

# HEROES AGAINST CANCER NEWSLETTER

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## Hyperbaric Oxygen Therapy for Systemic Healing

By Ty Bollinger

One of the hallmarks of cancer is the uncontrolled proliferation of abnormal cells that have flipped from their normal aerobic state, meaning they thrive on oxygen for energy production, to a malignant *anaerobic* one. Anaerobic cells march to the beat of their own drum, as you may already be aware. They gobble up and ferment both sugar and amino acids (glutamine in particular) in order to successfully divide, multiply, and spread throughout the body. This immensely damaging process typifies what it means to have a serious cancer diagnosis that requires concerted intervention.<sup>1</sup>

In recent years, science has taken a particularly keen interest in trying to develop novel ways to impede this destructive force by specifically targeting the disparate ways in which cancer cells function, as opposed to that of healthy cells. The goal has been to determine how best to disrupt the strategic survival methods of cancer cells in order to stop them in their tracks, as well as prevent them from spreading to the rest of the body – a catastrophic process known as metastasis.

But what's being uncovered as a highly effective means of accomplishing this both safely and naturally isn't necessarily new, as the technique has been around for

## Message from Ty Bollinger



Welcome to the February edition of your Heroes Against Cancer newsletter. We have a surprise for you this month with a brand new design and layout for the newsletter! (Actually it was a surprise for me too. I didn't even know my team was working on it until the layout was all finished! I love the new look though, and hope that you do too.

Even though the look may be a little different, the most important parts of the newsletter haven't changed. We're still bringing you three information-rich articles and cancer-fighting recipes each month.

Whether your personal goal is preventing cancer, healing from cancer, and/or getting your immune system strong after cancer treatment... our mission is to continue to bring you the knowledge you need to make the right choices for your health, and the health of your loved ones.


For those of you in the continental U.S., by now you should have received your inaugural print version of the newsletter for January. As soon as they started hitting mailboxes, we got some wonderful feedback from our HAC community. Here are just a couple of snippets:

*"I just received the newsletter in the mail and just love it."*

*"I want to say thank you for doing this. I hope it continues. You have such great and important information, and I don't want to miss out on any of it."*

Be sure to drop us a line at [support@thetruthaboutcancer.com](mailto:support@thetruthaboutcancer.com) and let us know what you think of both the print format and the new design. And if you have ideas for topics you think would be a good fit for the newsletter, be sure to send those along as well.

Until next month...

  
Ty Bollinger

more than 100 years. It's known as hyperbaric oxygen therapy, or HBOT, and I devoted a large segment of Episode 7 of "The Truth About Cancer: A Global Quest" to explaining how it works and how it can help people trying to fight cancer, as well as other chronic illnesses.



Dr. Donald Jolly-Gabriel demonstrating the Hyperbaric Oxygen chamber in Episode 7 of TTAC: A Global Quest

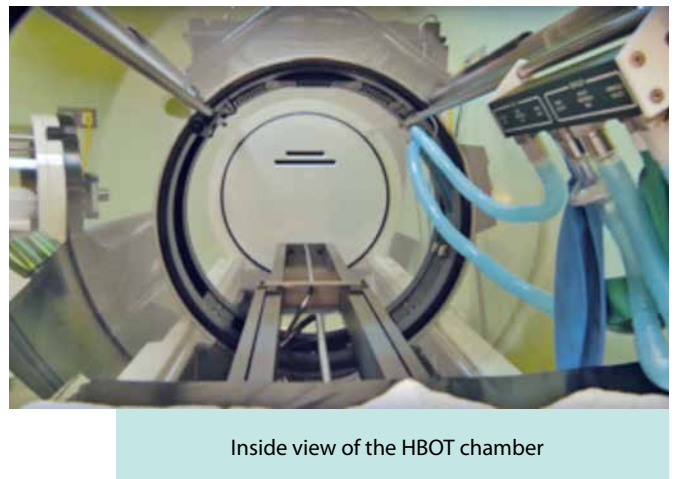
By essentially saturating the body with oxygen, HBOT helps to feed healthy cells in the body with the thing they love most – oxygen – while simultaneously boosting the body's natural immune function. At the very same time, HBOT appears to starve out cancerous cells, which are forced by the therapy to compete with healthy cells for resources and dominance. Which, when HBOT is done correctly, can lead to cancer remission.

In this article I'd like to explain more about how HBOT works, where it originated, and how it's being used today throughout the world – both as a first-line and adjunct therapy for cancer and many other chronic ailments. Truth be told, HBOT is one of the simplest and most effective ways to give your body's healthy cells an upper hand over the unhealthy ones, which in many cases leads to amazing healing results.

## The Numerous Healing Benefits of Oxygen

As a quick primer, the term "hyperbaric" is just a fancy way of saying that something is being delivered under higher-than-normal pressure conditions.<sup>2</sup> In the case of HBOT, it refers to the concentrated delivery of oxygen inside an airtight, pressurized atmospheric chamber. In its highest therapeutic mode this chamber is capable of delivering oxygen at an atm (atmosphere) of as high as three times the normal atmospheric level. This is considered an appropriate amount necessary to treat some of the most serious known health conditions, including cancer.

The way it works is a patient enters the chamber for a session lasting between 30 - 90 minutes (depending on the condition), during which time oxygen is applied at very high doses. The process allows for **up to 20 times** more oxygen to be absorbed in the patient's blood-stream compared to normal breathing, which helps to greatly speed up healing and recovery time.<sup>3</sup> It's a rather simple process, and yet what it accomplishes is incredibly profound when you consider what's actually happening inside the body.



Inside view of the HBOT chamber

Oxygen is the primary fuel that cells use to produce energy via their mitochondria, or cellular "engines," influencing the expression of more than 8,000 genes throughout the body. When cells are lacking in oxygen (which they often are when the body is sick), they're

much more prone to going rogue and wreaking havoc. Maintaining high levels of oxygen inside the body can help prevent or mitigate this, which is where HBOT comes in. **By effectively forcing cells to become oxygenated, HBOT can help in the following ways:**

- » Raising tissue oxygenation to optimal levels, as needed, to promote improved illness recovery and injury repair.
- » Boosting the body's natural defense mechanisms to help kill bacteria and viruses, and fight infection.

Encouraging the growth of new blood vessels to deliver more blood, including pluripotent stem cells, to areas of the body where more life essence is needed.<sup>4</sup> [Note: Pluripotent stem cells are “master cells” that can produce any cell or tissue the body needs to repair itself.]

- » Minimizing swelling in areas where inflammation is present, as oxygen functions as a potent anti-inflammatory.
- » Inducing neural stem cells in the brain to travel throughout the body and adapt, as needed, for tissue repair, offering pronounced neuroprotective benefits.<sup>5</sup>
- » Stimulating the formation of new nervous tissue in the brain, helping to correct neurological disorders.<sup>6</sup>

Oxygen is critical for life, in other words. But unfortunately, many people aren't getting enough of it, which is evidenced by the increasing prevalence of chronic illness that we see all around us. Chemical pollution, nutrient deficiency, and lack of exercise are among the primary causes of oxygen deficiency in the modern world, and the consequences are prolific.



Air pollution, poor diet, and a lack of exercise all contribute to our bodies not getting enough oxygen

### Oxygen as a Natural Antibiotic

Numerous studies conducted over the past several decades illustrate how oxygen acts as a natural antibiotic. **Without oxygen, the immune system is much less able to fight infection.** One study published back in 1984, for instance, found that oxygen is a powerful natural weapon against *E. coli* and the cell death that it causes.<sup>7</sup> A follow-up study conducted two years later by the same research team added to this finding, confirming that having fully oxygenated tissue is just as effective at treating infections as taking anti-biotic drugs.<sup>8</sup>

In a more recent correspondence published in *The Lancet*, other researchers looked at the science surrounding the use of hyperbaric oxygen therapy to overcome this lack of antibacterial protection resulting from inadequate oxygen – specifically in patients with colitis and toxic “megacolon.” They found that this increasingly popular adjunctive therapy is a powerful weapon against anaerobic bacteria in general. This even included *C. difficile*, one of the worst bacterial offenders known to fester in a severely damaged gut.<sup>9</sup>



## Oxygen as a Brain Healer

Where oxygen therapy has gotten perhaps the most attention in modern medicine is as a treatment for brain diseases. Traumatic brain injuries, strokes, neurodegenerative conditions like Alzheimer's and dementia, and even autism have all been studied in conjunction with oxygen therapy. And all have responded positively to its use both in a lab and clinical setting. It's similar to the way that exercising produces more oxygen in the brain, thus boosting brain power. Except in this case ill patients enter a chamber that does all the work for them.

Research published in the *Journal of Trauma and Acute Care Surgery* highlights how HBOT helps to not only stop damaging inflammation following a traumatic brain injury, but also stimulate angiogenesis (the formation of new blood vessels) and neurogenesis (the formation of new nerve tissue), both of which are critical for healing.<sup>10</sup> Related studies have shown similar benefits for palsy, stroke,<sup>11</sup> and vascular dementia.<sup>12</sup>



One exciting use of HBOT is as a treatment for brain injury and brain-related diseases

Even in children on the autism spectrum, HBOT has demonstrated its ability to help improve their overall behavior and functionality. In one particular study published in 2009, autistic children who underwent just 40, one-hour sessions of full-dose hyperbaric oxygen

therapy over the course of several weeks demonstrated noticeable improvements in language, social interaction, eye contact, and both sensory and cognitive awareness.<sup>13</sup>

## Oxygen as a Stem Cell Regenerator

Another area where oxygen therapy really shines is with stem cells. Undergoing just 20 sessions of HBOT was found in one study to increase the number of circulating CD34+ stem cells by more than 800 percent. CD34+ stem cells represent the vast majority of the undifferentiated, primitive blood and bone marrow cells that adapt, as needed, to perform various healing functions throughout the body. This same study found that just a single, two-hour HBOT session applying 2 atm of oxygen can effectively double the number of circulating CD34+ stem cells in the peripheral blood supply.<sup>14</sup>

This is significant because CD34+ stem cells possess a unique ability to transform into whatever reparative type of cell the body needs for healing and tissue rebuilding. Perhaps better termed as *rejuvenating* cells, these stem cells serve as the body's universal tool for performing all sorts of maintenance, which helps further explain why HBOT is so effective for treating so many different conditions, including cancer.

## Oxygen as a Cancer Therapy

As I mentioned earlier, cancer cells love sugar because this simple carbohydrate is what feeds their abnormal growth and proliferation. Nobel Prize laureate and cell biologist Otto Heinrich Warburg is widely credited as having been the first to discover this anaerobic phenomenon, which we now refer to as glycolysis.<sup>15</sup>

Warburg's research laid the groundwork for our current understanding of how oxygen therapy works, demarcating the unique way in which cancer cells function apart from oxygen as opposed to healthy cells that require it.

Warburg was the first to figure out that cancer cells don't, and can't, produce energy through normal cellular respiration using oxygen. Because they're unable to function in accordance with the "Krebs" cycle, cancer cells instead rely on fermented sugar to produce energy. A process that, in honor of his discovery of it, is now commonly referred to as the "Warburg effect."<sup>16</sup>

Hyperbaric oxygen therapy can not only combat this effect, but also reverse it by strengthening healthy cells to overcome the systemic damage it has caused. Many of the world's top researchers have been studying how HBOT can function as a cancer therapy, and many now agree that it works well in tandem with other therapies. For example, following a ketogenic diet, which is known to exert a powerful anti-tumoral effect, helping cancer patients to live longer, healthier lives.<sup>17</sup>

In one study, researchers from China Medical University in Taiwan found that combining hyperbaric oxygen therapy with a strict ketogenic diet helps decrease blood glucose, in turn slowing tumor growth and extending the mean survival time of mice with systemic metastatic cancer by nearly 80 percent.<sup>18</sup>



Otto Warburg was honored with a Nobel Prize in 1931 (and a stamp in his home country of Germany) "for his discovery of the nature and mode of action of the respiratory enzyme."

While it's been scientifically established that **HBOT in no way promotes cancer growth or spread**, hypoxia (lack of oxygen) is often what causes cancer cells to

develop in the first place. We know that cancer cells hate oxygen, but HBOT's use as an effective stand-alone cancer therapy is still being investigated. Only in recent years has there been some scientific evidence to point towards HBOT being able to fight cancer on its own: In a landmark 2010 study, researchers from Ohio State University showed that HBOT treatments alone caused tumors in mice with ovarian cancer to shrink significantly in less than a month.<sup>19</sup>

Treatments with hyperbaric oxygen were shown in a 2007 study published in the journal *Undersea Hyperbaric Medicine* to prevent metastatic growth in patients with breast cancer.<sup>20</sup>

As far as the necrotic damage caused by certain forms of cancer, such as penile cancer, research has shown that hyperbaric oxygen is exceptionally potent and effective at reversing and healing this damage.<sup>21</sup>

Furthermore, a study on hyperbaric oxygen published by the National Center for Biotechnology Information (NCBI) back in 2012 confirmed that prolonged hypoxia, or lack of oxygen, is a causative factor in many pathophysiological events, including cancer progression. Hence the importance of maintaining a highly oxygenated internal terrain. This paper concluded that, based on all the available evidence, HBOT on its own possesses pronounced "tumor-inhibitory effects in certain cancer subtypes."<sup>22</sup>

With that said, the best way to utilize HBOT as a cancer treatment, in my opinion, is to use it complementarily with other treatments such as the ketogenic diet. The consensus among the experts I've spoken with seems to be that HBOT is a potentiating treatment, meaning it amplifies other forms of treatment. Many cancer treatment centers, like the Cancer Center for Healing in Irvine, California, utilize it in conjunction with customized therapies to offer patients maximum healing potential.<sup>23</sup>

HBOT is even useful for cancer patients who have opted to undergo conventional chemotherapy or radiation treatments for their condition. At the Cancer Center for Healing, trained physicians develop a customized treatment plan for each patient that involves the use of HBOT before, during, and after chemotherapy. This helps to minimize the oxidative damage chemo is known to cause in healthy tissue. A patient undergoing chemotherapy or radiation will typically undergo between 5 and 40, one-hour sessions of HBOT as part of a complementary treatment plan.



Dr. Leigh Erin Connealy, Director of the Cancer Center for Healing, shares about HBOT treatment in "TTAC: A Global Quest"

According to Dr. Susan Sprau, MD, Medical Director of Hyperbaric Medicine at the University of California, Los Angeles, HBOT "is often the only treatment that can prevent irreversible bone or tissue loss or enable [patients] to undergo life-improving reconstructive procedures such as breast or facial surgeries following chemotherapy or radiation."<sup>24</sup>

### The Two Types of Hyperbaric Oxygen Therapy

It's important to note that there are two main types of hyperbaric oxygen therapy available to patients. The first is the full-strength kind (HBOT) that requires a

doctor's prescription because the U.S. Food and Drug Administration (FDA) considers it a "drug." The other is a lesser-strength kind (mHBOT) that anyone can access for supplemental therapy or wellness. Both are effective for different purposes, but if you're trying to treat a more serious health condition like cancer, you likely want to opt for the former variety.

Full-strength HBOT delivers near-100 percent oxygen in a "hard" chamber at an atm of up to three times the normal pressure found in nature, and uses only "medical grade" oxygen. Mild HBOT (mHBOT), on the other hand, delivers only up to a maximum of 95 percent, non-medical grade oxygen (typically more in the range of 27-70 percent oxygen),<sup>25</sup> in a "soft" chamber at a much lower atm ranging between 1.3 and 1.4. Full-strength HBOT is obviously the better choice when it comes to treating more serious chronic health conditions because the amount and intensity of the oxygen being delivered is much higher. But this must be done under the proper supervision of a qualified health practitioner.

As I stated earlier, you can't even access hard chamber HBOT without a prescription from a doctor because the medical grade oxygen that it uses isn't legally available to the general public. It's a highly concentrated form of oxygen that's at least 90 percent pure with all moisture removed to a -100 degrees Fahrenheit dew point, which is extremely difficult to make without expensive equipment. This is the type of oxygen that's been shown to be the most useful when it comes to systemic healing, and it's a safe and proven method with few, if any, harmful side effects.<sup>26</sup>

### Where to Get HBOT or mHBOT

The Oxford Recovery Center in Michigan explains on its website the differences between hard and soft chamber HBOT, noting that mHBOT can't effectively regrow bone and tissue, for instance, and in some cases can actually *promote* the growth of harmful aerobic bacteria if used incorrectly. There's also a very minimal risk that a "soft"

mHBOT chamber will suddenly lose power and deflate, which can theoretically cause damage to patients' ears (barotrauma) and/or lungs (pneumothorax).<sup>27</sup>

Though it's possible to buy your own soft chamber mHBOT or pay to use one at a health clinic, my recommendation would be to opt for hard chamber HBOT if you're planning to treat a serious medical condition like cancer. This is where you'll really see improvements in tissue regeneration and cellular healing. Also of note is the fact that Medicare, Medicaid, and even many private insurance companies will cover the cost of hard chamber HBOT, so long as your use of it fits within the parameters of approved medical treatments, which include:<sup>28</sup>

- Air or Gas Embolism
- Decompression Sickness
- Acute Mountain Sickness
- Anemia
- Actinomycosis (lumpy jaw)
- Gas Gangrene
- Intracranial Abscess (brain infections)
- Necrotizing Infections
- Osteomyelitis (bone infection)
- Acute Traumatic Ischemias
- Compartment Syndrome
- Crush Injuries
- Skin Grafts and Flaps
- Sensorineural Hearing Loss
- Carbon Monoxide Poisoning
- Cyanide Poisoning
- Chronic Wounds
- Diabetic Ulcers
- Radionecrosis (cancer therapy wounds)
- Thermal Burns



1 Day Prior to Scheduled Amputation



26 HBOT Treatments



50 HBOT Treatments

This image shows the healing of a diabetic foot ulcer after 50 HBOT sessions

There are many other "unapproved" conditions that HBOT is effective at treating, of course, but these conditions may or may not be covered by government or private insurance. In this case it will likely cost you out-of-pocket somewhere around \$150 - \$200 per treatment session.

Hyperbaric medicine is widely available throughout the U.S., including at places like UCLA, the Center for New Medicine (Cancer Center for Healing), the Whitaker Wellness Institute, Exodus Health Center, the California Integrative Hyperbaric Center, and many other clinics. The Undersea and Hyperbaric Medical Society (<https://www.uhms.org/>), an international nonprofit association located in North Palm Beach, Florida, can help you find a local clinic near you that offers HBOT appropriate to your specific health needs.<sup>29</sup>

As for mHBOT, which is still beneficial for some uses despite its lower oxygen levels and pressure capacities, there are soft chamber home systems that you can either access, rent, or even purchase for your home without a prescription. My friend (and docu-series expert) Dr. David Jockers of the Exodus Health Center in Kenesaw, Georgia, recommends a hyperbaric chamber



known as the Vitaeris 320 that he uses in his own health clinic. This portable chamber retails for roughly twenty thousand dollars,<sup>30</sup> though I've seen used and discounted units of this model being sold across the web for far lower. The Vitaeris website (<http://vitao2.com/>) also offers a way to contact them to discuss renting units.

If you choose to go the mHBOT route, my recommendation would be to first consult with a qualified physician and try one out at a local clinic to see how it benefits you. It's critical that you know what you're doing and how to appropriately use an mHBOT chamber in conjunction with a complementary dietary and lifestyle regimen in order to achieve your goals. These goals could range from fighting a chronic disease you already have, to simply oxygenating your body as part of a preventative approach to maintaining long-term wellness.

Though the possible side effects associated with both HBOT and mHBOT are minimal, I would personally recommend working with a hyperbaric oxygen specialist to develop a plan customized to your healing needs.

A qualified health practitioner or health coach will know how to advise you on how many HBOT sessions to undergo per week, for instance, and for how long, as well as help you structure a treatment plan.

### About Ty Bollinger



After losing several family members to cancer (including his mother and father), Ty Bollinger refused to accept the notion that chemotherapy, radiation, and surgery were the most effective treatments available for cancer patients. He

began a quest to learn all he possibly could about alternative cancer treatments and the medical industry.

Ty has now made it his life's mission to share the most remarkable discovery he made on his quest: the vast majority of all diseases (including cancer) can be easily prevented and even cured without drugs or surgery.

Ty is a happily married husband, the father of four wonderful children, devoted Christian, best-selling author, medical researcher, talk radio host, health freedom advocate, former competitive body-builder, and also a certified public accountant.



The Vitaeris 320 is an mHBOT option for home use, although it does come with a hefty price tag

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## The Clear Connection Between Heart Disease and Cancer (and What You Can Do About It)

By Dr. Véronique Desaulniers

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February is American Heart Month in the United States. The focus for this month is all about being kind to your cardiovascular system – and rightly so! Did you know that heart disease is the #1 cause of death for both men and women in the U.S. as well as the rest of the world?

Cancer comes in a close second when looking at both U.S. and worldwide causes of mortality. With so many people being affected by both these “heavy hitters,” it just makes sense that common risk factors have to exist that can contribute to both heart disease and cancer.

And there is. According to a 20-year study of 13,000 men and women conducted by the American Heart Association, **people who practice healthy heart habits have a 38 percent lower risk of developing cancer.**

### Heart Disease and Cancer: What are the Connections?

Heart disease is a broad term used to describe a number of possibly life-threatening cardiovascular conditions, including angina, arrhythmias, arteriosclerosis, heart failure, and heart attacks. High blood pressure (BP), diabetes, and Chronic Obstructive Pulmonary Disease (COPD) should also be considered when thinking about overall heart health and its connection to cancer risk.

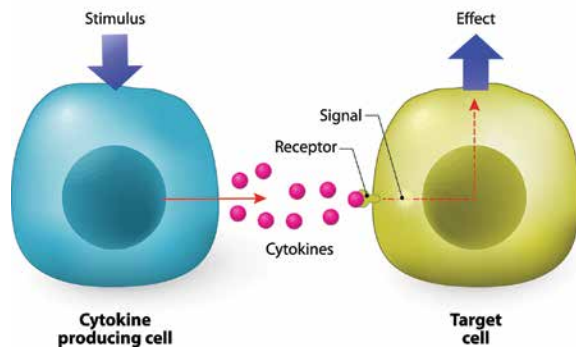
Here are just a few studies which show a clear connection between cancer and various forms of heart disease:

» The most obvious connection comes in the form of type 2 diabetes and obesity, both conditions that develop mostly because of the deadly combination of a stressful yet sedentary lifestyle – and by eating the *SAD*, or the “Standard American Diet,” which is notoriously rich in commercial meat and dairy, processed foods, sweets, salts, and simple carbs.

» According to studies conducted by the World Cancer Research Foundation, obesity itself is the likely cause of close to 20 percent of all major cancers, including breast, colon, esophageal, cervical, and more. At the same time, being overweight is a major factor in the onset of 58 percent of type 2 diabetes conditions as well as 21 percent of “ischemic heart disease” diagnoses.

» Patients suffering from cardiovascular disease also share elevated levels of “cytokines” with those diagnosed with cancer, according to a 2015 University of Colorado study and others. Cytokines are small proteins which can cause inflammation. Their levels are usually elevated in those with type 2 diabetes and in individuals with cancer tumors.

## CYTOKINES



Both cardiovascular and cancer patients have elevated levels of “cytokines” which are small proteins that can cause inflammation

Cancer and heart disease may also share the same culprits in the form of common pathogenic agents. A study conducted over 20 years ago by researchers at the National Heart, Lung, and Blood Institute and published in the journal *Science* (1994) discovered possible viral causes to heart disease that act similar to cancer cell growth. The commonly occurring cytomegalovirus can infect plaque cells in arteries, causing proteins responsible for stopping the growth of plaque to malfunction. These same proteins tend to fail in most human cancer cells as well.

» Another common factor between heart disease risk and cancer is stress. The body is equipped to deal with short bursts of stress hormones during a crisis, after which the body will naturally begin to balance itself. When stress becomes chronic, however, the body pumps a constant stream of cortisol into the bloodstream, with devastating effects.

» Inflammatory responses, a depleted immune system, and a whole host of other complications arise from chronic stress which can affect not only a person’s susceptibility to cancer but also the functions of the cardiovascular system. In particular, chronically high cortisol signals the constant production of adrenaline which can have a profound effect on heart health – leading to high BP, high cholesterol levels, and increased risk of heart disease, strokes, and heart attacks.

» Where cancer is concerned, chronic cortisol imbalance has been linked to the underproduction and malfunction of key immune system components that keep cancer at bay, including natural killer (NK) cells. A ground-breaking Stanford University study found that 65 percent of patients who had advanced breast cancer also had abnormal levels of cortisol in their system.

## Considerations About Traditional Cancer Therapies and Heart Health

If you have been diagnosed with cancer and are considering traditional therapies such as radiation and chemotherapy or if you have had these treatments in the past, this will be important information for you to consider.

Recent studies have confirmed that **there is a distinct connection between certain chemotherapy drugs and the development of cardiovascular conditions.** According to the Mayo Clinic, “chemotherapy side effects may increase the risk of heart disease, including weakening of the heart muscle (cardiomyopathy) and rhythm



disturbances (arrhythmias). Certain types of chemotherapy also may increase the risk of heart attacks.”



Many chemotherapy drugs are linked to both short and long term cardiovascular complications

Some chemotherapy drugs that may lead to short or long term cardiovascular complications include:

» **Anthracyclines** such as Doxorubicin and Daunorubicin

» **Trastuzumab** (Herceptin) and **Pertuzumab** (Perjeta), commonly given for HER2-positive breast cancer (a type of breast cancer that tests positive for a protein called human epidermal growth factor receptor 2 (HER2), which promotes the growth of cancer cells)

» **Taxanes** such as Paclitaxel and Docetaxel, which can lead to abnormal heart rhythms

» **Fluorouracil** and **Capecitabine** (Xeloda), which can cause coronary spasms and heart attacks

» **Angiogenesis inhibitors** such as Bevacizumab, Sunitinib, and tyrosine kinase inhibitors, which have been linked to high blood pressure (BP)

In addition, European studies have also linked the use of ionizing radiation, such as that used in X-rays and traditional cancer radiation therapy, with a greater risk of developing atherosclerosis – a condition in which plaque builds up inside arteries, raising the risk of strokes and heart attacks.

## The Curious Case of Fats, Cholesterol, and Heart Disease

For the last 60-plus years, the American medical establishment has used mass media and biased studies to make the false claim that fat in all its forms, and subsequently cholesterol as well, are the main culprits when it comes to heart disease. This biased focus has created a multimillion dollar “low fat / low cholesterol” foods industry.

Without getting too political, it is important to point out how corporate agendas have played a part in the “demonization of fats.” As the recent documentary *Sugar Coated* points out, the “all fat is bad” rhetoric was spurred on in large part by research conducted in the 1950s by Dr. Ancel Keys, a health research scientist with some rather questionable ties to the sugar industry.



Public opinion is starting to shift and people are realizing that cholesterol and high quality saturated fats are not inherently bad for you

And the bias against fat and cholesterol over the years has left an American population that is still in a state of confusion over the issue. In 2015, a survey sponsored by the International Food Information Council Foundation discovered that 31 percent of Americans have changed their mind completely about fats in recent years – approximately 75 percent now believe that saturated fats are worse for them than before, while the remaining 23 percent believe they are healthier for them than before!

The truth is that both camps are right in a way. Some kinds of fats are very bad for your health – while others are not only healthy, but even considered to be essential for normal functioning of the cardiovascular system, the brain, the digestive tract, and even the immune system.

First of all, not all *saturated fats* are inherently bad for you. “Saturated” simply means that the fat molecules in the substance are “saturated” with hydrogen. This is why most saturated fats are usually solid at room temperature. Most are derived from animal products such as meats, butter, and cheese.

Some very healthy oils can also be categorized as saturated as well, such as palm oil and coconut oil. Coconut oil in particular is considered a “superfood” for the many health benefits it provides, including inflammation reduction – a key factor in cancer prevention and healing.

And while everyone admits that artificially created *trans fats*, which are manufactured when companies turn liquid oils into solids such as with shortening and margarine, should be avoided for heart health as well as for cancer prevention, even well-respected mainstream health organizations disagree about the merits of other forms of saturated fats.

The American Heart Association (AHA) still states that “replacing foods that are high in saturated fat with healthier options can lower blood cholesterol levels and improve lipid profiles.” At the same time, other well-respected institutions are producing studies which prove the opposite. A 2010 analysis sponsored by Children’s Hospital in Oakland, California, gathered information about approximately 350,000 adults. They found that there was no difference between the risks of heart disease and stroke for people who ate the highest amounts of saturated fat and those who ate the lowest.

Mainstream messages about cholesterol can be just as confusing as well. Cholesterol is a fat-like substance that is found within cells of the body and is needed for the production of certain hormones and vitamin D and is also required for the digestive process. The U.S. Dietary Guidelines Advisory Committee’s latest guidelines reflect a complete “about face” regarding cholesterol, stating that “cholesterol is not considered a nutrient of concern for overconsumption.”

Common sense points to the benefits of naturally-sourced fats, *including some saturated fats*. After all, how many thousands of years have humans consumed animal fat as part of a healthy diet? It has only been in the last half a century or so, since the rise of the fast food culture, that the world has seen heart disease rates rise so dramatically and high cholesterol levels began to have an adverse impact on our health.

### **Monounsaturated Fat is a Must for Breast Health**

There is ample research that shows how monounsaturated fats can help prevent and heal breast cancer. A study conducted in Sweden in the late 1990s gathered information on over 60,000 women. It found that while overloading on polyunsaturated fats, found in many commercially produced vegetable oils, may promote breast cancer, monounsaturated fats may actually have a protective effect against cancer.



Research shows that monounsaturated fats in foods such as olive oil, avocados, and nuts may have a protective effect against cancer

A Rutgers University study conducted in 2015 discovered the substance *oleocanthal* in olive oil, which can cause chemical reactions in cancer cells that allows them to be killed by their own enzymes.

Besides olive oil, monounsaturated fats can be found in sesame oil, avocados, walnuts, almonds, macadamia nuts, pistachios, and olives.

## 5 Things You Can Do NOW to Reduce Your Risk of Cancer and Heart Disease

Here are 5 STEPS you can take NOW to reduce your risk of both cancer and heart disease:

- 1 | Avoid trans fats and keep your consumption of polyunsaturated fats to a minimum.** In addition to trans fats, try to keep the amounts of polyunsaturated fats – such as corn, soybean, and canola oils – you consume to a minimum. If you do consume these kinds of oils, realize that even if they are labeled as “organic,” they may still be genetically modified. Approximately 85 percent of all sources of yellow corn in the U.S. are now GMO, as is much of the soy and canola produced worldwide.
- 2 | Give your diet a do-over.** Boost the intake of fresh veggies and healthy fats in your diet. If you eat meat, commit to eating a moderate amount and make sure it is organic, grass-fed, and hormone-free.
- 3 | Move!** Just 30 minutes of moderate exercise five times a week can not only lower your risk of heart disease and diabetes, it can also boost your immune system, help to keep your weight down, and lower your cancer risk. The National Cancer Institute urges cancer survivors to make moderate exercise a serious part of their everyday health regime.



Just 30 minutes of moderate exercise five times a week lowers your risk of both heart disease and cancer

- 4 | Don't smoke and keep alcohol to a minimum.** It goes without saying that smoking cigarettes increases your risk of both heart disease and cancer. But did you know that a study published in the *Journal of the American Medical Association* found that women who have more than three drinks a day have a 15 percent higher risk of breast cancer? As for heart disease and alcohol, more than two drinks a day for men and one for women can increase risk for heart disease and stroke, according to the American Heart Association.
- 5 | Keep stress levels down.** Stress is an inevitable part of daily life. You CAN learn how to manage it and keep your cortisol levels down, however. Meditation, taking a walk, being in nature, exercise, practicing a hobby you enjoy, or even laughing at a funny movie can turn off stress hormones and turn on healing. Experiment with what works for you and commit to doing that one thing just a few minutes each day.

The vast connections that exist between heart disease and cancer may seem overwhelming. The mixed messages that continue to exist within the mainstream scientific community regarding cholesterol and fat don't help either. With heart disease and cancer rates so high, chances are you or someone you know is dealing with the ramifications of either one or both of these disease conditions right now.

There are simple ways to prevent and even heal both cancer and heart disease, however – so don't despair!

In addition to the five recommendations mentioned above, you can also follow these four steps:

- 1 | **Step One:** Educate yourself about the issue, which I hope this article has done.
- 2 | **Step Two:** Remember that no particular system in your body operates in a vacuum. Begin to view your body as an intelligent whole that has as its constant goal the healing and balancing of the total organism (i.e. your body).
- 3 | **Step Three:** Make the necessary changes in your lifestyle and diet, such as the five recommendations mentioned above, that will promote health, not disease.
- 4 | **Step Four:** Finally, remember that not all fats are bad for you! Avoid trans fats but also *consciously choose* to include more healthy fats, especially monounsaturated fats, into your diet in order to feed your brain, your heart, and your immune system. Being heart-healthy and cancer-free requires living a healthy lifestyle. It may not be easy at first, but when you begin to live the heart-healthy and cancer-free way, a whole new world of vital health and vibrant energy will open up to you on all levels!

### About Véronique Desaulniers



Dr. Véronique Desaulniers, also known as “Dr. V,” is a natural health pioneer with over 30 years of active practice in Bio Energetics, Digital Thermography, Meridian Stress Analysis, Homeopathy, and Chiropractic.

After she was diagnosed with breast cancer in 2004 and healed herself through natural means, she decided to devote her time to sharing her personal, non-toxic healing journey with others.

Her years of experience and extensive research have culminated in the award-winning book “*Heal Breast Cancer Naturally*” and her coaching program, “*The 7 Essentials™*” which unravels the mystery of healing the body in 7 easy steps.

Her story, wisdom, and knowledge has touched the lives of thousands internationally. Her website is [BreastCancerConqueror.com](http://BreastCancerConqueror.com)



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# Charlene's Cancer-Fighting Kitchen

## Green Shakshuka



*This Middle Eastern dish combines the typical breakfast eggs with super healthy leafy greens. Leafy greens are known for their antioxidant, anti-inflammatory, and anti-cancer benefits.*

*The remaining ingredients work together to create a meal that is satisfyingly rich in nutrients and cancer-fighting properties. Add some variety to your menu with this healthy option which makes a quick, delicious meal any time of day.*

Yield: 2 servings | Preparation time: 15 minutes

### Ingredients:

- 4 pastured chicken eggs
- 2 cups spinach, kale, beet greens, or Swiss chard (or a combination)
- 1 handful chopped parsley leaves

*For all recipes, please use fresh, organic, locally-grown ingredients whenever possible, including organic, non-irradiated spices. This will give you the maximum cancer-fighting benefits.*

- ½ cup onion, chopped
- 1-2 cloves garlic, chopped
- 2 tablespoons organic balsamic vinegar
- 1 teaspoon turmeric powder
- 1 tablespoon cold pressed coconut oil
- ¼ cup spring OR filtered water
- Quality salt & pepper, to taste

### Directions:

1. Place the coconut oil in a large saucepan over medium heat until it melts. Add the onion and garlic and simmer on low for a few minutes, stirring frequently.
2. Meanwhile chop your greens. Add the water to the saucepan and then the greens, tossing carefully to incorporate everything. Continue to simmer for a few more minutes.
3. Next add the eggs on top of the greens and a little more water if needed to steam the eggs. Cover the pan and steam until the eggs are cooked according to your preference. (i.e. sunny side up or with a steamed skin on top)
4. Turn off the heat, remove the lid and sprinkle the balsamic vinegar, turmeric, salt and pepper on top. Cover for a few seconds longer or serve immediately with chopped parsley sprinkled on top.

### Serving Suggestions:

- This dish is good with buckwheat crackers on the side and green tea for breakfast.
- Serve with steamed buckwheat groats and coconut oil for a heartier meal at lunch or dinner, along with a healthy fruit smoothie.

## Black Bean Shiitake Chili



*Black beans are an excellent source of fiber, magnesium, and copper as well as being high antioxidant and anti-inflammatory. These nutritional benefits help fight cancer and increase detoxification.*

*Shiitake mushrooms are loaded with complex carbohydrate compounds known as polysaccharides that fuel the body's uptake and storage of energy. Using shiitake mushrooms instead of the more common button mushrooms doubles the health benefits while increasing the flavor and creativity of this dish.*

Yield: Two 16-ounce servings | Preparation time: 30 minutes

### Ingredients:

- 3 cups pre-cooked black beans  
(1 cup dry yields 3 cups cooked)
- 1 stalk celery
- 2 cups tomatoes, diced
- 1 onion, diced
- 2 cloves garlic, chopped
- 1 large red sweet pepper, chopped
- 1 cup shiitake mushrooms, sliced
- 1½ cups spring OR filtered water

### Spices:

- 1 bay leaf
- 2 tablespoons organic balsamic vinegar
- ½ teaspoon cumin powder
- 1 teaspoon coriander powder
- 1 teaspoon fresh ginger, coarsely chopped
- ¼ - ½ teaspoon cayenne pepper powder
- 1 teaspoon dried oregano leaves
- 2 tablespoons coconut oil OR organic, grass-fed butter
- High quality salt & pepper, to taste

### Directions:

1. Soak black beans overnight. One hour before you are ready to make chili, rinse and drain soaked beans. In a pressure cooker add 6 cups water, one stalk of celery, and a bay leaf. Put lid on top with the pressure valve in place. (Follow pressure cooker instructions) and cook for 20 minutes after the valve begins to release the steam. Allow the beans to cool and remove from the pot.\*
2. Place all chili ingredients in a crock pot and bring to a slow simmer for 15-20 minutes with the lid on, or until the vegetables are tender. Add more water if needed, but this chili is not a soup so it should be thick. Stir occasionally. Turn off the heat and let sit for another 10 minutes. Add salt and pepper to taste.
3. Garnish with fresh herbs. Serve and enjoy!

*\*If you do not have a pressure cooker you could use organic canned black beans OR after soaking the beans overnight, rinse, place in a saucepan with 3 cups fresh water and simmer on the stove top covered for 30 minutes. Skim off any foam and then simmer uncovered for another 30 minutes or until beans are soft. Beans should be soft enough to bite, yet firm enough to retain their shape.*

## Fruity Moringa Breakfast Bowl

*This easy to assemble breakfast fruit salad is nutrient dense and delicious at the same time. Buckwheat is hearty and easily digested with the enzymes from the figs, oranges, strawberries, and mangoes.*

*The nuts further balance blood sugar, extending the feeling of being satisfied all the way to lunch. But what's even better is this combination will boost your metabolism so you will have the energy you need while burning fat to slim down your waistline. All in all this is a winning recipe that fights cancer too.*

Yield: Two 16-ounce servings | Preparation time: 10 minutes

### Ingredients:

- 1 organic blood orange (or regular orange)
- ¾ cup organic strawberries, sliced
- ½ medium organic mango, peeled and diced
- 1½ teaspoons Moringa powder\*
- 1 teaspoon ground Ceylon cinnamon
- 1 teaspoon cold pressed coconut oil
- 2 tablespoons organic sun dried unsweetened figs
- 1 tablespoon raw buckwheat groats\*\*
- 2 tablespoons untoasted nuts: a combination of your favorites

### Directions:

1. Peel and section the blood orange and cut sections in half or leave whole.
2. Add the orange sections, sliced strawberries, diced mango, and chopped figs to a medium-sized bowl.
3. Mix together gently and add the groats, melted coconut oil, Moringa, and cinnamon. Mix gently again and add the nuts. Divide into two serving bowls and enjoy!

### Serving Suggestions:

- This breakfast bowl can be enjoyed with a superfood smoothie or green tea for breakfast.
- As a snack this dish is a nice energy booster. It is a great dessert for something sweet but not sugary.

### Sources:

\*Moringa powder can be found in health food stores or ordered online. A good online source is <http://moringafarms.com/>

\*\* Buckwheat Groats are a whole grain that you can grind in a food processor or blender. Here is a good source: <http://www.bobsredmill.com/organic-raw-buckwheat-groats.html>

### About Charlene Bollinger



Charlene Bollinger is a devoted Christian, happily married wife, joyful mother of 4 beautiful home-educated children, health freedom advocate, co-founder of CancerTruth.net, former model/actress/fitness buff, and lover of healthy food and

healthy living.

After losing various family members to conventional cancer treatments, she and her husband, Ty, learned the truth about cancer and the cancer industry and together work tirelessly helping others learn and live free, healthy lives.

Currently, Charlene is working on compiling a cookbook to help families learn that they can indeed cook healthy, delicious food in this toxic world. Along with her husband, Ty, she is also the co-owner of Infinity 510 Squared Partners Publishing Company.





## Is Moringa Oleifera Actually a “Miracle Tree” When it Comes to Health and Healing?

By Suresh Nair, PhD

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If you watched “The Truth About Cancer: A Global Quest” docu-series, you may recall mentions of *Moringa oleifera*. It was also one of the cancer-fighting options shared by some of the experts during “TTAC’s Ultimate Live Symposium” last fall. But what is *Moringa oleifera*, and how can it possibly benefit you in your personal quest for optimal health?

*Moringa oleifera* has been known for centuries for its nutritional and medicinal properties. Nearly every part of this amazing tree contains high levels of protein, vitamins, minerals, along with various natural “bioactive” phytochemicals, or compounds with potent antioxidant, anti-inflammatory, antimutagenic, and anticancer properties. [Note: naturally occurring bioactive phytochemicals are usually found in small amounts in fruits, vegetables, nuts, oils, and whole grains and tend to act in our body to benefit our health.]

Originally native to the sub-Himalayan regions of India, Pakistan, Bangladesh, and Afghanistan, *Moringa*

*oleifera* is now found both wild and cultivated in many tropical and subtropical countries. Belonging to the family *Moringaceae*, it is also known as the “drumstick” tree, marango, mulangay, Kelor, saijhan, and sajna. It grows equally well in barren as well as rich soil and is unaffected by dry conditions and even drought, while also tolerating a wide range of rainfall.

Besides its fruit or pod being consumed as a common vegetable, many other parts of the *Moringa* tree – its leaves, flowers, bark, seeds, and roots – are also widely used for their nutritional as well as health benefits against various ailments and even some chronic diseases.

In 2001, the first international conference on *Moringa oleifera* was held in Tanzania. Since then, there have been a number of meetings and studies devoted to understanding and spreading awareness of this so-called “natural gift” and “mother’s best friend,” so called because it stimulates lactation in nursing women.

While modern science is slowly catching up, many of Moringa's benefits have been known to farmers and traditional medical practitioners for a long time.

## 8 Traditional Uses of Moringa Oleifera

The 5,000-year-old Indian medicinal system of Ayurveda claims that Moringa oleifera can prevent an astonishing 300 diseases. Moringa is also mentioned in the "Sushruta Samhita" (literally, Sushruta's Compendium), an Indian text on medicine and surgery, written in the beginning of the first century AD. Ancient Egyptians used its oil as a cosmetic value and skin "toner," and even the Greeks and Romans were aware of its medicinal properties.

**Here are some of the past and present uses for Moringa:**

### 1 | Water Purification

Approximately two million people across Asia, Africa, and Latin America are estimated to die from diseases caused by contaminated water every year. Powdered Moringa seeds can clarify even the most turbid water by joining with solid impurities in the water and taking them to the bottom. This treatment is also said to remove more than 90 percent of bacteria in the water.

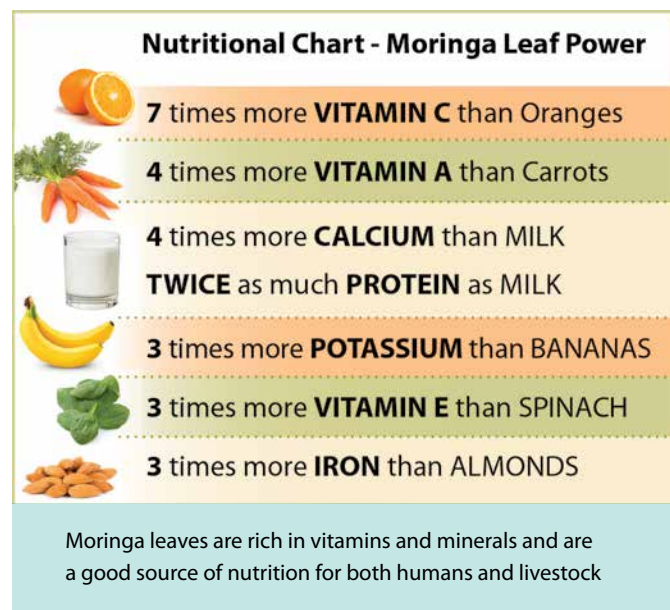
Using Moringa in this way to purify water is effective, cheaper, and safer than chemicals such as aluminum sulphate, which are dangerous to both people and the environment, along with being expensive.



Powdered Moringa seeds are a safe and environmentally friendly way to remove bacteria and impurities from drinking water

### 2 | Plant Growth Enhancer

In laboratory experiments, Moringa spray has been shown to have many beneficial effects on plant crops, including faster growth of young plants, becoming more resistant to pests and disease, having longer life spans, heavier roots, stems, and leaves, and producing larger fruit – which increased in yield by around 20-35 percent.



### 3 | Human and Animal Nutrition

While all parts of the Moringa oleifera tree are edible, its leaves are very nutritious and often used to supplement both human and animal diets in many underdeveloped or developing countries. Along with the leaves, Moringa fruit, flowers, and immature pods are used as vegetables in India, Pakistan, the Philippines, Hawaii, and many parts of Africa.

Moringa leaves are rich in beta-carotene, vitamin A, thiamine (vitamin B1), riboflavin (vitamin B2), niacin (vitamin B3), vitamin C, and vitamin E, as well as minerals such as calcium and potassium. According to the organization Trees for Life, "ounce-for-ounce, Moringa leaves contain more vitamin A than carrots, more calcium than milk, more iron than spinach, more vitamin C than oranges, and more potassium

than bananas.” In fact, the protein content and quality of Moringa leaves is said to rival that of milk and eggs!

Moringa leaves do not lose their nutritional value whether they are fresh, cooked, or stored as dried powder for months without refrigeration. Boiled and powdered leaves were found to have three times more bioavailable iron than the raw leaves. For these reasons, Moringa leaves and other parts of this amazing tree have been used to combat malnutrition in developing countries, especially in infants, pregnant women, and nursing mothers.

Along with humans, animals also benefit from Moringa’s powerful nutritional qualities. In one study, when Moringa leaves were added to cattle feed it increased their weight by up to 32 percent and their milk production by 43 percent.

#### 4 | Traditional Medicine

Every part of the Moringa tree has been found to contain at least one phytochemical compound, if not more. As Trees for Life states, it seems that every part of this incredible tree has been created to serve humanity. [Note – Phytochemicals refers to natural plant chemicals which have an impact on the health, flavor, texture, smell, or color of plants, but which are not required by animals or humans as essential nutrients. However, some of these are bioactive and impact our health.]

For instance, many studies have shown that Moringa leaves are a rich source of natural antioxidants including flavonoids, phenolic acids, and omega-3 fatty acids, among others. In general, antioxidants play an important role in countering the actions of harmful free radicals, preventing oxidative damage and protecting from infections, degenerative diseases, and even some of the adverse effects of aging.

Diets containing high levels of flavonoids have been shown to protect against many bacterial and viral infections, cardiovascular disease, various cancers, and many age-related diseases. Phenolic acids such as caffeic acid, ellagic acid, ferulic acid, and chlorogenic acid – found in various parts of the Moringa tree – are also well known for their antioxidant, anti-inflammatory, antimutagenic, and anticancer properties.

Omega-3 fats are polyunsaturated fatty acids (PUFAs) with proven anti-inflammatory activity. They are critical for normal human metabolism to function and their deficiency increases risk of heart disease, sudden cardiac death, stroke, and multiple cancers. These phytochemicals and others may be the reason why Moringa leaves, bark, and roots are routinely used to treat malaria, typhoid fever, parasitic diseases, arthritis, swellings, cuts, skin diseases, hypertension, and diabetes in various systems of traditional and alternative medicine. Even Moringa flowers are used to treat inflammation.



Moringa leaves, bark, and roots have been used to treat malaria, typhoid fever, parasitic diseases, arthritis, swellings, cuts, skin diseases, hypertension, and diabetes

#### 5 | Antibacterial and Antifungal

Moringa roots, bark, and seeds – and their extracts – have been shown to possess antibacterial activity, acting either by disrupting the cell membrane or by inhibiting essential enzymes in bacteria.



For example, Moringa root contains a natural compound known as pterygospermin, a powerful antibacterial and fungicidal agent. A similar compound seems to be responsible for the antibacterial and fungicidal effects of Moringa flowers.

Liquid from pulped leaves was found to prevent the growth of bacteria such as *P. aeruginosa* and *S. aureus* that are harmful to our health. Also, extracts of Moringa bark have been shown to have antifungal activity.

## 6 | Lowering Blood Glucose

Many laboratory studies have shown that extracts of Moringa leaves lower blood glucose levels. Multiple compounds found in Moringa leaves may be involved, including phenolic acids, flavonoids, and isothiocyanates. For instance, consumption of Moringa powder was seen to reduce glucose intolerance – an early sign of diabetes – in both normal and diabetic rats in laboratory studies. Moringa leaf extract also lowers blood levels of glucose and fasting blood glucose.

In a 2003 study, six patients with type 2 diabetes were given 50 grams of Moringa leaf powder on a one-time basis, which led to a reduction in their blood glucose levels by 21 percent on average. Similarly, 46 patients with type 2 diabetes were given 8 grams of powdered Moringa leaf in a tablet form daily for 40 days. At the end of the study, their fasting blood glucose and postprandial blood glucose were 28 and 26 percent lower, respectively.

These and other findings indicate that Moringa leaves may be useful for managing diabetes, although large-scale human clinical trials are still needed to confirm Moringa's safety and efficacy for this purpose.



Several studies have found that extracts of Moringa leaves lower blood glucose levels and with clinical trials may prove useful for managing diabetes

## 7 | Lowering Blood Lipids

Laboratory studies have also shown that extracts of Moringa leaves lower the levels of blood cholesterol, low-density lipoprotein (LDL), very low density lipoprotein (VLDL), and triglycerides in animals that were given a high-fat diet.

For instance, in one study, two groups of rats were fed for 30 days with a high-fat diet containing 20 percent fat. Only one group received a daily dose of a Moringa leaf extract. At the end of the study, the researchers observed significantly lower blood cholesterol levels in the Moringa treated rats, but not in the group which did not get the Moringa extract.

Similarly, in a small study on 23 non-insulin dependent diabetic patients carried out in 2010, daily treatment with 8 grams of Moringa leaves for 40 days significantly lowered their levels of total cholesterol, LDL, VLDL, and triglycerides, when compared to untreated subjects. On the other hand, their levels of HDL – the “good” cholesterol – improved noticeably after treatment.

These and other studies indicate that extracts of Moringa oleifera leaves can improve blood lipid profiles, with potentially lifesaving benefits for patients with heart disease and diabetes. However,

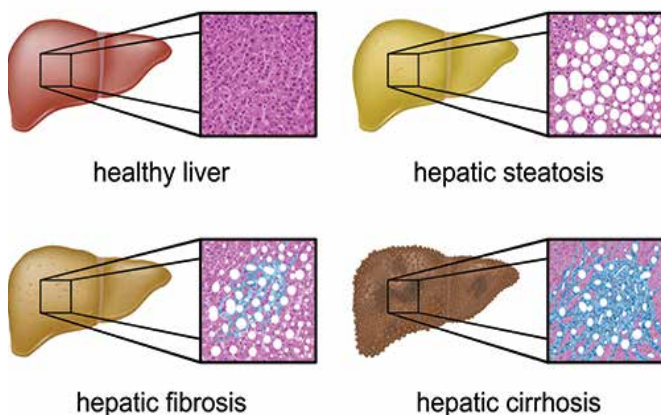
here too large-scale clinical trials are needed to understand how exactly Moringa does this and to assess its effects and safety across gender, age, race, nutritional status, and dietary habits.

## 8 | Liver and Kidney Protection

Various preparations and extracts of *Moringa oleifera* has been shown to protect the liver in laboratory studies. One example is a 2012 study that showed that Moringa seed oil protected against induced liver damage in rats. It appeared to do so by raising the levels of protective liver enzymes and fighting harmful free radical activity, thanks to its powerful antioxidant properties.

Similarly, Moringa leaf extract restored the levels of glutathione (GSH) in the livers of mice after radiation. GSH is a powerful natural antioxidant that prevents damage caused by reactive oxygen species, free radicals, peroxides, and heavy metals. The leaf extract also prevented radiation-induced lipid peroxidation, which is when free radicals “steal” electrons from lipids (fats) in cell membranes, damaging cells. In other words, Moringa leaf extract prevented free radical-induced damage to cells.

### Liver Disease



Various preparations and extracts of *Moringa oleifera* have been shown to protect the liver from different types of liver disease

Fibrosis is the first stage of liver scarring. When scar tissue builds up and eventually takes over most of the liver, it leads to a more serious problem called cirrhosis. Since scar tissue cannot function like normal liver cells, liver cirrhosis can lead to serious illness and even death.

In one laboratory study, Moringa seed extract was shown to reverse markers of oxidative stress in a laboratory study in which liver fibrosis was induced in rats. In another study, Moringa leaves reduced liver damage caused by a high-fat diet, suggesting a potential role in the prevention of non-alcoholic fatty liver disease (NAFLD). Moringa leaf supplementation was also seen to reduce kidney toxicity in a laboratory study.

## The Cancer-Fighting Compounds of the Moringa Tree

The term “chemoprevention,” coined by Dr. Michael Sporn (1976), is used to describe both natural and synthetic agents that prevent cancer formation – either right at the start, by preventing the DNA damage that leads to cancer formation, or later, by stopping or even reversing progression towards cancer formation after such damage has already occurred. All parts of the Moringa tree contain many potentially chemopreventive compounds. Most of which act by slowing or stopping cancer cell growth, or inducing them to commit a form of suicide known as apoptosis.

Apoptosis is a natural process of programmed cell death that is normally only “switched on” to get rid of damaged and dying cells so as not to harm healthy cells in surrounding tissue. Moringa’s bioactive phytochemicals – including a unique group of compounds known as glucosinolates and isothiocyanates – have been shown to trigger this process in cancer cells in laboratory conditions.



In fact, several studies strongly suggest that multiple phytochemicals obtained from the Moringa tree are likely to play an important role in the treatment of various cancers. However, none of these have yet been stringently tested in human clinical trials.

### Leaf Extract

In a 2011 study, human cancer cells were cultured for 48 hours in the presence of various amounts of Moringa leaf extract. The more of the leaf extract used, the more difficult these cancer cells found it to grow. Many succumbed to apoptosis.

Similarly, cold water extracts of Moringa leaves have anticancer activity against human cancer cell lines. For instance, a 2015 laboratory study looked at the effects of Moringa leaf extract on hepatocellular carcinoma cells in culture. Also known as malignant hepatoma, this is the most common type of liver cancer, usually occurring as a result of either a viral hepatitis infection such as hepatitis B or C, toxins such as alcohol or aflatoxin, or other conditions such as hemochromatosis.

In this study, a cold-water extract of Moringa leaves was seen to induce apoptosis and slow the growth of hepatocellular carcinoma cells, suggesting that Moringa leaf extract could become an important component in future therapies for human liver cancer.

Moringa leaf extract has also been studied for its effects on cancer of the esophagus, which is the food tube that runs from the throat to the stomach. Exposure to various amounts of Moringa leaf extract damaged the outer covering of esophageal cancer cells – known as the cell membrane – and also their DNA, leading to apoptosis.

### Leaf and Bark Extract

In a 2015 study, researchers looked at the effects of Moringa leaves, bark, and seed extracts on human breast and colorectal cancer cell lines. Treatment with these extracts dramatically increased apoptosis up to several-fold relative to untreated cells. However, Moringa seed extract was relatively ineffective.

On detailed examination, Moringa leaf and bark extracts were seen to contain multiple anticancer compounds which are likely to be used for the development of new therapies for breast and colorectal cancers.



All parts of *Moringa oleifera* contain many potentially chemopreventive compounds

### Seed Oil and Anticancer Phytochemicals

Treatment with Moringa seed oil has been shown to kill a significant proportion of human cancer cells in culture, indicating that this oil also has potent anticancer properties.

Advanced ovarian cancer cannot be treated by surgery alone; toxic chemotherapy is considered essential (by allopathic medicine) to achieve results. Promisingly, bioactive phytochemicals obtained from Moringa known as isothiocyanates have been shown to inhibit carcinogen-induced cancer formation in many animal models. In one laboratory study, benzyl isothiocyanate stopped ovarian cancer cells from growing and induced apoptosis.

Similarly, another related phytochemical found in Moringa known as phenethyl isothiocyanate was also shown to be toxic to ovarian cancer cells, once again by preventing their growth and inducing apoptosis.

Astrocytoma grade IV is the most frequent and most dangerous brain tumor in adults – and it has no known cure. However, in a 2016 laboratory study, a bioactive phytochemical known as moringin benzyl isothiocyanate – isolated and purified from Moringa – was found to induce apoptosis in human astrocytoma cells in culture.

These results indicate that multiple Moringa phytochemicals are likely to emerge in the near future as potential therapies for the treatment of ovarian, brain, and other types of cancer.

### **Safety and Toxicity Considerations of Moringa Oleifera**

Based on human, animal, and laboratory studies, preparations of Moringa leaves appear to be completely safe at the doses and amounts commonly used for nutritional and health benefits. In one study, researchers concluded that consumption of Moringa leaves at doses of up to 2000 mg/kg – a very high dose, not achievable by oral consumption in animals or humans – did not produce any adverse effects.

However, other phytochemicals are also present in Moringa, with different pharmacological actions and toxicity profiles. For instance, the root bark contains the phytochemical moringinine which has been shown to lower blood pressure (BP) and cause bradycardia. Bradycardia is defined as a heart rate of under 60 beats per minute in adults. When the heart rate drops below 50, it can lead to fatigue, weakness, dizziness. At very low rates, it can even cause fainting. Changes in clotting factor, total protein, bilirubin, and cholesterol in the blood as well as changes in bodily enzymes have also been noted with Moringa.

In summary, while early results from various Moringa extracts appear to be very promising for their multiple beneficial health benefits, you should err on the side of caution – especially if you have any health conditions – and first consult with your physician or qualified alternative healthcare giver before using Moringa.

If you're given the "all clear" by your healthcare provider, Moringa powders, capsules, and teas are readily available online and in some health food stores. Look for certified organic brands with no additives, fillers, or preservatives. If shopping on Amazon, read the reviews to ensure you're purchasing from a reputable, responsive company.

#### **About Suresh Nair**



Suresh Nair is a health writer with more than 15 years of experience as a practicing laboratory scientist. He is also a former copy-editor and project manager at a medical communications company.

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As a scientist with a PhD in Molecular Biology from UPenn, his articles are always thoroughly researched and have a sound scientific basis.

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