one serving weekly and two to three servings a week if you feel run down.

Anti-viral mushroom soup recipe

- 8 whole dried shitake or reishi mushrooms
- 6 cups water
- 1 cup whole rice
- 2 carrots, sliced into pieces
- 1 brown onion diced
- 2 cloves garlic optional, finely diced
- 1 tablespoon cold pressed olive oil
- 3 teaspoons miso
- 1 tablespoon finely chopped fresh cilantro (coriander) and/or parsley

Soak the mushrooms in one cup water. Bring the rice to the boil in 5 cups water, and simmer for 20 minutes (less cooking time if you use other types of rice). Cut each mushroom into three or more slices, and add to the rice, together with the soaking water; simmer for further 20 minutes. Brown onions and garlic in olive oil and add with the carrot to the soup, and simmer for a further 10 minutes. Turn off the heat, and stir in the miso and cilantro. If you like ginger, add in about 2 to 3 teaspoons fresh grated root. Serve with finely cut fresh parsley and/or chives. Serves 3.

Sea Vegetables (Seaweeds)

Seaweeds are definitely an acquired taste so use very small quantities to begin with. Also mix seaweeds with other foods and flavors. Seaweeds are sold dried in packets and soften and swell once they are moistened.

Immune strengthening effects of seaweeds

Research is mainly on particular compounds in seaweed, such as fucoidans, that are active experimentally against viruses.

How to use seaweeds

I suggest about two servings a week of seaweeds.

Below are a few easy ways of using the types of seaweeds that you can buy in supermarkets, health food stores and Asian shops:

Arame and Wakame. These are good for beginners! They are relatively mild tasting and usually sold in tiny dried strips. Start with about 2 to 3 teaspoons or even less per person. You can break the seaweed into small pieces with your fingers and add to soups or casseroles towards the end of the cooking time. Another option is to break the seaweed into small pieces, moisten with a salad dressing and add to a mixed salad.

Nori. This is sold in the form of paper-like sheets and is best known for its use in sushi dishes. You can also cut it into small pieces with kitchen scissors and add to rice or any moist food. Asian stores sell special bamboo rollers to make sushi, which is then cut into bite sized pieces ready to eat.

Nori strips with salmon and rice recipe

1 fillet Atlantic salmon (other fish could be used, but try to avoid farmed or imported fish)

Juice of one lemon or lime

1 tablespoon soy sauce

4 sheets nori cut into segments about 5cm (2 inches) x 20cm (8 inches)

1 cup hot or cold cooked rice

1 large handful fresh herbs

Sea salt and black pepper to taste

Brush bottom of small baking dish with olive oil. Place the salmon in the baking dish, sprinkle with the lemon juice and soy sauce. Cover the salmon with fresh herbs, then cover with foil or a lid. Bake for 30 minutes at 180 degrees Celsius (356 degrees Fahrenheit). Carefully remove bones, if any, and flake the fish with a fork into a small serving bowl. Each person makes their own sushi by placing about 2-3 teaspoons of the mix at one end of a nori strip and rolling it up with the fingers.

Serves two as an entrée

Lemon

Lemon and other citrus fruits (grapefruit, limes, oranges, and mandarins) contain at least 15 different anti-viral compounds and should be consumed daily by those serious about fighting a chronic viral infection. Freshly squeezed citrus juice is the best source of anti-viral substances and vitamin C. I drink lemon juice every day to strengthen my immune system.

Fresh lemon juice as a liver cleanser

Juice of one to two lemons in warm or cold water first thing each day – you may sweeten it with a little honey or stevia. Use three parts water to one part lemon juice. You may also use two teaspoons of lemon juice per person in a salad or over steamed vegetables.

Raw vegetables and lemon juice as a liver cleansing snack

Slice finely or grate:

1 carrot

1 stick of celery

1 red capsicum

¼ beet

1 zucchini

1 red radish

1 apple

½ red onion

Other suitable vegetables to grate are fennel root or kohlrabi.

Sliced fresh mushrooms are nice in this salad too.

Mix the vegetables with 4 teaspoons lemon juice mixed with cold pressed olive or coconut oil – this keeps the veggies fresh. Keep in fridge and use as a snack throughout the day.

Other ways of getting anti-viral properties from citrus:

- Add grated lemon peel to salads, soups and casseroles, and to baked goods such as cakes and muffins.
- Eat or juice four different citrus fruits (lemon, orange, lime, mandarin or grapefruit) daily. Their vitamin C and bioflavonoid content will neutralize the free radicals that would otherwise damage your liver. If you pass the fruit through a juice extracting machine please leave a lot of the white pith attached; this not only makes the healing properties stronger it gives the juice a nice creamy taste and texture.

The Cabbage Family

Vegetables in this family have anti-viral effects that are probably attributable to their high content of the infection fighting mineral sulfur. These foods are also excellent for the liver and if your liver is healthy, then your immune system is far less likely to become overwhelmed.

The cabbage family of foods includes broccoli, Brussels sprouts, cabbage, cauliflower, collards, kale, kohlrabi, mustard greens, radishes, turnips, swedes, rocket and watercress. I grow collards, kale and mustard greens and use the young leaves in salads, and use the mature leaves chopped finely in casseroles and stir fries. I suggest having one vegetable from this plant family every day to keep your immune system finely tuned.

Tips for making the cabbage family of foods more tasty

- Broccoli, Brussels sprouts and cauliflower need cooking; otherwise, they may cause intestinal cramps and bloating. If you add about one teaspoon (for four people) of caraway or cardamom powder during cooking this will improve the flavor and help digestion.
- During cooking, add a bunch of fresh herbs that are tied together – this is called a “bouquet garni” and I generally

Use whatever is growing vigorously, such as oregano, thyme, sage and rosemary. These fresh herbs have excellent anti-viral properties to augment the infection fighting ability of the cabbage family vegetables. The herbal flavor penetrates the vegetables. When cooking is done, remove the herbs. If you don't have fresh herbs, use one teaspoon of dried mixed herbs or a vegetable stock cube.

- After cooking and straining the vegetables, add about one teaspoon of virgin cold pressed coconut oil or olive oil per person together with a teaspoon of soy sauce or tamari. Shake the saucepan so that the additives are mixed through.
- Cabbage is more digestible in a salad if it is finely sliced or grated; sprinkle with a little apple cider vinegar and let stand for an hour before eating. Add in at least a handful of finely chopped fresh herbs, such as mint, basil, chives and parsley.
- Kohlrabi adds 'body' to a green salad.
- Swedes are quite pleasant peeled, sliced finely or grated, sprinkled with lemon and cold pressed oil (coconut or olive oil) and used as a snack.
- Radish and rocket add zest to salads and strengthen the liver.

Baked cabbage recipe

2 cups bite sized cabbage segments

2 teaspoons cold pressed virgin olive oil

1 onion, very finely chopped (or scallions)

1 cup chopped tomato (or grated carrot)

2 tablespoons chives or basil, finely chopped (or 1 teaspoon dried mixed herbs)

1 cup coconut cream (or soy or cow's milk)

2 eggs

2-4 tablespoons grated cheese

1 dessertspoon soy sauce

Grease a small baking dish with the olive oil. Combine all the ingredients (except the milk, eggs and cheese) and place in the baking dish. Lightly beat the eggs into the milk and pour this over the vegetables. Sprinkle the cheese on top. Bake at 180 degrees Celsius (356 degrees Fahrenheit) for about 30 minutes. Serves 2.

The Carrot Family

Carrots contain 16 different anti-viral compounds and it is probable that other vegetables in the same family (Asteraceae) have at least some anti-viral activity, including celery, fennel root, celeriac and parsnips. Grated carrots combine well in a cold salad with grated celeriac root and Italian parsley. Fennel root is a great snack food, and the tougher outer portion may be kept for use in soups and casseroles (with the stringy bits removed). One of the old time favorites is carrot and parsnips mashed together with a little tasty cheese or butter, and to get more anti-viral action you can sometimes use coconut cream instead of cheese and butter.

The Onion Family

Chives, leeks, shallots and garlic are in this family. Onions are the best food source of the flavonoid quercetin, which has scientific support as an anti-inflammatory and anti-viral compound. If you want to cleanse your liver and bloodstream use onions, garlic, leeks or chives on a daily basis. I prefer cooked onions because they are easier to digest; however, red onions (also known as Spanish onions) are delicious finely chopped in salads. Raw onions are superior therapeutically, but sometimes you have to weigh the advantages and disadvantages of eating them raw.

Coconut

Coconut oil contains fats known as medium chain triglycerides that are used for energy rather than being stored as body fat. Generally, I recommend an intake of about two to three tablespoons of coconut oil per week, though it is fine to have more and it is healthy to use for cooking (stir fries or baking vegetables). If you really like coconut, a few servings each week or a treat containing coconut milk or cream can also be included.

Immune benefits of coconut

About 50 per cent of coconut oil is lauric acid, which the body converts into monolaurin. Laboratory studies show that monolaurin reduces the activity of some bacteria and viruses. Coconut also contains fatty acids beneficial for immune function. Coconut is free of cholesterol and is a healthy, energy boosting fat that will not increase cardiovascular disease.

For more information on the health benefits of coconut, visit:
www.coconutresearchcenter.org

www.kokonutpacific.com.au

How to use coconut

The therapeutic components in coconut oil are degraded if the oil is heated to the extent that it turns brown. Make sure you choose virgin unrefined cold pressed coconut oil.

NOTE: Lite coconut milk and processed coconut oils are not likely to provide much immune benefit, so choose the full fat varieties of coconut cream and milk and cold pressed organic virgin coconut oil. You can always dilute the full fat coconut cream and milk with water if you prefer it thinner.

Coconut rice dessert

Near the end of the rice cooking time, stir in two teaspoons per person of cold pressed virgin coconut oil. This is tastier with jasmine or basmati rice. Another option is to cook the rice in coconut milk or coconut cream. When cooked, add fresh sliced bananas, berries or mango – yum!

Coconut and vegetables

Some Pacific islanders pour concentrated coconut cream over vegetables. Creaming fresh coconut milk is laborious, so I buy it canned and simmer it gently to get the required thickness. Another option is to add a little coconut oil to the vegetables at the end of the cooking time and the oil will drizzle through.

Coconut and blackcurrant rock cakes recipe

- 1 cup blackcurrants
- 1 cup concentrated apple or pear juice
- 1 cup desiccated coconut
- ½ cup crushed pumpkin seeds
- 1 tablespoon tahini (crushed sesame seeds) or cashew spread
- 2 tablespoons of cold pressed virgin coconut oil
- 1 cup wholemeal or gluten free flour
- ½ cup rye or oat flakes or rice flakes

Preheat the oven to 170 degrees Celsius (338 degrees Fahrenheit), and grease a large biscuit tray using coconut oil. Gently simmer the currants in the juice for 10 minutes—use a medium size saucepan. Mix in the coconut. Then add in the tahini and coconut oil, followed by the other ingredients. Mix thoroughly. Use a soup spoon to place the mix on the biscuit tray. Turn the oven down to 150 degrees Celsius (302 degrees Fahrenheit) and cook for 20 minutes. When warm these cakes are very soft and need to be handled carefully, but after storing in the fridge they become very chewy.

More fun ways of using coconuts

I sometimes buy a whole coconut (with the outer husk removed), break it into pieces with a hammer, store in the fridge and use pieces of the white “meat” as chewy snacks. Coconut cream (found in a can) is great for making smoothies with fresh fruit, water and ice and whey protein powder: mix in a blender and drink. Yum!

Whey, Glutamine and Colostrum

Whey is basically the by-product of cheese making and is very high in amino acids. Scientists have listed 26 biologically active compounds derived from whey that may help keep the immune system in a well maintained state.

Lactoferrin is a whey compound that enhances the body’s ability to fight viral infections. Animal experiments show that lactoferrin prevents infections and increases natural killer cell activity in the spleen.

I am also a big fan of glutamine and colostrum powder, as it promotes intestinal health and can heal a damaged and inflamed gut. A good brand I have seen of glutamine and colostrum powder is called Nutrasomma and it is made by a leading research company in Phoenix Arizona.

A huge part of your immune system exists in your gut so it is critical to support your intestinal health.

How to use whey

There are two basic types of whey products:

- **Sweet whey powder** – contains milk proteins, lactose, calcium and other nutrients. It is not suitable for people with lactose

intolerance or dairy allergies. It is pleasant tasting and may be used in baked goods or added to smoothies and cereals.

- **Whey protein** – there are many types of whey protein products on the market. Some contain a little lactose, others have various additives, a few are pure protein but without casein (a common allergen), and a few are branched chain amino acids only. You need to study the labels. Whey protein is not suitable for cooking and most product labels provide dosage and the preferred method of taking. Pure whey protein is not very palatable and I prefer to mix it into a soft food like yogurt or a cooked apple. To avoid upsetting the digestive system, start with less than the label dose and take about three weeks to build up to the full dose.

Yogurt

Probiotics are friendly bacteria found in yogurt that keep unhealthy germs in your intestines at a low level, which is very desirable! The same result can be achieved by taking probiotic capsules such as Floratone. A huge component of your immune system is found in your intestines, so it's vital to keep the population of friendly bacteria as high as possible. Yogurt may have a preventive effect against infections.^{52,53}

The yogurt you choose must contain live cultures of friendly bacteria such as lactobacillus and acidophilus; so check labels and buy those with the highest cultures. Don't buy flavored yogurts containing sugar; it's much healthier to add fresh fruit to plain acidophilus yogurt. Consuming too much sugar can lead to a fatty liver. Don't purchase low fat yogurts as they have been processed and have a reduced content of fat soluble vitamins.

Blackcurrant

Pure blackcurrant juice (especially freshly juiced or blended in a smoothie) is a rich source of vitamin C. Blackcurrant is known to contain 16 different anti-viral compounds. Blackcurrant juice is readily available and is healthier if it does not contain added sugar; have up to one glass per day. You can add dried blackcurrants to biscuits and cakes or mix with raw nuts and seeds to use as snacks. Also, you can soak two tablespoons overnight in ½ cup of water and add to porridge or any breakfast cereal.

Tea

Common black tea contains 18 anti-viral compounds. Experimentally one of these compounds (theaflavin) can neutralize some types of viruses. Green tea also has anti-viral activity and I suggest two to three cups daily. You can flavor teas with a slice of lemon and a teaspoon of honey or 1/6 th of a teaspoon of stevia.

Walnuts and Other Nuts

All nuts are rich in flavonoids and these compounds are known to have anti-viral actions. Any anti-virus diet should include nuts. Walnuts have a surprisingly high concentration of anti-viral compounds and are high in omega 3 fats, which reduce inflammation. Add walnuts and other raw nuts to your breakfast cereal, toss them into a green salad or a fruit salad, use them as snacks or add them to stir fries. Nuts, especially walnuts, can go rancid quite quickly so you need to store them in airtight containers, preferably in the fridge.

Pomegranate

In Asia and parts of Europe, pomegranate fruit and seeds have been used for decades to treat infection. A number of laboratory studies confirm that the seed has anti-viral activities. Not everyone likes the taste, but it is nice added to a fruit juice or fruit salad.

Flavonoid Rich Foods

Flavonoids are a class of water soluble pigments that are found in many plants. Several thousand different flavonoids have so far been identified. While not labelled as essential nutrients, many of these compounds serve as antioxidants and are anti-inflammatory and immune balancing.

Flavonoids are found in fruits, vegetables, legumes, nuts, seeds, buckwheat and herbs. A number of flavonoids have been tested and show inhibitory effects against multiple viruses, with some tests showing that multiple flavonoids have more anti-viral potential than a single compound – once again indicating that a varied diet rich in plant foods is a good anti-viral diet.

Soy

Soy is known to contain 16 different anti-viral compounds. A healthy way of getting soy is to have it in fermented form, such as tofu or tempeh.

Anti-viral spicy tofu cubes recipe

- 8 ounces (250 grams) firm tofu
- 1 tablespoon virgin olive oil
- 1 tablespoon lemon juice or apple cider vinegar
- 1 teaspoon ginger powder or fresh ginger grated
- 1 teaspoon turmeric, or use 4 teaspoons curry powder
- ½ teaspoon dried coriander
- ½ teaspoon dried mixed herbs
- 1 clove garlic, finely chopped, optional

Cut the block of tofu into cubes (about 2.5 cm or 1 inch) and add the tofu to a baking dish. Sprinkle over the herbs, oil and lemon juice. Shake the dish so that the herbs are spread evenly. Bake in the oven for 10 minutes at 180 degrees Celsius (356 degrees Fahrenheit). Turn over the cubes with a spoon, giving the dish another shake. Return to the oven for another 10 minutes.

This form of “roasting” makes the tofu flavorsome and improves the texture. You can use the tofu in stir-fries, or add it cold (after it has been cooked) to salads. For snacks, wrap tofu in pieces of lettuce or nori seaweed, but cook the tofu first. The herbs can vary according to your taste and what you have in your pantry.

Tofu berry mouse recipe

- 10 ounces (300 grams) silken (soft) tofu
- 2 cups fresh or frozen berries
- 3 tablespoons coconut cream
- 2 teaspoons cold pressed virgin coconut oil
- 2 tablespoons concentrated pear or apple juice
- 2 tablespoons ground almonds

Blend ingredients together until smooth. Pour into four glass bowls. Chill before serving. Optional: Before serving sprinkle with chopped walnuts or some whole berries. *Serves 4.*

Soy cookies recipe

- 1 cup soy flour
- 1 cup self-raising whole meal flour or gluten free flour
- ½ cup blackcurrants
- ¾ cup soy milk
- 1 tablespoon honey
- 2 egg whites, very stiffly beaten

Preheat the oven to 180 degrees Celsius (356 degrees Fahrenheit). Sift the flours together; then add the blackcurrants. Mix the honey into the soy milk and stir thoroughly into the dry ingredients. Fold in the egg whites. Drop dessertspoons of the mixture onto a lightly floured non-stick tray. Bake for 25 minutes or until lightly browned. Makes about 15 cookies.

Buckwheat

Buckwheat is a good source of anti-viral flavonoids and is a seed so it is a good alternative to grains. Buckwheat is gluten free and is safe for those who are celiac or gluten intolerant.

Cold buckwheat salad recipe

- ½ cup red onion, finely chopped
- 1 cup buckwheat kernels
- 2 cups water
- 1 avocado, sliced
- 1 tomato, finely chopped
- 1 cup fresh mushrooms, finely chopped
- ½ cup coconut or dairy yogurt
- ½ cup pumpkin seeds (pepitas) or hemp seeds
- ½ cup freshly mixed herbs, finely chopped (parsley, chives, basil, rocket)
- 1 tablespoon soy or tamari sauce or salad dressing
- Sea salt and pepper to taste

Bring the water to boil in a saucepan to cook buckwheat until it is tender but still a little chewy. When the buckwheat has cooled,

gently combine all the other ingredients, except the lettuce and avocado. Place cooked mixture in a serving bowl. Wash and drain the lettuce leaves and slice avocado. Place the lettuce leaves on a separate plate. People serve themselves by putting about a tablespoon of the buckwheat salad and a slice of avocado onto a lettuce leaf and rolling it up to eat with their hands. Serves 4-6.

Vegetarian protein loaf recipe

2 cups water

1 finely chopped onion

2 cups buckwheat kernels

1 cup soy flakes

2 vegetable stock cubes, for flavoring

1 cup linseed (flaxseed) meal

1 cup chopped zucchini or celery

1 cup chopped snow peas or green beans

1 cup grated raw carrot

1 cup finely chopped green herbs (chives, parsley, fennel, etc.)

1 teaspoon each of chilli, ginger and turmeric powder

4 eggs, lightly beaten

3 tablespoons sesame or caraway seeds

Place the onion and water into a large saucepan and bring to the boil and simmer a few minutes. Add the soy flakes, buckwheat, zucchini, snow peas and stock cubes, stir and let simmer for a few minutes. Turn off the heat and mix in all the other ingredients except the sesame seeds. Pour the mix into a greased baking dish with a capacity of at least 2 liters (64 ounces). Form the top into a loaf-like shape, sprinkle the seeds on top. Bake for about 40 minutes at 180 degrees Celsius (356 degrees Fahrenheit). Serve with a sauce of hummus or cooked tomatoes, garlic and chives. The same or similar ingredients can be made into burgers, cooked in oven (not fried). Can be frozen and reheated, or used cold broken up into a salad. Makes about 8 servings.

Lignan Rich Foods

Lignans are basically foods rich in fiber – the highest sources are whole ground linseeds (flaxseed), pumpkin seeds and berries. All whole grains contain lignans, but refined grains do not. Studies indicate that lignans can exert worthwhile anti-viral effects.

Lignan rich biscuits recipe – gluten free recipe

- 5 tablespoons unrefined honey
- 5 tablespoons tahini
- 1 cup whole ground linseeds
- 1 cup dried blackcurrants
- ¼ cup lemon peel
- ½ cup buckwheat seeds
- ½ cup desiccated coconut
- ½ cup pumpkin seeds
- ½ cup whey powder or substitute millet meal or oat flakes*
- ½ cup soy flour

Melt the honey and tahini together in a large saucepan (don't boil). Turn off the heat and stir in the rest of the ingredients, mixing thoroughly. Tip mixture into a well-greased biscuit tray or baking dish. Flatten with your hands—as the mixture is hard to flatten, run your hands under the cold water tap as you are pressing the mix into the dish ... this also moistens the biscuits. Bake at 150 degrees Celsius (302 degrees Fahrenheit) for about 20 minutes. When still slightly warm, cut into small squares. Store in fridge. If you find the biscuits too dry, use less of the dry ingredients.

Makes about 30 “chewy” biscuits. *Contains lactose and is not the same as whey protein, the latter not being suitable for cooking in this way.

Immune boosting porridge recipe

- ½ cup cooked oats or rice
- ½ cup whole ground linseeds (flaxseeds)
- 1 cup water
- 1 peeled and grated (or finely diced) apple

1 handful of raisins or chopped figs

2 teaspoons poppy or caraway seeds

Place all the ingredients in a pot, bring to the boil. Simmer for a few minutes. Turn off the heat and let it stand with the lid on for 5-10 minutes. Serve with plain acidophilus yogurt and a light sprinkle of sesame seeds. Serves 2.

To get more lignans, add raw seeds to porridges, biscuits, muffins and rissoles; use whole grains.

Immune boosting crunchy nut muesli bars

3 ounces (85mls) oil – olive, flaxseed or coconut

½ cup raw honey

½ cup almond butter or tahini

1 ½ cups puffed brown rice

1 cup rolled oats or flaked millet or quinoa

1 cup crushed mixed nuts

1 tbsp dried fruits (sultanas, apricots or chopped dates etc)

Preheat oven to 170 degrees Celsius (338 degree Fahrenheit).
Line slice tray with baking paper

Heat oil, honey, nut butter over medium heat to melt and mix together. Mix oats, rice, nuts and dried fruits in a bowl and combine. Pour over honey and oil mixture and mix all ingredients together well.

Pour mixture into slice tray and press down firmly.

Bake for 30 minutes. Allow to cool. Place in fridge for 60 minutes

Cut into bars and store in an airtight container *Makes 12 bars*

Variations – add ¼ cup crushed unsweetened carob buds and drizzle over bars while they are cooling

Raw Muesli recipe

2 teaspoons cacao (cocoa) nibs

1 teaspoon rosehip granules (optional as can be hard to find)

1 tablespoon dried goji berries

- 4 dried prunes
- 2 teaspoons bee pollen
- 1 tsp buckwheat
- 2 teaspoons pepitas
- 2 teaspoons hemp seeds
- 2 teaspoons sesame seeds
- 2 teaspoons sunflower seeds
- One handful of nuts – such as almonds, walnuts, Brazil, hazelnuts, cashews etc
- 4 tablespoons rolled oats
- One tablespoon shredded coconut
- One teaspoon nutmeg or cinnamon
- One tablespoon flaxseeds, ground
- One tablespoon chia seeds
- ¼ teaspoon sea salt
- 10 ounces (300mls) apple juice

Grind seeds and nuts in a coffee grinder or food processor. Mix all ingredients together and soak overnight in the apple juice. No need to cook as we want it raw.

To serve add fresh fruits and plain yogurt.

This muesli is excellent for the bowels and will prevent constipation. This muesli is very high in antioxidants and because of the grinding and soaking used in the method, its high powered nutrients are well absorbed.

Carotenoids – Immune Modulators

There are various types of carotenoids (pigments) and they are found primarily in green leafy vegetables, especially collard, kale and spinach. They are also high in yellow and orange fruit and vegetables, including carrots and sweet potatoes and red foods such as tomatoes, red capsicum and guava. Generally, any green or brightly colored edible foods are rich in immune-strengthening carotenoids. For instance, tomatoes contain 19 different anti-viral compounds. Apart from the fact that large amounts of raw foods may be hard to digest for some people, there is evidence

that important carotenoids are absorbed into your cells more effectively if they are cooked, so try to get more cooked tomato and carrot into your recipes.

Quick immune-strengthening soup recipe

- 1-2 peeled and chopped onions (depending on size)
- 5 cups peeled and chopped pumpkin*
- 5 cups (approx.) water
- 1 teaspoon mixed dried herbs or 2 tablespoons fresh herbs
- 1 vegetable stock cube
- 200 g (7 ounces) plain acidophilus yogurt

Simmer the onion in water for about 5 minutes while you are chopping the pumpkin. Add the pumpkin, and sufficient water to cover the pumpkin and simmer for 10 minutes. Add the herbs and stock cube, stirring them through. Allow to cool. Put about half the vegetables in a blender, add about 100 g (3.5 ounces) of yogurt, blending until smooth; then repeat this process with the rest of the vegetables. Reheat and serve with a dab of yogurt and chopped chives or parsley. For lunch serve with pumpernickel bread spread with hummus.

Serves 4-6.

*The same recipe may be used for carrots, broccoli, spinach, mushroom or tomatoes; if you mix the vegetables, the color is not appealing.

Antioxidant Foods

Many of the best anti-viral foods are fruit and vegetables.⁴⁹

They contain anti-viral compounds because the plants themselves need protection from viral diseases.

To increase your fruit and vegetable intake:

- Always have a piece of fresh fruit with breakfast.
- Aim to have a salad or vegetable soup with lunch and cooked vegetables plus a salad with dinner.
- Prepare veggie snacks for the week and keep them in the fridge in an airtight container; you can snack on a few while you are driving to work or during the day.

- In summer, keep fruit refrigerated to use for snacks.
- Use fruit as an entrée; e.g. slices of rockmelon, pineapple or orange and mandarin segments in a green salad.
- Serve lettuce leaves whole at the table and let the family put hot or cold food in them. Mignonette lettuce leaves are the right size, but imperial or other types of lettuce can be broken into suitable sizes for this purpose.

Raw juices are essential for people with small appetites or for those who don't like eating raw vegetables and fruits. Raw juices can provide a concentrated boost of anti-viral compounds. Raw juices are also vital for people who don't eat a wide variety of raw fruit and vegetables. If you have liver inflammation you may lose your appetite and feel bloated. Raw fruit and vegetable juices will fill the gap and are usually well tolerated; if they are too strong, simply dilute them with water or pass extra carrots, oranges, celery or apples through the juicer.

Virus Fighting juice recipe

Juicing a combination of carrot, orange, lemon, apple, celery and tomato, plus a knob of garlic, makes a wonderful anti-viral drink. The garlic is optional or can be replaced with a small amount of red onion or red radish.

2 oranges

1 lemon

1 lime

1 red apple

Pass all through the juicer, then add the juice to the blender, add ½ cup fresh or frozen blackcurrants, and blend.

Anti-viral stir fry vegetables with pineapple recipe

1 onion, finely sliced

2 stalks celery, diced

1 carrot, diced

1 green capsicum, diced

1 cup chopped spinach leaves

1 handful chopped Italian parsley leaves (or other green herbs)

- 2 slices pineapple, diced
- 2 tablespoons cold pressed virgin coconut oil
- 1 tablespoon honey
- 1 tablespoon soy sauce
- 1 tablespoon lemon juice
- 1 tablespoon tomato paste or 1 diced fresh tomato

You can add other vegetables, tofu or seafood.

Heat the oil and gently cook the onion while you chop the celery and carrot. Add a few tablespoons of water (or leftover tea), then add the celery and carrot. Chop and add the capsicum. When cooking mixed vegetables, I always start with the ones that need the most cooking. Then add the spinach and parsley. Lastly add the pineapple, honey, soy sauce, lemon juice and tomato; simmer for a few minutes. Serve with cooked rice or barley. Serves 4.

Anti-viral salad

A selection of raw, grated vegetables, such as carrot, red radish, celeriac, fennel root, kohlrabi, beetroot and cucumber make a good anti-viral salad.

Also beneficial are:

- Mixed sprouts, such as alfalfa and mung beans
- Salad greens, especially rocket
- Finely chopped mushrooms
- Mixed fresh herbs (such as parsley, chives, cilantro (coriander), sweet basil, mint)
- Tomato
- Grated cheese of choice (feta is nice) or avocado
- Pumpkin seeds

Other extras:

- Olives
- Walnuts or cashews
- Cooked, cold wild rice, chickpeas or beans
- Finely chopped cabbage (*This is better prepared at least 30 minutes in advance of the meal and sprinkled with a little lemon*)

juice or vinegar to help with digestion).

Cooked, cold cauliflower or broccoli ... these are too hard to digest raw

Cooked, cold beans – even uncooked green beans are hard to digest

Hard-boiled eggs

Flakes of cold fish

Roasted savory tofu cubes

Avocado

Wedges of peeled citrus fruits, such as oranges, mandarins or limes

The current trend of serving large green lettuce leaves as a salad is a real turn off. Try making a chewy, filling salad rather than just having green leaves and an oily dressing. I make a salad dressing using a little tamari plus vinegar or lemon, with cold pressed olive or coconut oil, but you may enjoy something else.

Anti-viral salad dressing recipe

1 tablespoon cold pressed olive oil or coconut oil

2 tablespoons lemon juice or herbal or plain vinegar

1 tablespoon soy sauce or tamari

1 teaspoon mustard powder

1 tablespoon finely chopped fresh basil, chives, thyme, oregano

Optional extras:

1 tablespoon tomato juice, 2 cloves crushed garlic, pinch of chilli powder.

Mix the dry ingredients to a paste with the lemon juice in a glass jar. Add the oil and herbs. Put the lid on and shake until the ingredients are thoroughly mixed. Store in fridge. Serves 4.

NOTE: The combination of plants in oils standing at room temperature can lead to a build up of botulinum toxin, so use these immediately or store in the fridge.

Beans

Both kidney beans and soybeans have tested positively for anti-viral compounds. It is likely that all legumes have some benefit to the immune system because they contain lignans and isoflavones that are known to have anti-viral properties. All dried legumes (beans, chickpeas, lentils etc.) must be soaked and thoroughly cooked; otherwise they are not absorbed and can upset the digestive process. You can also buy them pre-cooked in cans. To ensure that beans will be well digested, I add herbs to them during cooking, including tarragon, caraway, cumin and a little chilli. Remember, culinary herbs are cancer preventing and anti-viral. Chickpeas are my preferred legume. I use a pressure cooker, cook them in bulk and freeze for later use. Chickpeas are tastier if, after cooking, you dry roast them in the oven with herbs and vinegar. They may be used as a snack, mixed into cooked rice or into a cold salad.

Hummus recipe

- 1 cup well cooked or canned chickpeas
- 1 finely chopped onion (I prefer it lightly cooked with the tomato)
- 1 tomato
- 2 tablespoons lemon juice
- 1 teaspoon each of cumin and caraway (powdered or ground) or other herbs
- 1 clove garlic (optional)

Blend and use as a spread, sauce or dip.

Vinegar

Although there is no published scientific evidence that vinegar is anti-viral in humans, it is at least indirectly helpful, because it improves digestion and absorption; therefore, your immune cells are better nourished.

Good ideas for using vinegar include –

- 1-2 teaspoons vinegar per person in a salad dressing
- 1 teaspoon per person over rice, cooked vegetables or any savory food.

1 tablespoon rubbed over chicken or meat before cooking

Immune strengthening herbal vinegar recipe

1 bottle of apple cider vinegar, about 16 ounces (500ml), plus one spare empty bottle with lid

3-4 teaspoons of powdered or crushed herbs, such as ginger, turmeric, mustard, thyme, caraway, coriander and/or cumin

1-2 bags of herbal tea, such as chamomile, peppermint or lemon balm

1 handful of fresh herbs, such as sage, basil, fennel, rosemary, oregano and/or lemon balm (large leaves should be cut into smaller pieces)

You can use various culinary herbs and spices, plus add in chilli and garlic if you wish. You can use fewer herbs and substitute all dried herbs if you don't have any fresh. However, if you are using all dried herbs, use a maximum of about 12 teaspoons. The vinegar acts as a preservative and draws the healing components out of the herbs; it should keep for at least six months. Once the fluid is used, the herbs are "exhausted" and you need to make a new bottle.

Ten percent vinegar in water is useful as a wash for removing micro-organisms from fruits and vegetables. A vinegar solution will not get rid of all the dangers but in this self-serve age, many hands have touched much of our fresh food. A vinegar wash before use may prevent infections. Undiluted apple cider vinegar may be used for cleaning kitchen cutting boards and benches. The smell disappears overnight.

If you buy chicken, give it a thorough wash inside and out with undiluted apple cider vinegar, which will barely affect the taste and acts as a tenderizer. Make sure to either wear disposable plastic gloves or wash your hands in hot and soapy water straight afterwards.

I use organic chickens and stuff the inside with fresh rosemary and other culinary herbs. I cook the chicken in an oven bag with a tablespoon of herbal vinegar and one to two cups of red wine (the alcohol is evaporated in the cooking process and the wine provides antioxidant and anti-viral flavonoids). In addition I add in ½ cup buckwheat kernels (to thicken the wine and provide more

flavonoids), plus some garlic, chopped onion and a little tamari. Always cook chicken really well, so that the meat falls away from the bone.

Vinegar side effects and cautions

People with acid reflux (heartburn) may not tolerate vinegar well, although most can handle a little on food. I do not recommend you have vinegar in water on an empty stomach because you don't need acid in an empty stomach. It's very good to sip small amounts of the water-diluted vinegar during meals. Vinegar may be therapeutic, but do not have more than three teaspoons per meal and do not give vinegar to infants.

NOTE: Apple cider vinegar is the most healthful of all the different types of vinegar and can greatly improve the digestion and absorption of nutrients. You can use other types, such as rice and balsamic vinegars but there is no specific information about their antimicrobial properties.

I have emphasized the importance of plant foods, but that does not mean you should avoid protein. Protein deficiency impairs your immune cells and the protection you get in your blood and lymph circulation. Adults need at least 45 grams (1.5 ounces) of good quality protein daily.

Good sources of protein include –

- Lean lamb, organic eggs and poultry, organic beef, local fresh seafood or canned oily fish, plain acidophilus yogurt and whey, and good quality cheese, but avoid processed sliced or cream cheeses.
- Legumes (chickpeas, lentils or beans), nuts and seeds.

Dietary Fats and the Immune System

Unhealthy fats include margarine and hydrogenated processed vegetable oils and deep fried foods. These contain trans fats, which reduce the ability of immune cells to kill viruses.

Conversely, healthy fats (such as cold pressed olive and coconut oils, fish oil, raw nuts and seeds) strengthen immune function and reduce damage to liver cells.

Diet and Lifestyle

You may read about the benefits of moderate alcohol intake, but everyone's idea of moderate is somewhat different. In my opinion, it's one drink for women and two drinks for men per day. Anything above this increases susceptibility to viruses and reduces immune cell function.

Changing your diet and lifestyle can be stressful, but at the very least you should try to add one healthy food everyday or one healthy recipe every week, drink (make or buy) raw juice several times a week, and drink the juice of two lemons every day. If you do this without delay, that's an excellent start to your program to put nasty viruses in their place. It's also a plan to strengthen your immune system, which is vital if you want to reduce the viral load and reduce your risk of cancer.

Medicinal Herbs with Anti-viral Effects

These medicinal herb recommendations are based on

- Traditional or historical use
- The clinical experience of professional herbalists
- Laboratory tests and clinical trials

All plants contain literally hundreds of compounds; consequently, medicinal herbs have a number of uses.⁵⁴ Most herbs with anti-viral properties also have an antibacterial and antifungal action, which means they act as natural antibiotics. Your body or the hepatitis viruses do not become resistant to their antibiotic effects. Thus unlike antibiotic drugs or anti-viral drugs, they remain effective for as long as you use them.

Liquid Herbs

Medicinal herbal extracts are made according to specific pharmacopoeial directions, such as fine powdering, soaking in a particular alcohol and pressing with specialised equipment. Extracts are concentrated. If you have access to an olive tree, for example, you could simply break up olive leaves and make them into a tea (infusion), but this may not represent a medicinal dose because you don't know if the therapeutic compounds have been effectively extracted simply by immersing in water. The alcohol in herbal extracts is used to draw out the therapeutic components and it also acts as a preservative.

If you have liver problems or do not wish to have alcohol for any reason, you can remove the alcohol from herbal extracts as follows:

Put 100 ml (20 teaspoons or 3.3 ounces) of liquid herbs together with 5 teaspoons of distilled water in a small saucepan. Gently simmer for a few minutes with the lid off. You will see the alcohol evaporate. Turn off the heat, let the remedy cool, return it to the bottle and store it in the fridge.

NOTE: I do not recommend herbal tinctures because they contain one part herb to five parts alcohol/water; therefore their herbal content is too low to treat viruses.

Other Forms of Medicinal Herbs

Some herbs are available as teas but they are generally unpalatable and relatively weak because soaking in hot water does not effectively draw out all the therapeutic components. Decoctions are often used for hard plant materials, such as leathery leaves and bark, and this involves boiling in water and then straining.

To make herbal teas and decoctions more palatable –

Add one teaspoon of honey or $\frac{1}{6}$ teaspoon stevia per cup

Combine with another tea that you like, such as ginger or peppermint

Add slices of lemon or lime or a little of their juice

Allow the tea to cool and mix it 50/50 with a fruit juice

Make into an iced tea in a long glass with crushed ice, slices of fruit, some fruit juice and peppermint leaves.

The majority of herbs mentioned in this chapter are also available as tablets or capsules and, depending on the manufacturing process, can be very concentrated.

Using Medicinal Herbs

Herbs can be used singly or in formulas, with formulas tending to be more potent. In nature, all plant compounds are somewhat variable depending on the age of the plant, and the soil and climate and so on – but generally this does not have a huge impact on the therapeutic effect because the overall therapy comes from all the herb's components. Store-bought herbal products are usually standardized, which means they contain a specified level of the main therapeutic compounds.

Using a variety of herbs over a period of time should produce the most therapeutic benefits. A number of databases, websites and reviews give details about anti-viral herbs.^{54,55}

There are a number of herbs that provide anti-viral protection in various ways, and I consider the top four to be:

Olive leaf, Ginseng, Echinacea and St. John's Wort.

Note: *I am not recommending that you use ALL of these herbs at one time, but rather you may like to try one or two of these herbs if you are –*

- Feeling run down
- Battling a flu or a cold
- Under high stress
- Not sleeping well

Olive Leaf

The Health Science Institute of America says that “nature’s most promising antibiotic, anti-viral and antifungal agent is a compound derived from the olive leaf called calcium elenolate. As the number of drug-resistant superbugs continues to increase, so will the urgent need for olive leaf extract.”

Oleuropein is the active component of olive leaves and is largely responsible for its anti-viral, antibacterial and antifungal effects.^{58,59,60}

One method of using olive leaf that was first published in the *Pharmaceutical Journal* in 1854 is to boil a handful of olive leaves in a quart of water (1.2 liters) down to half its original volume. Then administer the liquid in the amount of a wine glass every day. This is a decoction and is stronger than simply making a tea from the leaves. The remedy would be more potent if the leaves were broken down into small pieces.

How to use olive leaf

You can make a decoction by boiling the leaves as described above, or you can buy capsules, tablets and liquid extracts over-the-counter. To boost anti-viral effects, a dose of around 1,000 mg a day is suggested and this may be taken for a course of 8 weeks.

Ginseng

In addition to centuries of traditional and practitioner evidence, there are more than 3,000 published scientific papers on the health benefits of Asian ginseng. Ginseng is classed as an adaptogen, meaning that it is a natural non-toxic remedy that provides support during times of physical and mental stress.^{61,62,64,65,66}

One of the primary attributes of Asian ginseng is its ability to strengthen the immune system.⁶³

How to use ginseng

Ginseng is available in varying strengths as teas, tablets and various types of liquid extracts. Herbalists, naturopaths, online companies, health food stores and pharmacies stock it. In traditional Chinese medicine it may be made into a decoction (simmered in water). This herb is best taken in the morning, otherwise it may prevent sleep.

Dosage and duration of treatment

The dose range of liquid extracts is between 1 ml and 5 ml per day, depending on the potency of the ginseng. Daily dosage for tablets is usually between 400 mg and 2,000 mg, but products come in varying concentrations so always be guided by the label dose. If you are using tea or a decoction, I suggest one cup per day. Ginseng should not be taken for more than three months without at least a month's break. An option for chronic viral hepatitis is to have a month's course and then alternate with another remedy.

NOTE: Do not take ginseng if you are on pharmaceuticals, without first checking with your own doctor. There have been reports of interactions with warfarin and some other prescription drugs. Not recommended during pregnancy.

Echinacea

There are three different species of Echinacea – namely, *Echinacea purpurea*, *angustifolia* and *pallida* – and all are used therapeutically. Some products contain the whole plant, some the roots only and some the above ground parts only. Herbalists have always maintained that the therapeutic effect comes from the combined action of all the constituents, and that herbs are nothing like pharmaceuticals. The fact that a number of scientific studies show immune or anti-viral effects from at least five groups of different compounds in echinacea supports its long history of use.

Known immune benefits of Echinacea

It has been shown repeatedly that all Echinacea species stimulate phagocytosis, which basically means that invading micro-organisms are ingested and destroyed by immune cells. According to Rob McCaleb, president of the U.S. Herb Research

Foundation, Echinacea increases the number of immune cells in the human body and stimulates production of interferon.^{67,68}

How to use Echinacea

Echinacea is readily available as tablets and as fluid extracts. The exact dosage depends on the type of echinacea product, as some are more concentrated than others. As a general guide, I suggest around 1,000 mg daily for four weeks to boost immunity. Four weeks is around the ideal duration because of a small risk of allergy developing to this herb.

NOTE: Echinacea is safe and well tolerated, although the possibility of allergic reactions cannot be ruled out and it should be avoided if you have severe allergies. Asthmatics should not take it without checking with their doctor first.

St. John's Wort

Two compounds in St John's wort (hypericin and pseudohypericin) have anti-viral activity.^{69,70} These two compounds are flavonoids that produce a strong claret color that can be seen in liquid extracts of St. John's wort. Various components in the herb have a wide variety of actions, including antimicrobial and anti-viral. This herb also produces a range of therapeutic effects and works to counteract depression and anxiety, both of which are common in those with chronic viral infections.

How to use St. John's wort

St. John's wort is readily available in tablets and liquid extracts, some of which are standardized. The potencies are variable so you need to follow the label's dosage instructions. Generally, St. John's wort is prescribed for periods of between one to three months.

NOTE: There have been a few reports of sensitivity of the skin to sunlight, therefore do not sunbathe or use ultraviolet treatment while taking St John's wort. The herb may decrease the effectiveness of oral contraceptives. Do not take St. John's wort without your doctor's approval if you are taking prescribed pharmaceuticals. Pregnant women should take this herb only if prescribed by a practitioner.

Licorice

It is known from laboratory evidence that a compound in licorice (glycyrrhizin) inhibits the growth of several viruses and inactivates virus particles. This compound also helps interferon production and promotes immune cell function.^{71,72}

Licorice is available over-the-counter as a tea and in some tablet formulations. Most herbalists prescribe liquid extracts as part of a formula. For self-treatment, the maximum dose is 2 ml of liquid extract twice daily or 3 grams of powdered herb daily. Do not take for more than a month without a two-week break.

NOTE: Do not use licorice without your doctor's advice if you are taking pharmaceuticals. Not suitable during pregnancy, or for patients with kidney dysfunction or hypertension. Also, please be aware that licorice candy is unhealthy and is in no way connected to pure licorice root, from which herbal remedies are made.

Ready References: <http://www.ars-grin.gov/duke>

Anti-Viral Herbs for your diet

Many culinary herbs have wide-ranging therapeutic benefits, and my research enables me to recommend them with confidence. There are actually so many healing (as well as tasty) culinary herbs that you have a wide selection from which to choose. You should know, however, that using a small amount of a single herb in your food will do very little to strengthen your immune system. You need to use several different culinary herbs regularly in your diet for them to be an effective part of your battle against chronic viral infections. They are also excellent to use as an ingredient in your raw juice recipes.

I will discuss different ways of getting what I call a “medicinal daily dose” of these special herbs. For the maximum benefit, they need to be as fresh as possible. Dried herbs, especially if they have little smell or taste, may be old and exhausted and therefore they have little therapeutic value. Many of the culinary herbs you’ll read about are listed as having [anti-viral activity](#) in a major scientific textbook and are listed in a U.S. government database.^{73,74}

The number of anti-viral compounds in some culinary herbs are:

- Common oregano: 22
- Thyme: 19
- Rosemary: 18
- Fennel seeds: 16
- Coriander: 15
- Marjoram: 14

These particular herbs are powerful weapons to help your immune system fight many types of chronic viral infections. It is fascinating to learn that ordinary kitchen herbs contain many known therapeutic compounds with anti-viral activity.

For all culinary herbs I suggest you start with low quantities, as taste buds need to adjust. At the same time, I am suggesting larger doses than recommended in most cookery books because for an anti-viral effect you need more than a pinch of herbs – just don’t use so much that your whole meal tastes bitter or unpleasant.

Some herbs in this section may cause side effects (i.e. garlic may upset the digestive tract), in which case you might want to try tiny quantities occasionally or avoid it completely. If anything irritates your body it is not good for you.

NOTE: For those with a sensitive digestive system I suggest tiny quantities only, rather than trying for therapeutic doses. As a general guideline, this means a pinch of mixed herbs per meal or a few fresh leaves finely chopped into a salad. If you're using herbal powders to make teas, I suggest that you mix them to a paste in water first because dry powders can irritate the throat. When you add powdered herbs to food, make sure they are thoroughly mixed through the food.

Three really important culinary herbs for the immune system are ginger, garlic and turmeric.

Ginger

It is best to use fresh ginger root because it is the essential (aromatic) oil in ginger that contains the anti-viral actions. The easiest way to get an effect is to grate fresh, uncooked root into your food or make a tea. It is also excellent to include raw ginger root as an ingredient in your raw juice recipes. Ginger is an excellent pain killer and anti-inflammatory. Laboratory studies have confirmed the anti-viral activity of ginger oil.^{75,76,77}

Ginger tea recipe

1-2 teaspoons grated fresh ginger root

1½ cups water

Bring to boil in a small saucepan, then simmer for about five minutes with the lid on. Turn off the heat and leave stand for a few minutes. Strain and drink—you can add stevia or honey to sweeten but do not add sugar or milk. It is better tolerated after food and I suggest 1-2 cups daily. You can change the quantity of ginger according to your taste. Assuming you like ginger, you can add an herbal tea to your ginger tea. If you have leftover ginger tea, use the water when cooking rice, vegetables, soups or casseroles.

Ginger in cooking

Add raw grated ginger root into foods such as stir-fries and casseroles and remember to do this near the end of the cooking time, otherwise the aromatic compounds will be lost. I suggest starting with about ½ teaspoon per meal per person and then up to 2 teaspoons daily about three times weekly.

Other ways of using ginger

Powder, tablets and liquid extracts are available and a therapeutic intake of dried ginger is 2-4 grams daily.

NOTE: People taking anti-coagulant drugs should check with their doctor before taking ginger.

Garlic

Laboratory and animal studies confirm garlic's anti-viral effects.⁷⁸ There are 39 sulfur compounds in garlic and these are primarily responsible for the anti-viral activity and the liver cleansing effect. If garlic is completely deodorized it will not exert a significant anti-viral or antibacterial effect. It is known that garlic can increase natural killer cell activities and enhance some specific immune cells.^{79,80,81}

Odor-reduced garlic with caraway and vinegar recipe

16 ounces (500 grams) garlic cloves (choose locally grown, as imported garlic is irradiated or treated with formalin)

1-2 tablespoons crushed caraway seeds (helps to reduce garlic odor)

16 ounces (500 ml) apple cider vinegar

Peel garlic cloves. Pack the garlic loosely into two 16 ounce (500 ml) glass jars, sprinkling over the caraway seeds. Fill the jar with apple cider vinegar so that the garlic and caraway are completely covered. Seal with a firm lid, label and date. This is my version of aged garlic and it will last for more than two years. I find that it is less reactive for those with sensitive digestive systems and has less odor. Use in cooking on top of grills or in casseroles and roasts. It may also be used as a marinade or in salads. I suggest about ½ teaspoon per person to begin with, perhaps increasing

to 1-2 teaspoons—which is the dose I have about 2-3 times each week.

Other ways of using garlic

Garlic is available as pastes and powders for use in cooking, and generally I suggest about ¼ teaspoon per serving, per person, initially. You can use a garlic crusher and squeeze a small segment (clove) of garlic over a salad or add up to a clove to your juicer if you are making a vegetable juice.

I adore raw garlic – I purchase organic Australian garlic and I finely chop 2 cloves and then stir this into my food after it is cooked. I do this for its natural antibiotic and liver cleansing effects. People sometimes comment that I smell of garlic, but I tell them sorry but I can't resist it!

You can also buy garlic tablets, capsules and liquid extracts. I recommend enteric-coated tablets for most purposes. (Enteric-coated means that the tablet passes through the stomach intact and does not get broken down until it reaches the intestines, where it gets absorbed and consequently causes little breath odor.)

NOTE: If you routinely use large quantities of garlic, stop 7 days before surgery. If breath odor is a problem, try sucking a peppermint or a spirulina tablet after the meal or chewing some caraway seeds or fresh mint leaves.

Foods in the same plant family as garlic, such as onions, leeks and chives, are somewhat weaker than garlic but they have many immune benefits and anti-viral effects. I recommend that you also use them liberally in your diet.

Turmeric

Turmeric is one of the spices in curry powder. Turmeric is listed in a number of authoritative texts as having anti-viral activity.^{55,73} Turmeric has powerful liver cleansing effects and has been found to exert antioxidant effects on the brain.

Curry powder recipe

2 tablespoons of powdered turmeric

2 tablespoons of powdered ginger

1 to 2 teaspoons powdered chilli

1 tablespoon each of powdered cumin, cardamom and cilantro (coriander); these herbs may be varied according to your taste and their availability.

The curry is much tastier if you buy seeds and chunks of dried herbs and grind them into a powder as required. I have a small electric coffee grinder that I use solely for herbs. Put all the ingredients in a dark glass jar, seal and shake thoroughly to combine. Use a dark jar (or a light-proof container) because turmeric in particular degrades in the light. Label and date – remember the fresher the better.

An easier option is to buy a curry powder or curry paste. Read the labels. Use curry powder in mixed cooked vegetables or meat and chicken dishes. With cooked dishes, add the curry in towards the end of the cooking time. First, mix the powder to a paste in cold water and then add more water, so that it is easier to mix through the food. I like my food hot and spicy, so I add about ½ teaspoon per cup of food, but I suggest that you start with ¼ teaspoon per cup if you're not used to curries.

Other herbs, including garlic, may be added according to your family's tastes, but if you add too many herbs this will reduce the curry flavor. I often add in some thyme, fennel and mustard powder. If you want a curry flavor but less heat, reduce the ginger and chilli and add one or more tablespoons of fenugreek powder.

NOTE: Some people are sensitive to hot spices. If anything irritates your mouth, throat or digestive tract, it is not good for you and should be avoided. There are plenty of other herbs and foods that provide anti-viral activity.

Easy lentil and barley curry recipe

2 cups brown/green lentils

2 cups whole barley

2 onions

2 vegetable stock cubes

Curry paste or powder (quantities depend on your taste and the hotness of the curry—start with about ½ teaspoon per cup of dry ingredients)

Soak overnight 2 cups of lentils in 4 cups of water. Next day, put the soaked lentils in a pressure cooker. Add the whole barley and finely chopped onions, plus 4 more cups of water. Add the vegetable stock cubes and stir. Bring to pressure and cook at a moderate heat for 30 minutes. Stir in the curry and leave stand for five minutes before serving. If you don't have a pressure cooker, cook until the lentils are very soft—about 1 hour. If you use whole barley it will stay very chewy. If you use pearl barley it requires only about 10 minutes cooking in a pressure cooker. I don't add the curry at the beginning because it tends to stick to the bottom of the cooker and lengthy cooking reduces the herb's therapeutic effects. This is a very basic recipe—you could substitute the barley for whole rice and the lentils for chickpeas or other beans, although these need soaking and take longer to cook than lentils.

Optional extras include tomatoes and fresh or dried herbs. Serve with a topping of plain acidophilus yogurt and chives, together with separately cooked vegetables or salad. Serves 6-8 people.

Other ways of using turmeric

Good quality turmeric gives a wonderful yellow color to cooked dishes, but a disadvantage is that it has a bitter taste by itself. Use it sparingly. For instance, about a teaspoon is sufficient for two cups of cooked rice (or a stir fry) for four people. Turmeric and its isolated compound curcumin, are available in tablet form and a liquid extract. I recommend it as a tonic, using it as a culinary herb at about one teaspoon three or four times weekly.

NOTE: Aside from the rare possibility of an allergic reaction, there are no cautions relating to a dosage of up to one teaspoon in food per person four times weekly.

Other favorite anti-viral culinary herbs

- Coriander
- Oregano
- Rosemary
- Cloves
- Thyme

- Sage
- Cinnamon
- Fennel and aniseed
- Mint
- Hot chilli
- Horseradish
- Basil
- Cardamom
- Tarragon
- Marjoram
- Nutmeg

Anti-viral Herbal Combinations

To get an anti-viral effect from culinary herbs you need to find a simple way of using at least several of these every day.

One way to do this is to –

- Select about six common culinary herbs that you have not included in your curry powder (see my recipe under turmeric). For example: dried thyme, sage, oregano, fennel, basil and tarragon.
- Put about two tablespoons of each of these into a dark colored, airtight jar and shake the jar so that the herbs are mixed together.
- Put a label on the container in case you forget the contents, and leave the container on the kitchen bench and protect it from the light. If it's in a cupboard you won't use it when you are busy!
- When you are cooking vegetables, rice, casseroles or any savory meal, simply add ¼ to 1 teaspoon (per person) of the mixed herbs towards the end of the cooking time.

If you don't want the actual herbs in the meal, you can buy a tea infuser – a small stainless steel container with holes – and fill it with dried herbs and leave it in the bottom of the saucepan while the food is cooking. This will only work if you have a reasonable amount of fluid in the saucepan. You will then get the flavor and some of the “goodness” of the herbs without the bits and pieces. (Strain and keep this water in the fridge to add to something that

you cook within the next day or so, then you'll get extra nutrients and compounds from the food and herbs.)

This system of combining herbs saves you from handling many containers of herbs. And even if you grow fresh herbs, and I highly recommend this, there are going to be times when you can't be bothered collecting them. Many of my meals are very herby because I may use dried herbs when cooking, plus a handful of freshly picked herbs to cut finely over the food when it is served. I always add fresh herbs to salads. I do this frequently with parsley, mint, basil, oregano and chives because they are easy to grow.

An even easier system is to buy a container of mixed herbs from your supermarket. You will find a list of contents on the label. Remember to keep it handy and use it regularly. I don't have rules about which herbs go with particular foods, although I tend to use a little cinnamon or clove with apples, and hot chilli and tarragon with dried beans.

Good herbal combinations for adding to Asian meals include cilantro (coriander), ginger, cardamom, aniseed, cumin, mint and mustard. Again – and I can't stress this enough – I add these toward the end of the cooking time because if you cook the herbs for too long, you lose much of the essential (aromatic) oil content into the air. It is these aromatic oils that contain much of the anti-viral activity.

Information on Different Culinary Herbs

Cilantro (Coriander)

Cilantro is surprisingly powerful as an infection fighter and liver cleanser. When you first use it, you may find the taste peculiar, so use very small quantities and gradually increase to about ½ teaspoon per person, per serving.

Oregano

This herb is surprisingly potent as an antimicrobial to fight viral infections. It is often used in Italian meals, but I use it freely in many types of cooking.

Rosemary

Rosemary has very good anti-viral activity and is one of nature's best natural antioxidants. Most people think of rosemary as the

herb that goes with lamb. But you can also put the fresh leaves into a tea infuser so you get the flavor into soups or other cooked dishes. Another way to use this herb is to simply tie a small bouquet of rosemary and place this into the saucepan. This way, you get the aroma while the food is cooking, but when the food is done the leaves can be easily removed.

Baked fish with rosemary recipe

Lay fish fillets on a bed of fresh rosemary leaves in an ovenproof dish. Cover the fish with slices of tomato, then more rosemary. Over the top add a little soy sauce plus a sprinkle of vinegar or lemon juice. Then cover the dish and bake in the oven for about 30 minutes at 180 degrees Celsius (356 degrees Fahrenheit). The rosemary camouflages the fishy smell, provides flavor and adds immune-boosting benefits. Remove the rosemary before serving, but use all of the juice. You can use any combination and amount of fresh herbs in this way, but if you have dried herbs only, limit yourself to a total of four to five teaspoons only.

Another way of using fresh rosemary leaves is to stuff them inside a roast chicken or place the leaves in the baking dish during cooking. Again, discard the leaves. Other fresh herbs, such as oregano, can be used in this way, as can combinations of any herbs that you have growing.

Thyme

Thyme has potent anti-viral effects and is easy to grow, but somewhat fiddly to use in cooking because you have to strip the tiny leaves from the woody stems. You may find it easier to buy powdered thyme and use it in the combination recipes I have already discussed. If you eat woody pieces of plants or leathery leaves (such as rosemary and bay), these can get stuck in the throat or even the intestines!

Cinnamon

Cinnamon has anti-viral activity and it is a useful herb for those with fatty liver and high blood sugar levels. You can mix cinnamon powder into cooked apple, using about ½ teaspoon of cinnamon per serving for therapeutic purposes. As a general culinary herb, if you add too much, the food tastes bitter. I use cinnamon in baked rice pudding and homemade bread and biscuits. You can also

use cinnamon powder sprinkled on top of a cappuccino or in a smoothie.

Fennel and Aniseed

These two herbs are popular culinary herbs and teas because of their lovely flavor. I usually buy the seeds and grind them as needed to add to other recipes. All plants in this family, including angelica, chervil, cumin, dill, lovage and parsley, have some anti-viral activity. Dill is often suggested in fish recipes and grows very easily, even in containers.

Mint

Most edible and herbal mint plants have some anti-viral action. Use the leaves liberally for decoration and aroma in iced herbal teas, together with crushed ice, fruit juice or slices of fruit. I like to use finely chopped fresh mint leaves in salads and raw juices.

Chilli

Chilli has excellent anti-viral activity. It clears the nasal passages and sinuses and it induces sweating, which is nature's way of cooling you down and cleansing your body of toxins. Chilli is commonly added to foods that are hard to digest, such as beans. I recommend about one teaspoon per meal for six people to begin with. Remember that nature does not make plants uniform, so some batches of chilli will be stronger than others. If you use fresh chilli, make sure that it is very finely chopped. If you use chilli powder, make sure it is mixed thoroughly with moist food – otherwise the powder can irritate the throat. Herbalists use liquid extracts and chilli capsules. (See the curry recipe under turmeric).

NOTE: Hot chilli should be considered an herb and not a food. Enormous quantities of chilli (10 per cent of the dietary intake) are harmful and some people cannot tolerate even tiny quantities, so use all hot spices wisely.

Horseradish

Horseradish is one of nature's best decongestants and has excellent anti-viral and antibiotic effects.^{54,55} As a culinary herb, it is commonly used as a paste and served with cold meat. Mustard is similar to horseradish and is useful with meat because it aids digestion.

Basil

Holy basil is a traditional Ayurvedic herb with anti-viral effects. The plant is sold in many nurseries, but some Indian people tell me it is not the same as “tulsi,” the sacred basil plant grown in India. In any event, basil grows well all year round and I have used both the flowers and leaves extensively for many years in cooking and in salads.

Also, cardamom, tarragon, marjoram and nutmeg are all good culinary herbs that are not generally used medicinally, although there is some evidence that they have anti-viral actions.

Cardamom has a wonderful flavor and smell, and I think it improves any herbal combination that you make up. Nutmeg causes nausea at high doses, but I find that a little freshly grated nutmeg goes really well added to spinach, together with some goats’ cheese.

Most people’s immune systems, and most meals, will be helped by a more liberal and regular use of culinary herbs. There is plenty of evidence to support their anti-viral and immune strengthening benefits – and what better way to protect your health than enhancing the taste of your favorite foods.

Frequently asked questions on Hepatitis B

How do you know if you are a carrier of the HBV?

The best blood test to confirm if you are infected with the HBV and are a chronic carrier of this virus in your body is called HBsAg. If HBsAg has been present in your blood for more than 6 months, then you have tested positive for the chronic carrier state. Conversely if you do NOT have HBsAg in your blood you are NOT a carrier of the HBV and you are not infectious to others.

This sounds simple right? Well you would be surprised that quite a few doctors and healthcare workers get confused about this and they mistakenly frighten patients by telling them that the presence of IgG anti-HBc in their blood makes them positive as a carrier of the HBV. This is wrong, as if you test positive for IgG anti-HBc, and yet you are negative for HBsAg, this means that you have antibodies against the HBV and you are immune to it – what a relief!

So just to summarize – If your blood test is negative for HBsAg and positive for IgG anti-HBc you are NOT a carrier and you are NOT infectious to others and you are immune to the HBV – lucky you!

If you are a proven carrier by testing positive for HBsAg you should have another blood test to see if the HBV is replicating rapidly in your body, which makes you more infectious to others. This extra blood test is called HBeAg. If you are lucky you will not have the HBeAg found in your blood test. The absence of HBeAg means the HBV is not replicating very much in your body and thus there is much less virus in your body. Generally speaking, drug treatment for the HBV is not recommended if you do not have detectable HBeAg in your blood.

How can you catch Hepatitis B?

The Hepatitis B virus is transmitted to another person by various ways; these include –

- From mother to baby during pregnancy, childbirth and breast feeding

- From blood contact – from sharing needles, needle stick injury, sharing toothbrushes or razors, or blood transfusion in some countries
- From improperly sterilized equipment used for surgical operations, tattooing, ear piercing and acupuncture etc.
- From sexual secretions – HBV infection is the most common sexually transmitted disease in the world
- From open cuts and sores if you have close personal contact with a HBV carrier

Remember that it's always wise to take precautions because many carriers of the HBV do not know that they have the virus in their body, as often it does not produce any symptoms of illness.

The HBV is easily transmitted – it is 10 times more infectious than the Hepatitis C Virus (HCV) and 100 times more infectious than the Human Immunodeficiency Virus which causes AIDS.

General social contact in the workplace will not spread the hepatitis B virus. It is not generally spread by food, sweat, tears, coughing, sneezing or kissing.

What are the chances of a person overcoming the HBV without any help?

Your chances of ridding your body of the HBV after becoming infected are mainly related to the age at which you first became infected with the HBV.

- Infection at birth or in the first 6 months of life leads to chronic infection (the carrier state) in 90% of cases.
- Infection from the age of 7 months to 5 years, leads to chronic infection (the carrier state) in around 30% of cases.
- Infection in adults leads to chronic infection (the carrier state) in only 10% of cases – in other words 90% of adults who become infected will rid their body of the virus within 6 months and they develop lifelong immunity and are no longer infectious to others and will not develop liver disease.

Thus you can now see the value of vaccinating babies against the HBV.

Can you prevent infection with the Hepatitis B virus?

The use of condoms with new sexual partners will protect you. Good hygiene is imperative in reducing the spread of the hepatitis B virus because it can enter the body in many ways - through sexual contact, sores and cuts in the skin, body contact sports, sharing infected needles, razor blades and toothbrushes. Do not share these items, wash your hands regularly with hot water and soap, and cover open wounds in the skin. The virus is killed by disinfectants (including bleach) and boiling water.

Since 1983 a genetically engineered vaccine to prevent hepatitis B has been available.

In babies, four injections need to be given, the first at birth, the second after 2 months, the third after 4 months, and the fourth injection after 6 to 12 months. All babies should be vaccinated unless otherwise instructed by your pediatrician.

In adults, three injections need to be given, the second injection being given after one month and the third after six months time.

The vaccine is very effective and in over 95% of healthy adults protection is achieved as determined by a blood test to measure protective antibody levels against the HBV. The level of these protective antibodies should be over 10mIU/ml. In older persons (over 45) there can be a lower success rate and post-vaccination testing is a good idea to make sure that you don't need extra vaccine shots.

Protection is even better in babies and children with over 98% becoming immune from the vaccine. Studies show that the HBV vaccine gives protection for decades, and probably for life, so that booster doses in later age are not generally recommended.⁸²

The effectiveness of the hepatitis B vaccine is not as good in patients with celiac disease and will fail in around 50% of cases.⁸³

One of the signs of non-responsiveness to the vaccine is if the patient carries the genetic marker called human leukocyte antigen (HLA) phenotype DQ2. This study confirms that celiac patients have a much higher failure rate for the vaccine than non-celiac patients. There is a need to re-evaluate current hepatitis B vaccine strategies for patients with celiac disease who may need a course of re-vaccination.

Who should be vaccinated against the HBV?

All babies or young children

Those who are at a high risk of catching hepatitis B such as healthcare workers, hemo-dialysis patients, homosexual men, injecting-drug users, sex workers and those with multiple sex partners

Sexual and household contacts of infected persons

Patients with other liver diseases (caution required)

Patients with AIDS

Is the vaccination against Hepatitis B safe?

The vaccine to protect you against becoming infected with the HBV is very safe and does not contain any live virus; thus you cannot catch hepatitis B from the vaccination. The vaccine is synthesized in yeast with recombinant DNA technology. A mild reaction to the vaccine occurs in around one in four persons and consists of soreness where the shot was given and a mild fever. Very rarely, severe allergic reactions like anaphylaxis can occur and the incidence is around 1 in 1.1 million doses given. If you are allergic to yeast you need to tell your doctor who will decide if the vaccine is safe for you.

What should I do if I am exposed to the HBV with a high chance of catching the virus and I have no immunity ?

You must receive an injection of HBV immune globulin (HBIG) within 72 hours of being exposed to the HBV. This injection contains antibodies against the HBV and these antibodies will destroy the HBV before it can infect your cells.

What are the symptoms of Hepatitis B infection?

Acute infection

After initial contact with the virus, symptoms take around 60 to 90 days to develop. Symptoms may include yellow discoloration of the skin and eyes (jaundice), loss of appetite and nausea, abdominal pains, fatigue, fever, and joint pains. Although these unpleasant symptoms may last for many weeks to months,

recovery without any long-term effects is the usual outcome in adults.

Long term infection – the carrier state

In a small percentage of adults, the virus remains in the body long-term and is infectious to others; these people are known as carriers. You will be defined as a chronic carrier if your blood tests positive for the HBV (+ve for HBsAg) 6 months after an acute infection or 6 months after you first tested positive.

The good news is that most chronic carriers of the HBV will never develop serious liver disease. Around 15 to 40% of carriers will have silent damage to their liver as the years go by, and may develop poor liver function, liver cancer or cirrhosis. This is particularly so if the carrier has a poor diet and unhealthy lifestyle, which compromises the immune system. All chronic carriers of the HBV must be monitored every 6 months for the rest of their lives.

The HBV is the second most common cause of cancer in the world – tobacco use takes the line honors. Many of the victims of liver cancer could have been saved from this developing if only they had known about the nutritional strategies that work to reduce the amount of the virus and the amount of chronic inflammation in their liver.

Drug Treatments for HBV

Currently the approved treatments include pegylated-interferon (IFN)- α and single drug therapy with five nucleos(t)ide analogues (NAs).

Unfortunately both antiviral treatments are not capable of eliminating the virus and do not establish long-term control of infection after treatment withdrawal. This is disappointing.

IFN therapy is of limited duration and has a low response rate and numerous and often severe side effects.

Nucleos(t)ide analogue drugs are well-tolerated but have a high risk of drug resistance developing which limits their prolonged use. Research efforts are focusing on the development of viral replication inhibitors that stop viral replication, as well as a number of immune-modulator drugs that do not cause liver damage.

The main aim of treatment is to achieve a sustained suppression of HBV replication and to improve the quality of life and survival of chronic carriers by preventing progression to cirrhosis, liver cancer and death. Today eradication of the virus is impossible, and current antiviral drug treatment aims to reduce liver failure and liver cancer and to increase survival.

The success of antiviral therapy is determined by the HBV surface antigen (HBsAg) and HBeAg serological status, as well as the levels of HBsAg and HBV DNA during the course of therapy. HBsAg seroconversion associates with a remission activity and improved long-term outcome. However, HBsAg clearance is achieved in only 10% of the patients and even in these cases both antiviral options are unable to prevent the replenishment of the cccDNA pool from genomic HBV DNA recycled from the cytoplasm, or to reach efficient clearance of cccDNA-containing hepatocytes. This explains the rapid rebound in serum HBV DNA after cessation of antiviral treatment.

Currently there are two drug programs approved for CHB treatment-

- Five nucleos(t)ide analogue drugs (NAs), which inhibit HBV replication
- Immune-based therapy that includes standard and pegylated interferon- α (IFN- α)

Both antiviral treatments are not capable of eliminating the virus or efficiently controlling the infection. IFN therapy is of short duration and provides low response rates, liver decompensation and many side effects. NA drugs give long-term treatment and are well tolerated, but there is a high risk that the HBV becomes resistant to the drugs which limits their long term use.

Patients with chronic hepatitis B are a very variable population and require different management strategies. To optimize therapy for the individual, several factors need to be considered including the patients' age, sex, genetic polymorphisms, lifestyle factors, stage of liver disease and co-infections and to viral characteristics such as level of virus in the blood, HBeAg-positivity and HBV genotype. The dosage duration, timing, efficacy, side effects, drug resistance and combination of antiviral agents need to be individually optimized. Available treatment options require long term use and carry a high risk for the development of breakthrough drug resistance.

Nucleos(t)ide Analogue Drugs (NAs)

Antiviral treatments for CHB using NAs have become the standard treatment. Current NA drugs approved for treatment of CHB infection include Lamivudine, Adefovir, Entecavir, Telbivudine and Tenofovir. Therapy with NA drugs leads to a strong and long-term control of virus amplification by interfering with the viral replication cycle. Viral suppression (not eradication) can be reached in up to 95% of the patients. The major weakness of NA drug therapy is that it requires life-long administration, has modest effects on HBsAg levels and carries the risk of the development of drug resistance. The major side effects of long-term administration include kidney toxicity and muscle disease.

During long-term therapy with NA drugs, the HBV eventually becomes resistant to the drug which is being taken. The resistance rates are higher with earlier generation NA drugs such as Lamivudine, Telbivudine, and Adefovir. The drugs Entecavir and Tenofovir are associated with low risk of resistance in patients who have not been treated before, but it is still difficult to manage pre-existing resistance to other anti-viral drugs because of the risk of cross-resistance. If the HBV becomes resistant to the drug being taken, there is usually an acute exacerbation of liver inflammation, which can be severe. Thus the rapid introduction of a new drug poses a serious challenge.

Interferon Therapy

Interferon has been used in CHB liver disease since the early 1980s. Conventional IFN- α or Pegylated IFN- α (Peg-IFN- α) induces direct antiviral activity by stimulating the patient's immune response. Peg-IFN- α has replaced conventional IFN- α treatment as it allows the administration of weekly injections compared to three times schedules of conventional IFN- α , while maintaining similar antiviral efficacy.

The response rate of IFN treatment is about 30%-40% in those with high ALT levels, but this effectiveness drops to only 10% in those with normal ALT levels. Unfortunately response rates can change at the end of the treatment because viral relapses are very common. Sustained responses have been reported to be only about 18% to 25% at the end of IFN treatment. Best chances for response to treatment are correlated with high ALT levels, low

viral load, older age and the absence of previous IFN therapy. Poor responses correlate with longer periods of infection, male sex and human immunodeficiency virus (HIV) co-infection. The main advantages of IFN treatment are short duration, absence of resistance, a higher rate of HBsAg clearance and HBeAg sero-conversion.

Current antiviral single drug therapies are not able to eradicate the HBV from the liver, have limited effectiveness, high expense and lead to drug resistance. So far, combination therapy with a number of NA drugs or with IFN, were not superior in comparison to single drug (monotherapy)

With the shortcomings of current antiviral therapies it is vital to develop new combination therapies that can achieve clearance of HBV DNA and cccDNA, as well as the restoration of immune defence mechanisms.

Although antiviral therapy of CHB infection has improved dramatically during the last decades, an effective treatment is still not available and CHB remains a serious clinical problem worldwide. Current available antiviral options suppress viral replication and improve patient survival but they do not eradicate the virus and the cccDNA pool resulting in viral reactivation after cessation of treatment and in the development of liver disease progression. The goal of new therapeutic strategies is to eliminate or control HBV and to allow access to therapy in poor high-endemicity areas, where the consequences of HBV infection are more severe. Experience with the treatment of HIV and HCV has proven that combination therapy with compounds targeting multiple steps in the replication cycle would be more efficient than monotherapy.

If you decide to use anti-viral drugs it is imperative that you get a chance to discuss in detail all your options with a liver specialist (hepatologist). Every patient is in a unique situation and your personal preferences should be fully discussed.

How should patients with chronic hepatitis B be monitored?

They should have a blood test for liver function every 6 months to check for increasing liver inflammation. They should have a blood test to measure their viral load (HBV DNA) every 12 months and this is covered by Medicare.

They should be screened for liver cancer every 6 months with a liver ultrasound scan and a blood test for levels of alpha-fetoprotein (AFP). This monitoring can generally be done by a family physician or general practitioner.

For references and more information on HBV see reference list.^{84,85,86,87}

A Future Vaccine for HBV is under development

A new therapeutic vaccine which, since January, has been the focus of a landmark Phase IIb/III clinical trial, could revolutionise the treatment of chronic hepatitis B (CHB), a disease that currently affects 350 million people worldwide and results in one million deaths every year. Not only has it already been shown to have significantly fewer side effects than current immunotherapeutic approaches, and is easier to administer; researchers hope to prove through this study that it can control viral load (the amount of the virus in a patient's blood) for a much longer period of time than other available drugs.

The drug, called ABX203, is being developed by France-based clinical stage biotech company ABIVAX, after being licensed from the Center for Genetic Engineering and Biotechnology (CIGB) in Havana, Cuba, in 2013. It is a therapeutic vaccine designed to produce immune responses in patients with CHB similar to those that occur in patients with a self-resolving acute hepatitis B virus (HBV) infection.

The one million deaths that result from CHB mainly occur as a result of the disease evolving into two potentially fatal complications, liver cirrhosis and liver cancer.

ABX203 has already shown promising results in trials carried out by CIGB in Cuba and Bangladesh, performing significantly better than the immunotherapy currently on the market, pegylated interferon, in a number of ways. "Pegylated interferon is the standard immunotherapy that has been used up until now, but it has a number of substantial shortcomings," explains physician and ABIVAX CEO Professor Hartmut Ehrlich, MD. "First, you need to treat the patient with weekly injections for one year, secondly it has many side effects, and finally once you stop the therapy, the virus comes back very rapidly."

So what do Ehrlich and his team hope to prove in the current study?

It differs from the previous trial in two important ways, the ABIVAX CEO explains. “Firstly, the current trial will test the drug on pre-treated patients, which means, in this scenario, patients that have been on nucleotide or nucleoside analogues (NUCs) for at least two years. The previous trial only recruited patients that had never been treated before,” he notes.

NUCs are the other standard treatment option for patients with CHB and can be very effective at reducing viral load, although when the treatment is stopped, the virus tends to come back in a matter of days or weeks.

“And secondly, ABX203 will not be tested against interferon. We have already established that ABX203 is clinically differentiated with critical therapeutic advantages over interferon; we don’t need to repeat this,” Ehrlich says.

Instead, in the current trial, half of the 234 patients the researchers aim to recruit will receive ABX203 for 24 weeks on top of NUCs and the other half, the control group, will receive only NUCs.

“After half a year we will withdraw all therapy, and see how rapidly the virus comes back in both groups.”

“After half a year we will withdraw all therapy, and see how rapidly the virus comes back in both groups,” Ehrlich notes. “We know in the NUCs group it will be a matter of days or maximum weeks, whereas in the other group, which will have had NUCs and ABX203, we believe we will be able to not only reproduce the data that we had from the initial study done by the Cubans on 160 subjects, but see an even more protracted effect on viral load.”

Then, after six months without any treatment, during which time the researchers predict viral load will remain low, they plan to also give half the patients a booster dose of ABX203. “This could potentially eliminate the virus in these patients,” Ehrlich says.

So far, recruitment for the trial, which is expected to take place at 50 different clinics in eight countries in the Asia Pacific region, is going well. “Because CHB is a very frequent disease, we believe we will be able to recruit all 234 subjects by the end of Q3 of this year, and so far we are essentially on track.”

Then, if the trial is successful, which should be confirmed by late 2016, ABIVAX will look to get market authorisation in selected countries in Asia, and subsequently bring the drug to Europe. “We would initiate a European confirmatory study, for potential licensing in Europe, but, when it comes to the European study design, we want to wait and see how big the effect of the drug is in the current trial,” Ehrlich remarks.

Ultimately, he hopes that ABX203 won’t be just another weapon in the fight against CHB, but “a new treatment paradigm” for the disease. “We believe that with the prolonged effect on viral load we have already seen, we will be able to keep patients off drugs for an extended period of time without the virus returning,” he explains, adding that if the booster dose that will be tested in the current study works, too, we could even be looking at eliminating the virus in a significant population. “It would then be a functional cure for the disease and that would dramatically change the way people look at the treatment of CHB.

“We hope it will be similar to the situation that occurred with chronic hepatitis C. The introduction of new effective therapies has changed the way patients and physicians look at the disease and we are going in the same direction with our therapeutic vaccine.”

The Heber-NASVAC vaccine to treat Hepatitis C is among the new productions of the National Centre for Bio-formulas (BIOCEN) located in Bejucal, Mayabeque province in Cuba. The vaccine is the result of research work by the Centre for Genetic Engineering and Biotechnol

Source: <http://www.caribbeannewsnow.com/topstory-Cuba-begins-industrial-production-of-new-Hepatitis-C-vaccine-27183.html>

Frequently asked questions on Hepatitis C

Do you need to be tested for Hepatitis C?

If you received a blood transfusion or blood products before routine screening of donor blood for the HCV was introduced (prior to February 1990) you should be tested. If you have ever shared equipment (needles, spoons, swabs, tourniquets, etc) for injecting drugs, it is vital that you ask your doctor for a blood test to check for the HCV. If you have been tattooed, had body piercing or needle-stick injuries, you should also consider being tested for hepatitis C. Sharing straws to sniff cocaine can be a risk for catching the HCV.

Hospital and healthcare workers who are regularly exposed to blood are at increased risk. Sharing razors or toothbrushes with infected persons can be risky. Some cases of infection have been caused by contaminated dental, medical and surgical instruments (such as colonoscopies etc). Sexual transmission of the HCV is not nearly as common as that from the HBV but is not impossible. The risk of transmission from infected mother to her baby before or during birth is much less than that of the HBV and has been estimated to be around 6%. There is no evidence that the HCV can be transmitted by breast feeding.

You cannot become infected by social contact with a carrier; thus activities like hand shaking, hugging, kissing, coughing will not transmit the HCV. There is no need for separate kitchen utensils, crockery or towels in the household of an infected person. Mosquitoes and fleas and other blood sucking insects do not transmit the HCV.

It is interesting to know that approximately one third of those infected with the HCV have no risk factors and never discover how they contracted this virus.

Around five million Americans are infected with the HCV and ideally all American middle aged persons should be tested to see if they are infected with the HCV. The U.S. Centers for Disease Control (CDC) data indicate that 7.1% of men and 2.3% of women,

aged between 45 and 49, are infected with the HCV. We can lower the death rate from HCV infection if we are more proactive in diagnosing infected patients. The earlier we can treat patients the lower the death rates will be.

What are the correct tests to check if you have Hepatitis C?

Tests for Hepatitis C Antibodies

This test checks for the presence of antibodies that your immune system forms against the hepatitis C virus (HCV). If you test positive for antibodies this means that at some stage you have been infected with the HCV and your body has made antibodies against it. After initial infection with the HCV it can take 3 to 6 months before your body makes antibodies against it. If you are positive for antibodies this does NOT mean that you are still infected with the HCV or that the virus is still hiding in your body. The test for hepatitis C antibodies is not 100% accurate (95 to 99% accuracy) and false readings (both negative and positive) can occur.

Tests for the Hepatitis C Virus (HCV)

If you test positive for hepatitis C antibodies your doctor will do additional blood tests to see if the hepatitis C virus (HCV) is still present in your body. One such test is called HCV b-DNA which stands for hepatitis C virus branched DNA. This test is also known as HCV RNA b-DNA. This test is not very sensitive and will only show the virus if it is present in fairly high levels (viral loads above 200,000 to 350,000 per ml). If you have smaller amounts of the HCV in your blood it is possible to have a negative HCV b-DNA test even though you are still infected with the HCV.

There is another test to find the HCV in your blood which is called the PCR (Polymerase Chain Reaction) and this is a much better test. The PCR test is more sensitive, as it can detect much smaller viral loads as low as 1000 per ml of blood. The PCR test can also determine the genotype of the HCV that you are infected with. Both the PCR and the bDNA tests can be used to estimate the amount of virus in your blood – this is known as your “viral load”.

What is the viral load test?

Put simply, the viral load is the number of hepatitis C viruses that are present in a given volume of blood (usually 1 milliliter).

Your viral load represents the concentration of the hepatitis C virus in your blood and a high viral load means that you have a high concentration of the virus in your blood and you have a greater amount of hepatitis C viruses in your body than someone with a low viral load.

The way the blood test results are presented is complex and many patients need their doctor to fully explain them. Basically the amount of hepatitis C genetic material found in the blood correlates to as many hepatitis C viruses as the stated number in the test results. Therefore the stated number represents “viral equivalents.”

The value of the viral load in a patient with HCV can range from undetectable to hundreds of millions. It is not easy to understand or interpret the results of your viral load test. One reason for this is that the meaning of “not detected” or “negative” differs, according to the type of test used.

The **quantitative** HCV RNA test detection limit is 200 virus equivalents/ml and anything below this does not show up.

The **qualitative** HCV RNA test detection limit is much lower - it can detect down to 10 virus equivalents/ml. The qualitative test is obviously more sensitive and can detect tiny amounts of virus.

So, if you test negative –

- You may have no Hepatitis C virus in your blood.
- You may have Hepatitis C virus in your blood, but the number of viruses is lower than the detection limit of the test your doctor chose to assess you.

If a **quantitative** HCV RNA result is reported as too low to measure, this means that the quantitative test cannot accurately measure the Hepatitis C Virus. This may mean that there is no HCV RNA at all, but it may also mean that the level of virus is just too low for the test to pick it up. A qualitative test should then be performed to see if there is any detectable Hepatitis C Virus at all. If the qualitative test is reported as “detected” then the Hepatitis C

Virus is present in the blood, but at a very, very low level, which is too low to be measured by a quantitative test. Because these test results can become so complicated you will need to rely on your doctor for interpretation of your results.

Having your viral load measured before considering anti-viral drug treatment is worthwhile, because patients with “very high to high” viral loads often have more difficulty getting the virus to become completely undetectable on treatment. If you have “low” viral loads you have a better chance of getting the virus to become completely undetectable on treatment.

The result of anti-viral drug treatment is considered good when the quantitative HCV RNA measurement drops a lot and the virus eventually becomes undetectable.

There is still no absolute agreement on what viral load is considered high or low. Here is a general guide:

Numbers are virus equivalents per milliliter of blood

Quantity of HCV equiv	Viral load status
below 200,000	Very low
1,000,000 to 5,000,000	Medium
above 25,000,000	Very high

What are the long term effects of the Hepatitis C Virus?

The initial (or acute) infection with the HCV usually does not produce any obvious symptoms and often passes unnoticed so the patient does not know they have been infected. Worldwide there are millions of people who are chronically infected with the HCV and are blissfully unaware of it, and if they never get sick they often never find out.

The amount of long term liver damage caused by the hepatitis C virus varies from person to person and is extremely unpredictable. Those with a strong immune system and a healthy diet and lifestyle will have a much better outcome.

In those who become infected with the HCV we find the following approximate outcomes –

- 15 to 20 percent of people will completely eliminate the virus from their bodies within 3 to 6 months (much like we overcome the flu virus).
- 80 percent of people will develop a long-term (chronic) infection that may not cause any problems or may go on to varying degrees of liver damage. Many people with chronic infection have no specific symptoms and the disease may be silent or produce only vague symptoms such as fatigue, mild abdominal discomfort, depression or slight reduction in appetite.
- 25 to 40 percent of people will suffer serious liver damage, such as cirrhosis (liver scarring), although this takes around 20 to 30 years to develop. In this group, 10 to 15 percent will remain stable and be able to survive with their disease, while 20 to 30 percent will go on to develop liver failure and/or liver cancer. Although type 1 genotype HCV with high viral loads is associated with a greater chance of cirrhosis, there are many exceptions and extreme variability. Excess alcohol intake worsens the prognosis.
- 5 percent of patients with cirrhosis (due to the HCV) will get liver cancer.
- 1 percent of all patients infected with the HCV will develop liver cancer

It is reassuring to know that most patients infected with the HCV will die with their infection and not because of it or its complications.

Should I take anti-viral drug treatment for Hepatitis C?

When a patient is diagnosed with hepatitis C, the biggest decision he or she has to make is whether to take anti-viral drug therapy. This is always a complicated and personalized decision that can only be made after you have educated yourself about all your options and worked closely with your primary care physician and liver specialist (hepatologist). The decision is complicated by the fact that the outcome of this disease can be so variable and unpredictable among individuals. Although hepatitis C can be a slowly progressive disease, many untreated carriers of the HCV never develop complications of cirrhosis, liver failure and liver cancer.

Newer anti-viral drugs against the Hepatitis C virus

The aim of treatment with the new anti-viral drugs is to eradicate the hepatitis C virus and prevent liver damage and liver cancer.

In the past, treatment with Interferon alone eliminated the virus in only 20% of patients. Another 30% responded but subsequently relapsed. Genotype 2 and 3 patients achieved better results with Interferon/Ribavirin combination therapy and cure rates approximated 80%. For patients with genotype 1 HCV, treatment with Interferon and Ribavirin did not have high success rates.

Two new drugs called telaprevir (marketed under the brand names Incivek and Incivo) and boceprevir (brand name Victrelis) have been made available at liver clinics for patients with HCV genotype 1. These drugs are known as protease inhibitors and they work by inhibiting the ability of viruses to replicate.

These drugs are used with Interferon and Ribavirin to prevent the virus becoming resistant to the drugs. If this triple therapy is used in cases of genotype 1 HCV, the success rates of cure approximate 70%. A disadvantage of these drugs is they need to be taken for between six and 12 months, usually several times per day. In many cases patients find it difficult to tolerate the severe drug side effects.

The Latest Drug Therapies for Hepatitis C

In 2013 and 2014, a new class of antiviral medications were approved in the United States. These drugs have dramatically improved success rates of viral clearance, with much shorter treatment regimes, spanning from between six weeks and three months. Most of these drugs are taken just once daily and so far seem to be well tolerated, with few side effects. These new drugs are truly a breakthrough in the battle against the HCV.

These new drugs include:

- Simeprevir (brand names Olysio and Sovriad)
- Sofosbuvir (brand names Sovaldi, Hepcinat, Resof, Hepcvir and SoviHep)
- Ledipasvir/Sofosbuvir (brand name Harvoni)
- Ombitasvir, Paritaprevir and Ritonavir (A combination of three drugs, sold under the brand name Viekira Pak)

Unfortunately these new drugs are extremely expensive, and they are not available to every patient. At this stage they are only available to patients with the HCV genotype 1 who have not responded to conventional interferon/ribavirin treatment, or patients in whom the traditional therapy is contraindicated.

In patients using these new drugs, at least 90 percent are able to eradicate the hepatitis C virus from their body.

It is important to seek out the care of a liver specialist who has had a lot of experience with anti-viral drugs.

In September 2015, the FDA issued a warning about the risk of serious liver damage with Viekira Pak. There were 26 reported cases of severe liver damage from Viekira Pak, with 10 leading to liver transplantation or death.

The anti-viral drug Harvoni has NOT been shown to have similar safety issues. This means that doctors will be less likely to prescribe Viekira Pak over Harvoni. Gilead Sciences manufacture Harvoni.

Since these adverse reports Viekira Pak is now contraindicated in a small proportion of the overall HCV pool of patients (3% to 5% of all patients, and 15% to 20% of those with cirrhosis).

As of October 2015 the drug company Merck has not yet received FDA approval for grazoprevir/elbasvir but these drugs could see faster than expected launch momentum in light of Viekira's adverse reports.

Summary of New Anti-Viral Drugs for HCV

HCV Treatment Recommendations for Treatment-Naive Patients

	Recommended*	Alternative
Genotype 1a	Harvoni for 12 weeks** OR Olysio + Sovaldi for 12 weeks (no cirrhosis) or 24 weeks with/without ribavirin (cirrhosis) OR Viekira Pak + ribavirin for 12 weeks (no cirrhosis) or 24 weeks with/without ribavirin (cirrhosis)	n/a
Genotype 1b	Harvoni for 12 weeks** OR Olysio + Sovaldi for 12 weeks (no cirrhosis) or 24 weeks with/without ribavirin (cirrhosis) OR Viekira Pak for 12 weeks (+ ribavirin with cirrhosis)	n/a
Genotype 2	Sovaldi + ribavirin for 12 weeks (16 weeks with cirrhosis)	none
Genotype 3	Sovaldi + ribavirin + PEG*** for 12 weeks	Sovaldi + ribavirin for 24 weeks
Genotype 4	Harvoni for 12 weeks OR Sovaldi + ribavirin for 24 weeks OR Technivie + ribavirin for 12 weeks	Olysio + Sovaldi with/without ribavirin for 12 weeks OR Sovaldi + ribavirin + PEG*** for 12 weeks

HCV Treatment Recommendations for Treatment-Naive Patients

	Recommended*	Alternative
Genotype 5	Harvoni for 12 weeks	Sofaldi + ribavirin + PEG*** for 12 weeks
Genotype 6	Harvoni for 12 weeks	Sofaldi + ribavirin + PEG*** for 12 weeks

** 8 weeks may be considered in patients without cirrhosis who have pre-treatment HCV RNA less than 6 million IU/mL

*** PEG = peginterferon

In 2015 the U.S. Food and Drug Administration approved Daklinza (daclatasvir) for use with sofosbuvir to treat hepatitis C virus (HCV) genotype 3 infections. Daklinza is the first drug that has demonstrated safety and efficacy to treat genotype 3 HCV infections without the need for co-administration of interferon or ribavirin.

The safety and efficacy of Daklinza in combination with sofosbuvir were evaluated in a clinical trial of 152 treatment-naive and treatment-experienced participants with chronic HCV genotype 3 infection. Participants received Daklinza 60 mg plus sofosbuvir 400 mg once daily for 12 weeks and were monitored for 24 weeks post treatment. The studies were designed to measure whether a participant's hepatitis C virus was no longer detected in the blood 12 weeks after finishing treatment (sustained virologic response), suggesting a participant's infection had been cured.

Results showed that 98 percent of the treatment-naive participants with no cirrhosis of the liver and 58 percent of the treatment-naive participants with cirrhosis achieved sustained virologic response. Of the participants who were treatment-experienced, 92 percent with no cirrhosis of the liver and 69 percent with cirrhosis achieved sustained virologic response. Sustained virologic response rates are reduced in HCV genotype 3 infected patients with cirrhosis.

Safety information was available for approximately 1,900 patients with HCV treated with the recommended dose of Daklinza in combination with other anti-HCV drugs in clinical trials. The most common side effects of Daklinza with sofosbuvir were fatigue and headache.

In 2015 the U.S. Food and Drug Administration approved the drug Technivie (ombitasvir, paritaprevir and ritonavir) for use in combination with ribavirin for the treatment of hepatitis C virus (HCV) genotype 4 infections in patients without cirrhosis. Technivie in combination with ribavirin is the first drug that has demonstrated safety and efficacy to treat genotype 4 HCV infections without the need for co-administration of interferon.

The safety and efficacy of Technivie with ribavirin were evaluated in a clinical trial of 135 participants with chronic HCV genotype 4 infections without cirrhosis. Ninety-one participants received Technivie with ribavirin once daily for 12 weeks. Forty-four participants received Technivie once daily without ribavirin for 12 weeks. The studies were designed to measure whether a participant's hepatitis C virus was no longer detected in the blood 12 weeks after finishing treatment (sustained virologic response), suggesting a participant's infection had been cured.

Results showed that 100 percent of the participants who received Technivie with ribavirin achieved a sustained virologic response. Of those who received Technivie without ribavirin, 91 percent achieved sustained virologic response.

Safety information was available for 316 participants with HCV treated with the recommended dose of Technivie in combination with other anti-HCV drugs in clinical trials. The three drugs included in Technivie are also included in Viekira Pak, previously approved for the treatment of HCV genotype 1 infection. The most common side effects of Technivie with ribavirin were fatigue, weakness (asthenia), nausea, insomnia, itching (pruritus) and other skin reactions.

Technivie carries a warning that elevations of liver enzymes to greater than five times the upper limit of normal occurred in approximately 1 percent of clinical trial participants. The elevations occurred more frequently in females taking contraceptives containing ethinyl estradiol. Contraceptives containing ethinyl estradiol must be discontinued prior to starting Technivie.

In 2015 the FDA granted priority review to Merck's new hepatitis C virus (HCV) treatment drug grazoprevir/elbasvir. This once-daily, single-tablet combination was previously granted 2 breakthrough treatment designations for chronic HCV genotype 4 infection, as well as chronic HCV genotype 1 infection in kidney disease patients on hemodialysis. The FDA is expected to act on grazoprevir/elbasvir 100 mg/50 mg for the treatment of adult patients infected with chronic HCV genotypes 1, 4 or 6, on January 28, 2016.

Grazoprevir/elbasvir is being studied in multiple HCV genotypes and HIV co-infection, and is undergoing clinical trials in chronic kidney disease, blood disorders, and cirrhosis. The most common side effects associated with the drug in clinical trials include fatigue, headache, nausea, and diarrhea.

[See more at: http://www.pharmacytimes.com/](http://www.pharmacytimes.com/)

Financial Problems

Many patients with chronic HCV have financial difficulties and some medical insurance companies place too many hurdles to block patients from receiving the latest expensive anti-viral drugs. Insurance companies should not minimize the need to cover the cost of treatment of chronic HCV; after all they are forbidden to discriminate against treatment of HIV/AIDS.

How to get the new anti-viral drugs cheaper and faster

For sufferers of chronic HCV who do not want to wait until the new drugs that cure hepatitis C are government subsidised there are groups of family doctors who can give patients access to these drugs for a fraction of the usual \$84,000 price for a 12 week course. These drugs are sourced from China for around \$1500 for a 12 week course.

A Tasmanian based website known as FixHepC helps patients obtain generic versions of sofosbuvir and daclatasvir through their buyer's club. The drugs can be legally imported for the patient's personal use via this website. The service purchases the drugs, arranges for them to be tested and has the drugs encapsulated in Australia to standardise quality. Around 200 doctors in Australia are directing their hepatitis C patients to the buyer's club.

Whilst negotiations with the government to list these new anti-viral drugs on the subsidised Pharmaceutical Benefits Scheme (PBS) continue, more than 100 Australians have died from complications of hepatitis C. Many cannot afford to wait.

The Generic Daclatasvir and Harvoni Situation

Daclatasvir is a drug that works well in combination with Sofosbuvir for the treatment of several Hep C genotypes, including Genotype 1, 2 and 3. Branded Daclatasvir is made by Bristol Myers Squib and a three month supply costs somewhere around \$45,000 in Europe and the USA but must be combined with Sofosbuvir or some other drug to be really effective. So a non-generic treatment could typically cost well over \$130,000.

There are three sources of generic Daclatasvir -

Mesochem supplies the Daclatasvir in a concentrated form known as an API (Active Pharmaceutical Ingredient), and a 12 week course needs 6 grams of API and it needs to be made into consumable capsules by a chemist. The cost of the API is US\$255 delivered. Mesochem requires a letter from the chemist who will make the API into a capsule for you before they will supply. Contact is Rachel rachel@mesochem.com

Generic Daclatasvir is now available in tablet form through India. The same processes as applied to the Sofosbuvir, apply to getting the generic Daclatasvir. The cost for 84 tablets delivered anywhere in the world is Australian Dollars \$700. This requires a prescription.

Generic Harvoni is now available from two pharmaceutical manufacturers in Bangladesh. One of these has been tested by an independent testing authority in Australia and is 100% as claimed, chemically identical to Harvoni. This generic is called Twinvir and is manufactured by Incepta.

The problem with Twinvir is that Bangladesh is like India on steroids and a very difficult place to do business. My friends in India have good connections in Bangladesh and can organise secure and reliable shipping supply lines there. The expected price should be around US\$1,600 for a 12 week treatment of 84 tablets delivered.

Licensed Indian generic Harvoni is available and the price is expected to be about the same as Twinvir. There are, at the moment, four companies in India licensed to make generic Harvoni.

Contacts for obtaining cheaper and generic versions of the new drugs for HCV faster.

ehelp@liverdoctor.com

Greg Jeffries — gregjefferys@outlook.com

<http://fixhepc.com/buyers-club-nodes.html>

Drugs for Hepatitis C Genotypes

Hep C Genotype 1

Sofosbuvir and ledipasvir

Sofosbuvir and daclatasvir

Sofosbuvir and peg interferon and ribavirin (unlikely to be used as a first-line therapy)

Paritaprevir, ritonavir, ombitasvir and dasabuvir

Paritaprevir, ritonavir, ombitasvir, dasabuvir and ribavirin.

Hep C Genotype 2

Sofosbuvir and ribavirin

Hep C genotype 3

Sofosbuvir and daclatasvir

Sofosbuvir and peg interferon and ribavirin (unlikely to be used as a first-line therapy).

How long does treatment last?

Sofosbuvir and ledipasvir

8 weeks for those with a fibrosis score of 0-3 and a viral load less than 6 million

12 weeks for those with cirrhosis and no prior treatment

24 weeks for those with cirrhosis and prior treatment

Sofosbuvir and daclatasvir

12 weeks (probably longer for people with cirrhosis)

Sofosbuvir and ribavirin

12 weeks

Sofosbuvir and peg interferon and ribavirin

12 weeks

Paritaprevir, ritonavir, ombitasvir and dasabuvir

12 weeks

Paritaprevir, ritonavir, ombitasvir and dasabuvir and ribavirin

12-24 weeks depending on treatment history and/or presence of cirrhosis

Some of these treatment combinations include the drug ribavirin, and one includes peg interferon (this last treatment is unlikely to be used as a first-line therapy and may likely be used only with people who have a resistance to other, better treatments).

Additionally, sofosbuvir and daclatasvir may be taken with ribavirin for those people who have genotype 3 and cirrhosis.

The paritaprevir, ritonavir, ombitasvir, dasabuvir combination includes ribavirin for people with genotype 1a and for some other people (eg. with genotype 1b who also have cirrhosis).

Do these new drug combinations have side effects?

Sofosbuvir and ledipasvir is well tolerated with only minor side effects.

Sofosbuvir and daclatasvir is well tolerated with only minor side effects.

Sofosbuvir and ribavirin is well tolerated. The most common adverse events are fatigue, headache, skin irritation, and insomnia (ribavirin side effects).

Sofosbuvir and peg interferon and ribavirin is less well tolerated. The most common side effects are fatigue, headache, mood swings, depression, nausea, insomnia and anaemia (peg interferon and ribavirin side effects). These side effects should be more tolerable due to shorter treatment durations.

Paritaprevir, ritonavir, ombitasvir and dasabuvir is well tolerated with only minor side effects.

Paritaprevir, ritonavir, ombitasvir and dasabuvir and ribavirin is well tolerated for most people. The most common side effects are nausea, insomnia and itching (ribavirin side effects).

The success rates of the new drugs are very high

Sofosbuvir and ledipasvir = around 95% of people (with genotype 1) treated, achieve cure.

Sofosbuvir and daclatasvir = around 95% of people (with genotypes 1 or pre-cirrhosis genotype 3) treated, achieve cure. (People with genotype 3 and cirrhosis have lower cure rates and may require longer duration and addition of ribavirin)

Sofosbuvir and ribavirin = around 95% of people (with genotype 2) treated, achieve cure.

Sofosbuvir and peg interferon and ribavirin = around 90% of people treated achieve cure, although this treatment (for people with genotypes 1 or 3) is unlikely to be used as a first-line treatment option.

Paritaprevir, ritonavir, ombitasvir and dasabuvir = around 99% of people (with genotype 1b and no cirrhosis) treated achieve cure.

Paritaprevir, ritonavir, ombitasvir and dasabuvir and ribavirin = around 96% of people (with genotype 1) treated achieve cure.

The above cure rates relate to people's hepatitis C genotype and treatment history. They are from clinical trials (and therefore may not apply to real-life populations). Treating doctors will advise which treatment options are suitable for you. All patients will require a PCR test following treatment (12 or 24 weeks afterwards) to check for SVR (cure).

How do you know if the drugs have cured you?

A "Cure" from HCV is known as a "SVR" (Sustained Virological Response). A SVR means that the patient has cleared hep C virus from their body. If the patient is PCR virus undetectable at 12 weeks post-treatment, they are generally considered to be cured. Some clinics will still do an additional PCR test at 24 weeks.

If you do relapse after a SVR, even if it is many years after anti-viral drugs, don't panic! The strategies in this book can still enable you to protect yourself against this virus. You will be disappointed that the drugs have not achieved eradication of the virus from your body or a "virological cure", but some studies show that anti-viral drug treatment may reduce your chance of future liver cancer and cirrhosis. Furthermore with all the research I have done in liver disease, I am convinced that nutritional medicine achieves these same goals. Try to remain positive, as hepatitis C is a disease which progresses very slowly if you look after yourself and you will probably die of other causes. Just stay healthy and keep that virus in its place, and in the meantime newer less toxic and more effective drugs will become available.

Hepatitis A

What is Hepatitis A?

The hepatitis A virus is an RNA virus and causes **infectious hepatitis**. It is easily spread through food or liquids contaminated with the virus. It can also be spread via cutlery, bed linen and skin exposed to feces contaminated with the virus. Transmission can be avoided by adopting high standards of personal hygiene especially in the preparation of food.

International travelers to countries with poor sanitary conditions are at risk of catching hepatitis A and should consider preventative vaccination. While traveling, drink only boiled or bottled carbonated water, avoid eating raw fish and shellfish and avoid eating fresh vegetables and fruits washed with water from local water supplies. Use frequent hand washing and choose disinfectant soaps.

The hepatitis A virus attacks the liver producing an acute illness and the severity varies from very mild to severe.

The vast majority of people get better quickly and the hepatitis A virus does NOT cause long term (chronic) liver disease and does NOT cause permanent liver damage.

Unlike hepatitis B or C, a chronic illness does not develop from the hepatitis A virus.

Only 1 in 100 cases of hepatitis A infection result in liver failure. Approximately 1 in 300 cases of hepatitis A results in liver transplant or death and this is usually in older people or those with a pre-existing severe medical or immune problem.

Symptoms of infection with the hepatitis A virus may be so mild as not to be noticed or can consist of nausea, loss of appetite, vomiting, fatigue and jaundice. This illness usually lasts for several weeks and resolves quickly once the virus is cleared from the body.

There are two types of vaccination against the hepatitis A virus

- **Temporary vaccination:** One injection of immune globulin can protect against hepatitis A infection in those who have been in close contact with infected persons within the preceding 2 weeks, or those traveling to countries with high rates of infection and who have no immunity.
- **Permanent vaccination:** Two injections given 6 to 12 months apart. The first injection must be given at least 4 weeks before travel. This will give lifelong immunity.

Hepatitis and liver cancer

In patients with chronic infection with the HCV or the HBV there is an increased risk of liver cancer.

Screening for liver cancer should be done every 6 months in hepatitis patients with the following factors –

- African descent and aged over 20
- Aged over 40
- With cirrhosis of the liver
- With a family history of liver cancer

The screening tests that should be done include –

- A blood test to measure the level of alpha-fetoprotein (AFP), which is a marker for liver cancer
- An ultrasound scan of the liver

What factors increase the risk of primary liver cancer?

- **Older age** - In North America, Europe and Australia, liver cancer most commonly affects older adults. In Asia and Africa, liver cancer diagnosis tends to occur at a younger age (between 20 and 50) because of the high incidence of chronic viral hepatitis in children.
- **Cirrhosis** – over many years, chronic inflammation causes scar tissue to form in your liver and this increases your chances of developing liver cancer.
- **Some genetic liver diseases** – inherited liver diseases that can increase the risk of liver cancer include hemochromatosis (iron overload) and Wilson’s disease (copper overload).
- **Diabetes** – diabetics have a greater risk of liver cancer than do people who don’t have diabetes.
- **Fatty liver disease** - accumulation of fat in the liver from poor diet increases the risk of liver cancer.
- **Exposure to aflatoxins** - Eating foods contaminated with fungi that produce aflatoxins greatly increases the risk of liver cancer. Crops such as corn and peanuts can become contaminated with aflatoxins.
- **Chronic infection with the HBV or the HCV.**

- **High alcohol intake** - Drinking more than a moderate amount of alcohol over many years increases your risk of liver cancer.
- **Obesity** - If you are very overweight you have a higher risk of liver cancer.
- **Your sex** - men are more likely to develop liver cancer than are women.

Liver Cancer Prevention

A healthy diet and lifestyle can greatly reduce your risk of liver cancer, even if you have a chronic viral infection of the liver. Avoid smoking and excess alcohol intake and follow the dietary recommendations in this book.

The most important nutrients to reduce the risk of liver cancer include –

- [Selenium](#)
- [Vitamin D](#)
- [Vitamin K](#)
- Phyto-nutrients and pigments found in a wide variety of herbs, fruits and vegetables

I urge you to check you have an adequate amount of these specific nutrients in your diet and to supplement with vitamin D, especially if you do not get regular sun exposure, work indoors or live in a cold climate. It is important to supplement with a good selenium supplement on a long term basis.

Treatment of Liver cancer

The patient with liver cancer must be referred to a liver specialist who is working within a multi-disciplinary team with the aim of achieving a cure. Treatment options include surgical removal of the cancer and localized chemotherapy. A liver transplant may be needed.

Blood tests for Liver Function

Some of the standard or routine blood tests that your doctor will order to check liver function are in reality only able to detect liver damage. These tests may not be sensitive enough to accurately reflect whether your liver is functioning at its optimum level.

These tests will usually be abnormal in significant liver disease or liver distress; however, they can still give normal readings in some cases of liver disease.

This is why imaging tests of the liver and gall bladder, such as ultrasound scans or CAT scans or MRI scans are important. These imaging tests can determine the degree of liver disease and if there are any tumors, cysts, gallstones or fatty accumulations, which change the texture of the liver.

Thankfully it is often possible to return abnormal liver function tests to normal with our dietary program and suitable liver tonics.

A routine blood test for liver function checks the blood levels of the following –

Total Bilirubin

The normal range is: 2 - 20 umol/L or 0.174 - 1.04 mg/dL. This test measures the amount of bile pigment in the blood.

If blood levels of bilirubin become very elevated, the patient may have a yellow color to their skin and eyes and this is known as jaundice.

Liver Enzymes

AST (aspartate aminotransferase), which was previously called SGOT, can also be elevated in heart and muscle diseases and is not liver specific.

The normal range of AST is 0 - 45 U/L.

ALT (alanine aminotransferase), which was previously called SGPT, is more specific for liver damage.

The normal range of ALT is 0 - 45 U/L.

ALP (alkaline phosphatase) is elevated in many types of liver disease, but also in non-liver related diseases.

The normal range of ALP is 30 - 120 U/L.

GGT (gamma glutamyl transpeptidase) is often elevated in those who use alcohol or other liver-toxic substances to excess.

The normal range of GGT is 0 - 45 U/L.

Why do all or some of these liver enzymes become elevated in cases of liver disease?

Normally these enzymes are mostly contained inside the liver cells; they only leak into the bloodstream when the liver cells are damaged. Thus, measuring liver enzymes is only able to detect

liver damage and does not measure liver function in a highly sensitive way.

Blood Proteins

These proteins are manufactured by the liver and are measured in the blood test for liver function.

Total protein: Normal range is 60 - 80g/L or 6 - 8g/dL

Serum albumin: Normal range is 38 - 55g/L or 3.8 - 5.5g/dL

Serum albumin is a good guide to the severity of chronic liver disease. A healthy liver manufactures plenty of albumin and falling levels of blood albumin show deteriorating liver function.

Globulin protein: Normal range is 20 - 32g/L or 2 - 3.2g/dL.

Blood levels of globulin may be abnormal in chronic liver disease. Elevated levels of globulin proteins in the blood usually mean excessive inflammation in the liver and/or immune system. Very high levels may be seen in some types of cancers.

For an in depth explanation of blood tests for liver function, visit <http://www.liverdoctor.com/liver-tests>

For an explanation on how doctors judge the appearance of your liver, visit <http://www.liverdoctor.com/liver/fatty-liver-study/> and click Imaging.

The Liverdoctor website also discusses a clinical study that we did on fatty liver reversal - see <http://www.liverdoctor.com/liver/fatty-liver-study/>

AIDS

New HIV infections now total about 50,000 a year in the U.S.A.

In 2015 more than 26,000 people are thought to be infected with HIV in Australia. In 2013 87% of HIV diagnoses occurred in males. An estimated 14% of all HIV cases in Australia remain undiagnosed.

In 1996 the modern era of treatment for HIV began in Vancouver at the International AIDS Convention where the first effective anti-retroviral drugs were introduced. These drugs suppress viral replication and prevent HIV-related complications. In 2015 in Vancouver the International AIDS Society had only a few sessions on new antiviral drugs and the focus was more on how to use the drugs that we already have more effectively to turn around the HIV pandemic. There is intense ongoing research into a preventative vaccine but it is difficult because the virus that causes AIDS is highly variable and hides in the hosts DNA in the nucleus of the cells where it evades the immune system. The virus that causes AIDS is a superb stealth virus

Prevention of AIDS

We do not have a cure or a vaccine so how can we turn around the HIV pandemic?

Firstly we promote the use of safe sex with condoms and make available needle and syringe exchange programs. Treatment of those with HIV greatly reduces the risk of transmitting HIV – this is called “treatment as prevention”. Antiviral drugs can be given before or just after exposure to HIV and are highly effective.

The 2015 goal of 15 million people on HIV drug treatment has been achieved which is remarkable considering the challenges in developing countries. The major theme of the 2015 Vancouver conference was to reach 90-90-90 by the year 2020. This means 90% of people diagnosed, 90% being treated and 90% being effectively treated so that their HIV viral load is undetectable.

Treatment is recommended for all patients with HIV and the earlier treatment is started the less the morbidity and mortality rates. Treatment is also highly effective in preventing the transmission of HIV but must be taken for life.

As of 2016 there is still no cure for HIV.

Many doctors and activists see the preventive use of Truvada (a combination of emtricitabine and tenofovir in one tablet) as a very useful tool for protecting uninfected people who engage in risky sex without using condoms.

However Truvada is not without controversy with some saying its use is reckless, tempting some condom users to abandon that layer of protection and exposing them to an array of other sexually transmitted infections aside from HIV.

According to Michael Weinstein, president of the AIDS Healthcare Foundation “If something comes along that’s better than condoms, I’m all for it, but Truvada is not that. Let’s be honest: It’s a party drug.”

Truvada, is manufactured by Gilead Sciences and has been available for around a decade. It is used as one of the key drugs used in combination with others as the basic treatment for people who have the AIDS-causing virus HIV. In 2012 the Food and Drug Administration approved it for pre-exposure prophylaxis, or PrEP — this means for use to prevent people from getting sexually transmitted HIV in the first place.

Truvada is a once-a-day regimen and is not cheap — around \$13,000 a year. Most insurance plans, including Medicaid programs, now cover prescription costs for Truvada. If taken daily Truvada can reduce the risk of getting HIV by more than 90 percent. There is also interest in using Truvada intermittently timed around episodes of sexual exposure, allowing a reduced cost. There is also interest in a new promising drug for prevention called cabotegravir used as a depot injection every 3 months.

To date, preventive use of Truvada appears to be limited, due partly to misgivings among some gay men and partly to lack of awareness.

According to Gilead, 1,774 people starting using Truvada for prevention between January 2011 and March 2013 — nearly half of them women. The company said more recent figures aren’t available, but health officials in several cities said they see no signs of a major surge in usage.

New York psychotherapist Damon Jacobs has encountered the shaming syndrome as he encourages more gay men to learn about the drug’s preventive abilities. Since co-founding an

informational web site called PrEP-o-licious.org, Jacobs says he's heard from men distressed by reactions they faced after broaching the possibility of taking Truvada.

The U.S. Centers for Disease Control and Prevention offers extensive information about PrEP on its web site. They believe that good research evidence shows that PrEP, when used daily, is safe and effective for reducing the risk of acquiring HIV sexually.

However, Jacobs says other sections of the medical establishment should be more active in disseminating that message, both to gay men and to doctors.

"A lot of doctors are still under the belief that if they give their patients PrEP, they'll go out and have condomless sex," Jacobs said. "What they don't understand is that gay men are already doing that."

Dr. Kenneth Mayer, the medical research director of the Fenway Institute in Boston, which specializes in gay, lesbian and transgender health, says many doctors initially had misgivings about PrEP, but have overcome them. Another challenge is raising awareness of PrEP in black communities with high HIV infection rates. "We have young minority men becoming infected at disproportionately alarming rates, and now we have something that could avert this," said Lynnette Ford of GMHC, a New York City AIDS service organization. "But there's not a lot of information out there in communities that need it most."

Some doctors think that the Truvada debate recalls the way birth control was viewed by conservative groups in the 1960s — as an accessory to promiscuity.

As of 2015 Truvada is licensed in the USA for prevention (pre-exposure prophylaxis) but is not licensed in Australia. In Australia patients can purchase Truvada privately at a cost of around \$1000 dollars for a one month supply. Patients can purchase generic Truvada online for around \$100 for a one month supply. All patients using preventative Truvada need monitoring for side effects from the drug. The cost of providing Truvada on a wide spread basis is very high but this should change when these drugs move off patent over the next several years.

Today available intervention strategies have the potential to prevent most new infections with HIV.

Conclusion

After reading this book you will have become aware of the vast number of the world's population who suffer with liver disease from the chronic viral infections of Hepatitis B and C. To me, as a medical doctor, I find it mind boggling!

It does not have to be this way and I find it frustrating that so many people continue to become infected. We have an effective and safe vaccine to prevent Hepatitis B Virus (HBV) infection, and yet because of social and political problems and ignorance, hepatitis B virus infection is the leading cause of chronic liver disease in the world. Chronic infection with the HBV is one of the most common causes of liver cancer, and once again this is preventable.

I think this book is essential for everyone who has been infected with the hepatitis C and/or B viruses. It is also essential reading for those with AIDS, as it provides holistic and well researched strategies to increase your chances of surviving any nasty virus. After reading this book you will have come to understand just how hard it can be to destroy, or at the very least control, an enemy that is within us. These clever viral enemies live within the deepest part of our cells – indeed they become part of our own genetic material. These viruses integrate into the human genome and take control of it.

You can understand that many people with chronic HBV, HCV and/or AIDS feel violated and terrorized by these viruses. You can understand how desperately victims of these viruses want to be rid of them – they want to be cured and this is now possible with the new drugs that promise to eradicate the HCV.

Most sufferers think that the Holy Grail is a cure and this is understandable, but we need to understand that a cure or eradication of the virus does not repair the damage to the liver. In the case of the HBV, these are stealth viruses that can mutate and hide so as to evade our immune system and become resistant to drugs. You may think you are cured, but the virus can recur, or can still lurk, unbeknownst to you, in your genome.

With the HBV the Holy Grail is to eradicate it via prevention with universal vaccination; just like we eradicated the smallpox virus.

But for those who remain infected, to me the Holy Grail is not a cure or total eradication of the virus, no matter what the cost to the patient's general health or psyche. If your immune system is weak you may be attacked by another infection in the future, or the HCV and HBV can recur. I believe that your greatest asset is a strong and healthy immune system.

The most important things are to –

- Create and maintain a healthy immune system
- Reduce inflammation in the liver
- Prevent the development of cancer
- Prevent the virus from damaging your organs including your liver

Even if the drugs fail, nutritional medicine can help you achieve these goals – just see our [testimonials](#).

If you have a chronic infection with the HBV, HCV or HIV, try not to feel contaminated or irrevocably damaged. To try and put it into perspective, think about this – 95% of the world's population are chronic carriers of the Epstein Barr Virus, which causes glandular fever. Globally it is estimated that one in eight to one in five persons (depending on country of residence), carry the genital herpes virus; many carriers have no persistent symptoms, so they can easily infect others.

There is still much that we need to learn about chronic viral infections, and new tests, more effective anti-viral drugs and vaccines will be developed, and the future can only get better.

Infectious diseases continue to wreak havoc worldwide and many are related to poverty and ignorance. The hepatitis B virus presents unique challenges, as not only is it so ubiquitous, it is harder to treat than the hepatitis C virus. This is because in the majority of patients with chronic HBV infection, there are only low levels of viruses replicating in their bodies. You may think this sounds good, but anti-viral drugs are designed to treat viruses that are very active and replicating; otherwise they are not that effective. In the majority of chronic carriers of the HBV, the viral genetic material is snuggled away hiding in the carrier's cells and is not actively replicating. So to kill such a clever stealth virus, we must reach into the patient's very own genetic material (DNA), and this is very risky business.

So my view is, at the end of the day, there are many unanswered dilemmas, as well as treatment failures, but I always remain an optimist and I never give up. I have seen so many excellent treatment outcomes using the strategies in this book that continue to vindicate my belief in nutritional medicine. You too should not feel the need to give up, as there is a wealth of old and new scientific research that proves the effectiveness of nutritional and herbal medicine. The drug companies do not always want to hear about it, although I have seen over the last 5 years that drug companies are starting to buy up the vitamin and herbal companies! They are not all that silly and they can see that antibiotic drugs are failing and that consumers are demanding safer and long term treatments, not just a short term fix.

I have found that many liver specialists try to ignore nutritional medicine; they minimize it or put it down. But don't let that put you off – read our testimonials and contact us for help. Be a patient patient, as it may take a year before you make great strides and my books on the liver will help you. My team are here to support you all the way.

Our Health Advisory Service in Phoenix Arizona receives many inspiring testimonials – to see some of these, visit <http://www.liverdoctor.com/liver/fatty-liver-study/> and click Testimonials.

To obtain more help you may:

E-mail us at ehelp@liverdoctor.com or write to us at

P.O. Box 5070, Glendale Phoenix AZ 85312

or

P.O. Box 689 Camden NSW 2570 Australia

You can phone our help line where you can speak to a naturopath on 623 334 3232 in the USA or 02 4655 8855 in Australia.

Glossary

AIDS – Acquired Immune Deficiency Syndrome is an infectious illness caused by a virus called the human immunodeficiency virus (HIV). It is transmitted via blood and sexual fluids. The HIV causes severe damage to the immune system resulting in life threatening cancers and infections.

Albumin – is a protein manufactured by the liver and is the most abundant protein found in the blood. The blood level of albumin becomes abnormally low in liver disease.

Amino acids - small proteins which are the building blocks of larger proteins found in the body. Amino acids contain an amino group (NH₂), a carboxylic acid group (COOH) and side groups that have the basic formula NH₂CHR₁COOH. Some amino acids can be manufactured by the body whereas others known as essential amino acids must be obtained from the diet, otherwise deficiencies will occur. Many amino acids, especially those high in the mineral sulfur, are required for healthy liver function.

Antibodies – proteins found in the blood, which can be tested for and measured with a blood test. Antibodies are made by cells of the immune system against specific viruses, bacteria and proteins.

Antigen – a protein component of a virus, bacteria, chemical or food that stimulates the immune system to make antibodies against it

Antioxidant - a substance that inhibits oxidation. It protects body cells from damage caused by the oxidative effects of free radicals. Oxidation damages the body's cells causing inflammation and sometimes cell death. Certain nutrients, such as vitamin E and C, and minerals such as selenium and sulfur are powerful antioxidants which exert a protective effect

Ascites – accumulation of abnormally high levels of fluid inside the abdominal cavity; this is most often caused by cirrhosis or other severe diseases of the liver. Ascites occurs when the liver is unable to manufacture adequate amounts of albumin protein.

Autoimmune – the condition where the immune system attacks and damages the cells and organs of a person, instead of protecting them

bDNA – a blood test used to measure the amount of hepatitis virus in the blood

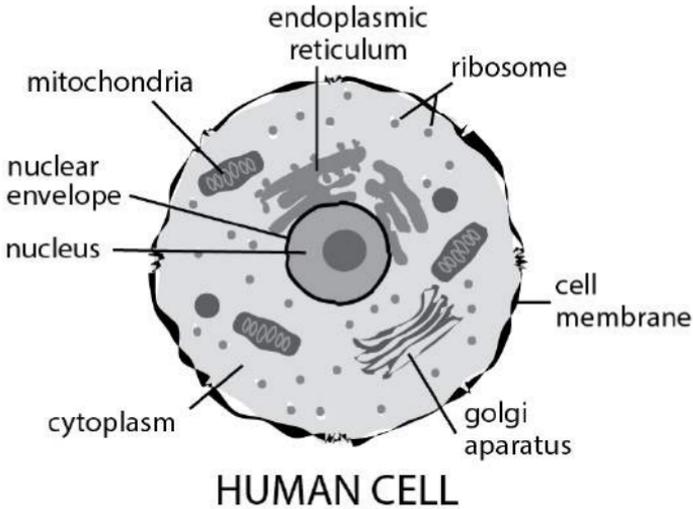
Bilirubin – a substance produced in the body from the breakdown of old red blood cells. Bilirubin is taken in by the liver cells and converted to a more soluble form and then secreted in the bile. Blood levels of bilirubin may become elevated in liver disease. If the blood bilirubin concentration is higher than 2mg per deciliter the person will appear yellow (jaundiced)

Biopsy – the removal of a piece of body tissue, either by fine needle or other surgical means. The tissue is then examined under a microscope to look for types of disease affecting the cells in the tissue. See www.liverdoctor.com/liver-biopsy/

Blood count – the number of red and white cells in the blood

Carrier – a person is known as a carrier if the virus remains in their body long-term. A carrier is infectious to other people who do not have immunity against the virus.

Cell - the cell is the basic functional unit of life and is the smallest unit that is classified as a living thing. The cell can be described as the building block of life. Some organisms, such as most bacteria, are unicellular (consist of a single cell). Other organisms, such as humans, are multicellular. Humans have approximately 100 trillion cells and a typical cell size is 10 μm . Every part of a human being is made from a collection of different types of cells. There are a large variety of specialized cells - skin is made from epidermal and dermal cells, the brain contains cells called neurones and the liver contains cells called hepatocytes. There are 210 known types of human cells that make up all the different organs, systems and tissues of the body. Human cells are like tiny factories. The nucleus, at the center of the cell, is the head of the factory, and contains most of the genetic material (DNA) of the cell. There are a variety of other structures contained within the cell that facilitate energy creation and distribution to the different parts of the cell. Among the different parts inside of a cell are the mitochondria, which carry out a lot of metabolic functions that keep the cell alive and healthy.



Cell membrane – this is vital to the survival of the cell and serves as a barrier between the internal contents of the cell (cytosol, cell organelles, etc.) and the external environment. This barrier allows the cell to maintain homeostasis as well as keep unwanted materials out of the cell. In humans, the cell membrane consists of a fatty phospholipid bilayer; this bilayer forms a protective barrier that renders the cell impermeable to water and other materials. Without the cell membrane, the cell would be unable to keep unwanted liquid and materials from entering it and also unable to keep vital internal liquid and materials from exiting.

Cirrhosis – a diseased state of the liver characterized by fibrous scar tissue and nodules. The nodules form from newly regenerating liver cells replacing dying liver cells. These nodules and scar tissue damage the architecture of the liver. Cirrhosis is the result of damage to liver cells caused by chronic inflammation. There are four different stages of cirrhosis as follows:

Stage One – is the initial phase of cirrhosis. Generally during stage one, the patient experiences few or no symptoms and may

feel very well. In stage one, abnormal tissue and inflammation have developed in the liver. This is mainly confined to around the portal areas, which house branches of the bile duct, portal vein and hepatic artery.

Stage two- the areas of abnormal tissue begin to form into stiff bands of connective tissue, a condition known as fibrosis.

Stage Three - the areas of fibrosis expand and merge – this is called bridging. This can lead to a degradation of liver function.

Stage four - this is the final stage of cirrhosis. Patients in this stage need a liver transplant. They have end stage liver disease and without a liver transplant their average life expectancy is less than 10 years.

Clinical experience – the interaction between a patient and a doctor, which may incorporate the taking of a medical history, doing a physical examination and ordering appropriate blood and imaging tests. It usually results in the initiation and monitoring of treatment with the intention of a therapeutic or healing outcome.

DNA - Deoxyribonucleic acid or DNA is situated in the nucleus of the cell. DNA is a nucleic acid that contains the genetic instructions used in the functioning of all known living organisms (with the exception of RNA viruses). The main role of DNA molecules is the long-term storage of information. DNA segments carry the genetic information called genes.

Encephalopathy – inflammation of the brain, which causes abnormal mental function. This can be caused by high blood ammonia levels in liver disease.

Enzyme – a protein manufactured by the body's cells to speed up (catalyze) chemical reactions which are needed for normal body function

Essential fatty acids – are fatty acids that humans must ingest because the body requires them for good health but cannot manufacture them. Two essential fatty acids (EFAs) required for humans are alpha-linolenic acid (an omega-3 fatty acid) and linoleic acid (an omega-6 fatty acid). If these EFAs are not present in the diet a large range of health problems, including immune dysfunction will occur.

Fatty liver – a liver that contains an excessive amount of fat, which replaces healthy liver cells. This fat can cause varying degrees of inflammation in the liver, which can result in chronic liver disease. Fatty liver increases the risk of diabetes.

Fibrosis – scar tissue

Flavonoids - are a class of water-soluble pigments that are found in many plants. While not labelled as essential nutrients, many of these compounds serve as antioxidants and are anti-inflammatory.

Free radicals - are molecules that are very unstable and seek to bond to other molecules to increase their stability. When free radicals bond to molecules within the body's tissues, they can cause damage to cells or to the genetic material inside the cells. Excessive free radicals are produced in the body when it is subjected to infection, toxic chemicals, cigarette smoke, trauma and immune dysfunction. Free radicals have many undesirable effects in the body such as - accelerating the aging process, tissue inflammation and damage, which can result in scarring and cancer. Antioxidants neutralize free radicals.

Gastroenterologist – a doctor who specializes in disease of the gastrointestinal system, including the liver. Some of these specialists are super specialized in liver diseases and are known as hepatologists; whereas others are more interested in the digestive tract.

Genotype – this describes a particular sequence of genes (genetic material). There are different strains of the hepatitis C virus which have different genotypes – such as genotype one, two and three. A person also has a specific genotype that makes them more susceptible to certain diseases or more responsive to antiviral drugs. Genotypes can be tested for with blood tests.

Glutamine – an amino acid with positive health effects on the liver and gut

Glutathione peroxidase - is an antioxidant enzyme required for detoxification and protection of the liver against free radical damage.

Gluten – a protein found in various grains, especially wheat, rye, barley and oats. It may trigger or worsen autoimmune disease

such as celiac disease, psoriasis, Crohn's disease, autoimmune liver diseases, ulcerative colitis and many others. You can have a blood test to check if you carry the genes that predispose you to gluten intolerance.

Hepatitis – inflammation of the liver which can be caused by numerous factors

Hepatocyte – the predominant type of cells found in the liver. These cells perform many specialized biochemical reactions essential to life.

Hepatologist – is a doctor who specializes in liver diseases.

Hepatomegaly – an enlarged liver.

HCV – Hepatitis C Virus

HBV – Hepatitis B Virus

HBV DNA – the genetic material of the hepatitis B virus – the amount of HBV DNA can be measured with a blood test and is called the viral load.

Holistic – an approach to healing that incorporates all types of treatment modalities including natural substances, diet, exercise, stress management and suitable drug therapy. Its aim is to minimize the use of drugs or the dosage of drugs with potentially toxic side effects, so that a safer and better outcome is achieved.

Immune globulin – an injection containing concentrated antibodies against a specific virus. Hepatitis B immune globulin contains antibodies against the hepatitis B virus or against the hepatitis A virus. It is given to protect people who have been exposed to these viruses and have no immunity. It is protective against infection for a short period of time.

Immune – the ability to overcome infection or resist attack by invading micro-organisms such as bacteria, viruses or larger parasites. Immunity requires the proper functioning of the body's immune system. Acquired immune responses, designed to act against a specific microbe (such as the influenza virus or the hepatitis A, B or C virus) are stimulated by the prior presence of that microbe in the body. Previous infections with these specific viruses, as well as vaccines, produce this type of immunity. Acquired immunity is based on the recognition of viral protein

(antigen) by white blood cells known as B cells and T cells. Killer or cytotoxic T cells destroy infected cells. Helper T cells induce B cells to proliferate into antibody-secreting cells, or plasma cells. Antibodies produced by plasma cells bind to antigen-bearing cells and viruses, marking them for destruction.

Immune system - this is a collection of organs (including the liver and spleen), the thymus gland and cells of the blood and bone marrow and antibodies. These components work together to protect your body from dangerous micro-organisms (such as bacteria, viruses, parasites and fungi) and cancer. The immune system also includes the tonsils, lymph nodes, and parts of the intestines. An important part of the immune system are specialized cells, called white blood cells, which patrol throughout your body looking for micro-organisms that may infect you and cause disease. For people with viral hepatitis, the immune system is very important and determines if the disease will be acute and short lived or chronic.

Inflammation - a protective reaction of body tissues to infection, irritation or injury. The reaction is characterized by pain, redness, swelling, and sometimes loss of function. Inflammation may be acute and short lived or long lasting (chronic)

Interferon - a protein substance made by white blood cells in humans and animals in response to infection or cancer. It is a protective response by the body to prevent multiplication of viruses. The action of interferon was first demonstrated in 1957 by British virologist Alick Isaacs. Interferon interferes with cancer cells, reducing their ability to grow and multiply. Interferon stimulates the immune system by invigorating its killer T cells and other cells to attack cancer cells and viruses. Interferon alpha is a man made copy of natural interferon.

Jaundice – a yellow discoloration of the skin, whites of the eyes and mucous membranes caused by abnormally high levels of bilirubin in the blood.

Killer cells - Natural killer cells (or NK cells) are a type of white blood cell and play a vital role in the destruction of tumors and cells infected by viruses. They kill bad cells by releasing small granules of proteins (called perforin and granzyme) that cause the bad cell to die by apoptosis (programmed cell death).

Lamivudine – an oral drug belonging to the group of drugs known as nucleoside analogues. It is approved to treat chronic viral hepatitis.

Lignans- a member of a group of substances found in plants that have shown estrogenic and anti-cancer effects.

Liver biopsy – see [biopsy](#)

Liver enzymes – these are measured in the blood for liver function tests. These enzymes are situated inside the liver cells and enable the liver cells to perform their chemical functions efficiently. The blood levels of liver enzymes are often elevated in liver disease where inflammation is occurring in the liver. Examples of liver enzymes are ALP, ALT, AST, GGT

Liver failure - is the inability of the liver to perform its normal manufacturing and metabolic functions. Typical symptoms include jaundice, ascites, bleeding from the intestines, bruising, tremor, hepatic encephalopathy (confusion, stupor and coma) and decreased production of proteins (such as albumin and blood clotting proteins).

Liver palms – excessively red colored palms, which may be a sign of liver disease. Doctors call this sign palmar erythema.

Lymphatic system – a network of lymph nodes (lymph glands), small vessels (which carry lymph fluid) and lymphoid tissue found throughout the body. This includes the spleen, the thymus gland, the tonsils and bone marrow. Lymph fluid circulates throughout this system. The lymph fluid returns proteins and waste products from the tissues to the blood. The lymphatic system is part of the immune system. Lymph nodes (lymph glands) filter bacteria and foreign matter from the lymphatic fluid. The lymphatic system produces a type of white blood cell called a lymphocyte which helps to fight infections.

Lymphocytes – A type of white blood cell found in the blood, lymph, and lymphoid tissues. Lymphocytes account for approximately 25 percent of all white blood cells. B cell lymphocytes produce antibodies against viruses and T cell lymphocytes function in cellular immunity.

Minerals - inorganic elements, such as calcium, iodine, sulfur, magnesium, selenium, iron, potassium, sodium, copper,

molybdenum, manganese and zinc etc. Many minerals are essential to the immune and metabolic function of humans, animals, and plants. Many people are deficient in these minerals.

MRI Scan – Magnetic resonance imaging is a test that images internal body organs such as the liver and is very good in finding tumors. It is very safe and accurate.

Nucleus - is a membrane-enclosed organelle found in the center of a cell. The nucleus contains most of the cell's genetic material (DNA molecules) which form chromosomes. The genes within these chromosomes are the cell's nuclear genome. The nucleus is the control center of the cell and can be compared to the operating system of a computer. The nuclear membrane is impermeable to most molecules and contains pores to allow the movement of molecules across the envelope.

Nutritional medicine – the use of targeted supplements of vitamins, minerals and essential fatty acids with super foods, nutrient dense foods, raw juices, bio-identical hormones and herbs to treat the causes of disease and to overcome genetic weaknesses.

PCR – this stands for Polymerase Chain Reaction, which is a laboratory test used to amplify tiny amounts of virus genetic material, so the virus can be detected. This test uses reverse transcription (copying) of RNA to DNA, to detect hepatitis C virus RNA in the blood.

Platelets - are tiny cell fragments, which are derived from fragmentation of large cells in the bone marrow. Platelets circulate in the blood and are involved in the regulation of bleeding. When needed, platelets initiate the formation of blood clots to stop excessive bleeding. If the number of platelets is too low, dangerous and excessive bleeding can occur.

Quantitative HCV RNA test – this is a blood test to detect the hepatitis C virus. It is not highly sensitive, as its detection limit is 200 virus equivalents/ml and anything below this does not show up.

Qualitative HCV RNA test - this is a blood test to detect the hepatitis C virus. It is highly sensitive because its detection limit is much lower - it can detect down to 10 virus equivalents/ml. The

qualitative test can detect tiny amounts of virus in the blood.

Ribavirin – an oral antiviral drug used with interferon to treat chronic infection with the hepatitis C virus.

RNA virus - is a virus that has RNA (ribonucleic acid) as its genetic material. This nucleic acid is usually single-stranded RNA (ssRNA) but may be double-stranded RNA (dsRNA). Important human diseases caused by RNA viruses include SARS, influenza and hepatitis C.

Selenium – a mineral that is vital for healthy liver function and healthy liver tissue. It exerts an anti-viral and anti-cancer effect. The organic form of the mineral selenium is called selenomethionine.

SVR – this is the abbreviation for Sustained Viral Response. A SVR means that 6 months or more after anti-viral drug treatment is finished, blood tests (PCR test) are negative for the Hepatitis C virus. It is sometimes referred to as a cure.

Therapeutic – Treatment to fight disease and/or alleviate pain or injury, requiring no further treatment after recovery.

Transfats – a man made synthetic fat devised because unsaturated fatty acids become rancid quickly. To combat this instability of unsaturated fatty acids, manufacturers hydrogenated them; this process makes them more stable. The result was a more solid and longer lasting form of vegetable oil, called “partially hydrogenated” oil. When unsaturated vegetable fats are subjected to the process of hydrogenation, a new type of fatty acid called transfats is formed. Transfats are unhealthy because they increase the bad LDL cholesterol levels and reduce the good HDL cholesterol levels; thus transfatty acids are detrimental to cardiovascular health. Transfatty acids are detrimental to the function of cell membranes and the liver.

Avoid foods that contain large amounts of transfatty acids – eg. margarines (the more solid the margarine, the more the transfatty acids), high-fat baked goods (eg. doughnuts, cookies and cakes), French fries, potato chips, corn chips and many crackers and products with labels stating “partially hydrogenated vegetable oils” (unfortunately this includes most processed foods.)

Ultrasound scan – a test using sound waves to obtain images of internal organs such as the liver, gall bladder and spleen. It is accurate in detecting liver tumors, gallstones and dilated bile ducts.

Unsaturated vegetable oils – these are present in oils from nuts, olives, flaxseeds, corn, safflower and sunflower. As long as they have not been subjected to the process of hydrogenation, they are healthy for the body. These oils contain monounsaturated or polyunsaturated fatty acids that can reduce total cholesterol and increase HDL cholesterol levels. These oils also contain the essential fatty acids - specific fatty acids necessary for life but which the body cannot make itself. (These include omega-3 and omega-6 fatty acids.)

Vaccine - a preparation of a weakened, killed or genetically made bacteria or virus, or of a part of a virus or bacterial structure. If such a preparation is administered it stimulates the immune system to produce antibodies against the virus. A vaccine is designed to provide immunity against infection and will not cause infection.

Virus - a small infectious particle that can only replicate inside living cells. Viruses infect all types of organisms, from humans, animals, plants and bacteria. Around 5,000 viruses have been studied in detail, although there are millions of different types. Virus particles are known as virions. They consist of two or three parts: the genetic material made from either RNA or DNA, a protein coat that protects these genes and in some types, an envelope of fats (lipids) that surrounds the protein coat. The shapes of viruses vary tremendously. The average virus is about one one-hundredth the size of the average bacterium. Most viruses are too small to be seen directly with a light microscope.

Viral load – the concentration of virus in your blood. The viral load is the number of hepatitis C viruses that are present in a given volume of blood (usually 1 milliliter of blood). The PCR test and the bDNA test can be used to estimate the amount of virus in your blood.

Vitamins – organic compounds required in small quantities, which are essential for health and metabolism. They must be obtained from the diet (or in the case of vitamin D from sunshine and/or diet), as they cannot be manufactured by the body.

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