

CANCER, CHEMO, AND SUPPLEMENTS THAT HELP



**Discover
nutrients that stop
tumors, enhance
chemotherapy, and
enable recovery**

The Diagnosis: What Now?

A cancer diagnosis can be overwhelming and frightening. Cancer is an incredibly complex disease, and even the same type of cancer varies from person to person. That is because cancer arises from our own cells, which are unique to us. That can be a challenge, because the therapy that is effective for one person may not be as effective for another.

Additionally, other factors play a role in the fight against cancer. Some of these include smoking, liver function, age, gender, nutrient intake, body mass index, and endogenous antioxidant status—and these are just a few!

So imagine how hard it is to develop a one-size-fits-all therapy that works for everyone with cancer.

One of the beauties of dietary supplements is that they are less dependent on individual differences and challenges because they work at such a foundational level in the body. And now, leading edge research is showing how these nutrients can not only make chemotherapy more effective and less toxic, but also have the potential to stop the development of cancer in the first place.

The results of these studies are exciting, and can bring hope to a stressful diagnosis.

Supplements that Enhance Chemotherapy



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Chemotherapy can save your life.
Chemotherapy can disable or kill you.
Chemotherapy can cure your cancer.
Chemotherapy can give you cancer.

All these statements are true.

One of the biggest questions in the natural health world is the safety and effectiveness of combining supplements with mainstream cancer care, which is usually some combination of surgery, radiation therapy, and chemotherapy. Chemotherapy is generally the treatment with the highest level of concern regarding the use of dietary supplements before, during, and/or after therapy.

The choices made by people struggling with cancer are individual choices, deciding what risks are manageable and what best fits them personally.

It is not the purpose of this booklet to either recommend or dissuade people making treatment decisions with their doctors. However, there is vital information that may help both clinicians and patients make the best choices for their specific circumstances.

The reason that doctors have concerns about taking dietary supplements while undergoing cancer treatment is (ironically) because they work. Many supplements *protect* healthy cells from toxic damage, and chemo definitely causes toxic damage. The fear is that in protecting the healthy cells, the cancer cells will be protected from the chemo as well.

Supplements and Cancer Risk

One example of why doctors have concerns about supplement use during cancer treatment can be traced back to a 1994 study on beta carotene. Beta-carotene is a precursor form of vitamin A. That means that when you take beta-carotene, the body will convert it into vitamin A as needed. Beta-carotene from food is healthy; carrots are quite rich in beta-carotene, and no one disputes that eating carrots is good for you. However, substantial amounts of this nutrient in supplemental form were found to cause problems for people who smoke cigarettes.



Conventional Cancer Treatment Can Involve:

Chemotherapy

The use of drugs that destroy cancer cells. The drugs can be administered orally (swallowed) or injected into the body.

Radiation

Refers to high energy, ionizing radiation that destroys the genetic material of cancer cells, stopping them from replicating.

Surgery

The oldest form of cancer treatment, in which a surgeon removes the cancerous tissue from the body.

In a Finnish study of over 29,000 men who smoke cigarettes, beta-carotene was used in part of the group for 5 to 8 years to determine if this otherwise healthy nutrient would reduce the risk of lung cancer. The researchers were very surprised to find out it did the opposite. Compared to the male smokers in the group who did not take beta-carotene, lung cancer risk increased 18 percent.

There were many theories about why this occurred. Some researchers conjectured that the ability of beta-carotene to promote the growth of healthy lung tissue also stimulated the growth of unhealthy lung tissue.

This alarming study from 1994 set the groundwork for concern about supplements and cancer. Other studies followed on various nutrients used with chemotherapy, and some were found to be problematic. For example, breast cancer patients who took high doses of iron had a worse outcome than breast cancer patients who did not. That does not mean iron is unhealthy—iron is required to stay vital and healthy. Lack of iron causes anemia. However, in certain circumstances, in much higher than usual dosages, it caused a problem.

This led many cancer specialists to tell patients to not take any supplements while under treatment because they were fearful it would make standard treatments less effective. The problem is that there are thousands of nutrients and supplements and not enough research to provide guidance on whether or not they can be safely used while undergoing cancer treatment. Since the doctors did not know which might be a problem, they decided to recommend avoiding all of them,

Chemotherapy works . . . but . . .

While it is true that chemotherapy can kill any cancer, the problem is that it might kill the person, too. Much of mainstream oncology is determining the highest dose of chemo that can kill the most cancer cells while allowing the patient to survive. This doesn't always work. In fact, about 20 to 25 percent of people being treated for cancer die of the chemotherapy and its side effects and not the disease. Conversely, there are cancers that were once almost universally fatal, especially childhood leukemias, that now are highly curable because of advances in chemotherapy. However, the more cycles of chemotherapy a person undergoes, the higher the risk of death.

Why would a person need multiple rounds of chemo? The best results are obtained with the first round of treatment. However, if the cancer comes back, the doctors use chemo again to try to get rid of the cancer or at least slow it down. It doesn't work as well the second (or third or fourth or fifth) time around because cancer cells develop something called chemoresistance.

Just as in antibiotic resistance, the surviving cancer cells are the ones that are the best at resisting the lethal effects of chemotherapy. And they start replicating again from the stem cells left behind—the cancer cells masquerading as normal and hiding in the body, only to recur months or years later.

Another conundrum is the use of dietary supplements while undergoing chemotherapy. When a person is diagnosed with cancer, it is a life changing event that often marks the beginning of major emotional and physical challenges. People are suddenly invested in finding anything—whether mainstream treatment or not—that will improve their chance of long-term survival, and/or reduce distressing symptoms and side effects. People are afraid and they understandably want answers.

Fortunately, researchers have tackled both these problems in looking at a) do certain supplements help chemotherapy work better, b) are there better results in using specific dietary supplements during treatment, and c) do any of these nutrients have strong anticancer actions of their own?

The results and answers from animal, genetic, and cell studies have been impressive. Some of the dietary supplements thus far investigated dramatically enhance the powers of chemotherapy, in part by making cancer cells more vulnerable, reducing chemoresistance, and even stopping the creation of stem cells. In every instance of the supplements discussed in this booklet where supplemental nutrients were combined with chemotherapy, the combination far surpassed the use of chemotherapy alone, and demonstrably reduced chemoresistance. And it should be mentioned that in none of these studies did the use of supplements impair the effects of the cancer treatment.

These results provide incredible hope to anyone who may be dealing with cancer.

Chapter One | **Andrographis**

Andrographis: A Cancer-Fighting Adaptogen

Andrographis paniculata is an ancient Ayurvedic herb that has been respected for millennia for its health benefits. It is in a class called adaptogens, a small group of herbs that strengthen the ability of the body to adapt to challenges, making it extremely valuable for inhibiting



cancer. After all, much of our survival relies upon our ability to adapt. When winters became colder, people had to adapt to changing temperatures. When a certain food became scarce, people had to adapt to a new food source. When invaded by a virus, the body has to adapt to the attack and respond in a way that ensures survival. And when the body is faced with cancer, it has to adapt in order to fight off this health threat.

While andrographis provides a full spectrum of compounds that prevent or stop disease, andrographolide is considered the most beneficial. Much of the research on the herb—no matter what disease it is studying—focuses primarily on that compound. Cellular damage throws our DNA replication process into chaos and triggers tumors. Scientists have linked andrographolide from andrographis to stopping the cycle of melanoma cancer cell growth. This is good news, because the rate of melanoma has been growing steadily for the past 30 years. In fact, in any given year, the American Cancer Association predicts that approximately 100,000 people will be diagnosed with the condition. Anyone who spends a lot of time outdoors should protect themselves with supplemental andrographis.

Andrographis has also been shown to stop the growth and formation of pancreatic tumor cells and suppress the ability of glioblastoma multiform cells (a type of brain cancer) to migrate. In each study, andrographolide worked along different pathways, showing the versatility of this compound.

Overall, a recent review showed that this one component of andrographis stopped tumor replication in virtually every type of cancer evaluated and addressed virtually every mechanism, including inflammation, oxidation, cancer cell replication, and cancer cell invasion. The report concluded, “After careful consideration of the relevant evidence, we suggest that andrographolide can be one of the potential agents in the treatment of cancer in the near future.”

So not surprisingly, research has established that andrographis, containing the key compound andrographolide, can help in cancer prevention and recovery. However, the question remains about how it may interact with chemotherapy.

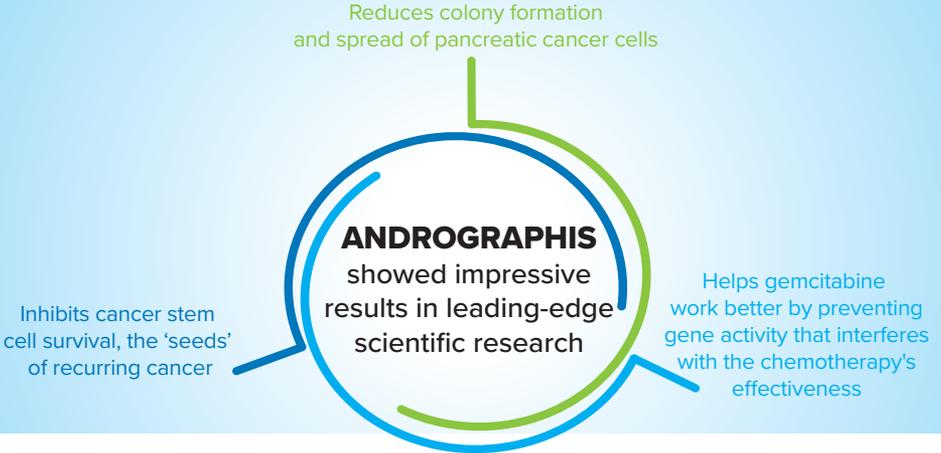
There are two studies that have examined the use of andrographis standardized to a minimum 20 percent andrographolides (EP80) with chemotherapy. Each one has yielded exciting results.

In this research, andrographis reduced chemoresistance, produced better cancer outcomes, and improved the efficacy of chemotherapy drugs, including gemcitabine (often used for pancreatic cancer) and 5-fluorouracil, also called 5-FU (often used for colorectal cancer).

In the first study, researchers tested the ability of andrographis to stop tumors and assist conventional treatment.

Andrographis and Pancreatic Cancer

Andrographis, Gemcitabine, and Pancreatic Cancer Results:



Pancreatic ductal adenocarcinoma (PDAC) is not only the most common form of pancreatic cancer, but also incredibly aggressive and lethal—only about 10 percent of patients survive the condition beyond five years following its diagnosis.

One of the reasons this cancer is so deadly is that it progresses through a multitude of pathways, and by the time it is detected, it has already done considerable damage and possibly spread into surrounding organs. Additionally, it quickly becomes resistant to conventional chemotherapy, including the drug gemcitabine (the standard chemotherapy drug for patients with PDAC), leaving cancer stem cells that create new tumors—even after apparently successful treatment.

As a result, researchers have tried to partner gemcitabine with other chemo drugs like oxaliplatin and cisplatin to determine if this would help. The results showed very slight improvements with survival, but overall, were deemed quite disappointing.

In contrast, a study on andrographis was performed using tumor cells from 37 patients with PDAC. The researchers also created human organoids—three-dimensional models grown from stem cells—to model the characteristics of an organ, in this case, the pancreas.

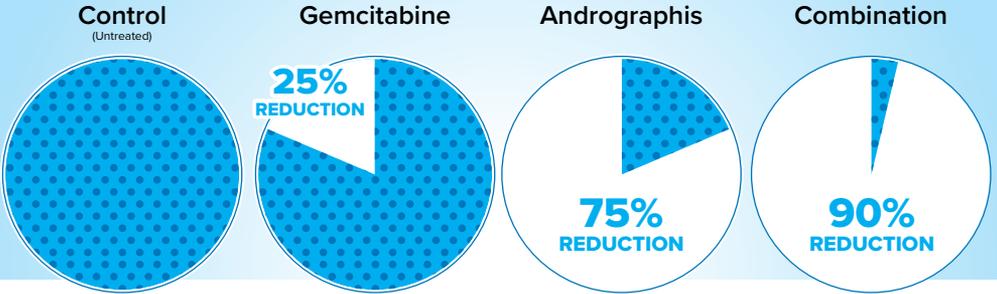
The results with andrographis were *extremely* encouraging:

- ▶ Andrographis inhibited the activity of ERBB3, a gene that uses calcium signaling pathways to initiate tumors and create resistance to gemcitabine. By doing this, andrographis made gemcitabine more effective at inhibiting tumor growth.
- ▶ Working alone and when combined with gemcitabine, andrographis stopped the formation of cancer-forming cell colonies in the organoids that could otherwise lead to unrestricted growth. The combination also killed cancer cells that had already formed.
- ▶ Andrographis killed cancer stem cells, the ‘seeds’ of future cancer. Normally, cancer stem cells are extremely difficult for chemotherapy drugs or radiation therapy to address without also causing great risks to the patients, so this is incredibly good news for cancer treatment.

This study perfectly illustrates the potential of combining strong botanicals with conventional therapies. By combining andrographis with gemcitabine, the researchers may have shown the first practical step in overcoming one of the world’s fastest moving and deadliest cancers.

Nearly 90% of Cancer Cells Eliminated

Dots represent colony-forming cancer cells



Andrographis and Colon Cancer

Colon cancer is the second leading cause of cancer death in the United States. Although regular colon cancer screening tests (such as colonoscopies) have made finding colon cancer in its early stages more common, for 20 percent of colon cancer patients, their cancer will have already spread by the time it is discovered.

A major challenge with colon cancer survival is that many cases do not respond well to the standard treatment with the chemotherapy drug, 5-fluorouracil (5-FU). In fact, up to 60 percent of cancer patients develop chemoresistance. Fortunately, other leading-edge studies have found that andrographis is an extremely valuable ally in fighting cancer and in making chemotherapy drugs more effective for colon cancer as well.

One of these studies found that combined treatment with andrographis and 5-fluorouracil (5-FU) had a synergistic effect that either one alone couldn't match. Working in tandem, the drug and the botanical regulated specific gene pathways, including a cancer-stopping pathway in the body called ferroptosis. Ferroptosis is a process that kills cancer cells by flooding them with iron, creating intensive oxidative damage, and ultimately leads to cancer cell death.

In experimental models of colorectal cancer using cell samples and xenografted human tumors (human cancers transferred to mice), the andrographis extract overcame 5-FU resistance, and reduced 5-FU resistant tumor cells, in part, by inhibiting the DKK1 pathway.

And, perhaps even more impressively, andrographis dramatically reduced tumor growth on its own as well by stopping the mechanisms that can lead to further cancer cell formation. Combined treatment with both andrographis and 5-FU had a synergistic effect on tumor inhibition, showing that the two could be used together for a potentially much higher treatment success rate.

Like the results from the other andrographis studies, these results could indicate that the future of cancer treatment is integrative, combining the most advanced natural medicine along with conventional therapies.

Chapter Two | **Berberine**

Berberine: Chemotherapy-Enhancing Compound

Berberine is not a plant, but is a compound found in a number of plants. Berberine research is often on diabetes and heart disease, with excellent benefits noted for metabolic syndrome. However, researchers are now investigating its ability to reduce chemoresistance.



Berberine Overcomes Pancreatic Cancer Chemoresistance

In this study, researchers tested the ability of berberine to overcome chemoresistance to gemcitabine, the standard chemotherapy drug for pancreatic cancer mentioned earlier when discussing one of the andrographis studies. Again, while combining gemcitabine with other chemotherapy drugs has been tried, it can also be incredibly expensive, and ultimately toxic. That is why researchers are looking for ways to use natural medicines that don't add to the burden of toxicity and can stop cancer progression.

What This MEANS

Gemcitabine is a chemotherapy drug used for pancreatic cancer, but cancer cells become resistant to its effects, and it can be toxic for patients at higher dosages.

Berberine reverses cancer cell resistance to gemcitabine, making the drug more effective.

Berberine has anti-cancer effects, including on pancreatic cancer cells. It can stop the cycle of cancer cell growth and induces apoptosis (cancer cell death).

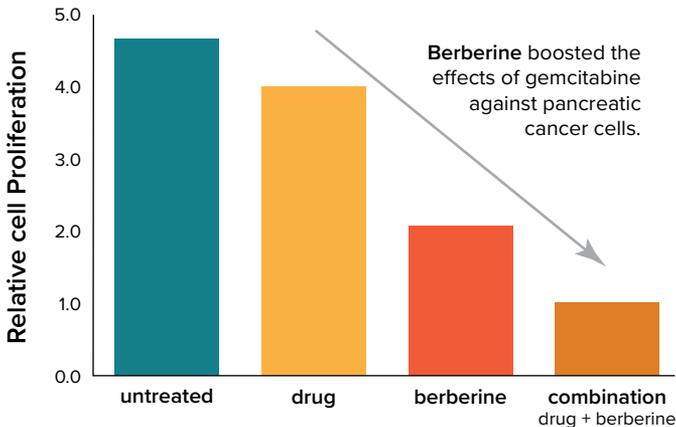
Combining berberine and gemcitabine strongly inhibited resistant cancer cells, keeping cancer proliferation and colony formation at practically zero.

Fortunately, berberine improve sensitivity to gemcitabine in chemo-resistant cancer cells and greatly inhibited their proliferation and spread. And berberine was the one doing the actual heavy lifting, which is to be expected, since the pancreatic cancer cells used in those tests were already resistant to gemcitabine, so the drug couldn't have much effect.

But while berberine performed very strongly on its own, combined with gemcitabine, the two consistently delivered the strongest results, boosting cancer cell death by up to 70 percent. The combination of berberine and gemcitabine almost completely inhibited the formation of cancer cell colonies by resistant cells, an incredible testimony to the synergy of these medicines.

In some ways, these results aren't surprising—berberine has already shown effective anti-cancer actions in previous research. It's also important to keep in mind that over 40 percent of anticancer drugs developed in the past 40 years have their origin as a naturally occurring compound, and we're still learning the mechanics of how those medicines stop tumor formation and growth.

75% REDUCTION in Cancer Cells



The combination of berberine and the chemotherapy drug almost completely inhibited pancreatic cancer cell proliferation, meaning the cancer cells stopped replicating.

This study with berberine, like the others summarized in this booklet, illustrates the potential of combining strong botanicals with conventional therapies. Combining berberine with gemcitabine helps overcome some of the greatest challenges in fighting pancreatic cancer.

Better Berberine Absorption

Berberine can be difficult for the body to fully absorb. In fact, as little as five percent of every dose may actually get into the bloodstream. That's why doctors have recommended 500 mg, three times a day so that an effective amount of berberine is absorbed.

However, combining berberine with gamma cyclodextrin, a natural oligosaccharide, may help overcome this problem. Gamma cyclodextrin surrounds the nutrients and helps ease their transit through the intestinal walls, giving fat-soluble and other difficult-to-absorb herbs and other compounds the absorption qualities of water-soluble nutrients. And gamma cyclodextrin is effective—in some cases, it has been shown to increase the absorption of certain hard to absorb (fat soluble) dietary ingredients by as much as eight times.

Chapter Three | Curcumin from Turmeric



Curcumin: Proven Cancer Fighter

Curcumin is a polyphenol found in the turmeric plant (*Curcuma longa*) that has thousands of years of traditional use combined with extensive research proving its multitude of health-enhancing benefits. In fact, there are over 7,900 studies published and archived on the electronic database of the National Institutes of Health (NIH) specifically on curcumin and cancer, so its ability to help people with cancer has been repeatedly confirmed by research. Many of these studies show how curcumin works effectively with conventional cancer treatment, including a human clinical trial that found that curcumin can strongly enhance chemotherapy treatment for multiple myeloma.

Curcumin More than Doubled Remission Rate of Myeloma

Myeloma is a cancer of blood plasma that produces abnormal, nonfunctional antibodies. Common treatments include chemotherapy, radiation, and drug regimens, including the combined protocol of melphalan (a chemotherapy drug) and prednisone. Unfortunately, the remission rates from these treatments are low, and their side effects—nausea, diarrhea, alopecia (hair loss), and dermatitis—can feel overwhelming.

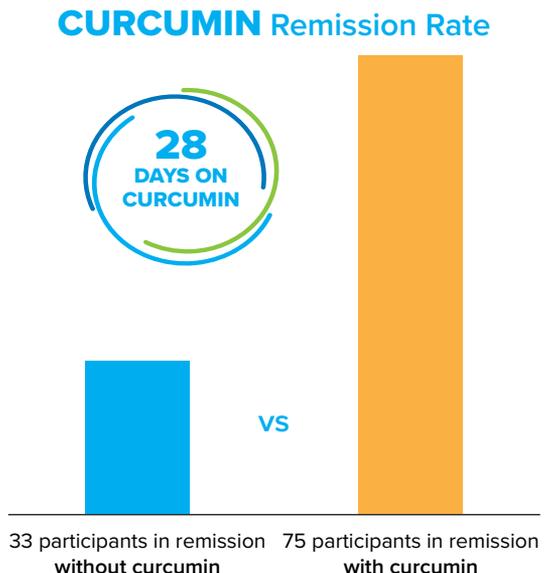
In this clinical trial, all patients received the standard drug melphalan and prednisone treatment, but one group also received eight grams of curcumin enhanced with turmeric essential oil (BCM-95) for improved absorption and bioavailability.

Curcumin Strengthens Cancer Treatment

- ▶ After 28 days, 75% of the curcumin group were in remission, compared to 33% of drug only group.
- ▶ People who achieve multiple myeloma remission live an average of 3X (or more) longer than people who do not achieve remission.

In just 28 days, 75 percent of those in the curcumin group were in remission versus only 33 percent of the drug-only group (which had received a lookalike placebo in addition to the melphalan and prednisone). So curcumin helped more than double the remission rate of this disease compared to people who received only chemo and steroids.

In the curcumin group, researchers noted significant reductions in a variety of disease markers, including vascular endothelial growth factor (VEGF), which can create blood vessels that help feed tumors, transcription factor NF- κ B, that helps cancer cells replicate, and TNF- α , an inflammatory compound that creates damage that may initiate cancer.



Curcumin Makes Chemotherapy Drugs More Effective

Why Use Curcumin for Liver Cancer?

- Curcumin can stop cancer cells from forming, developing tumors, and spreading.
- Curcumin can reduce the toxic effects of cancer drugs.
- When used in combination with chemotherapy drugs, curcumin has been shown to make them more effective and reduce their toxic effects.

Results:

- In tests with lenvatinib-resistant cancer cells, the drug by itself only reduced their number by about 10 to 20%. Curcumin alone did a better job, reducing them by 25 to 50%. But the combination was incredibly effective, reducing cancer cells by almost 75%!
- Cancer cells that were completely resistant to lenvatinib were reduced by 80% when the drug was combined with curcumin.



Curcumin Helps Deliver Dramatic Results

Hepatocellular carcinoma (HCC) is the most common form of liver cancer and a major cause of cancer-related deaths. When it is diagnosed early, it can be treated with surgery to remove the cancer, or, as a last resort, be corrected with a liver transplant. However, when surgery or transplants are not an option, drug treatment is used instead.

Lenvatinib is the chemotherapy drug used for patients with advanced liver cancer who can't be treated by surgery. But patient response rates are typically low—about 24 percent, and cancer resistance develops quickly.

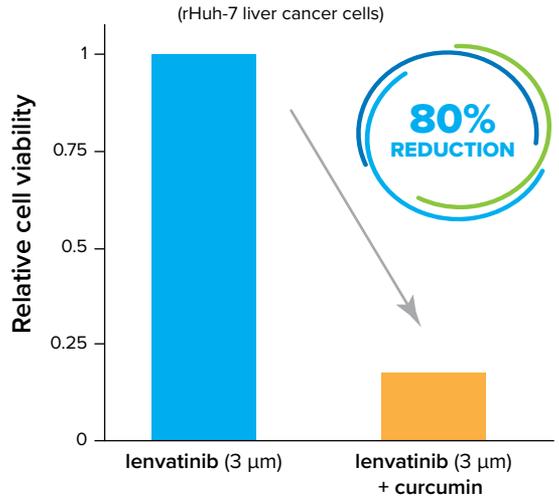
Curcumin has been shown to stop cancer cell formation and tumor development independently and has a strong record of enhancing the effects of chemotherapy drugs in past research. That's why the researchers chose a well-studied form of curcumin with turmeric essential oil, to see how it would work against liver cancer on its own and combined with the drug.

The results were impressive.

Curcumin alone was incredibly effective against all of the cancer cell types used in the study, both drug-resistant and drug-sensitive. But the combination of lenvatinib and curcumin worked best. In fact, curcumin and lenvatinib reduced cancer cell colony formation by 64.9 percent in one of the drug-resistant cancer cell lines, and by 72.4 percent in another.

One of the reasons that HCC develops a resistance to lenvatinib is due to an overexpression of the epidermal growth factor receptor (EGFR) gene, which is also responsible for the survival of cancer stem cells that can cause tumors to return. Understandably, this gene is a frequent target in fighting liver cancer. Fortunately, curcumin is a natural inhibitor of tyrosine kinases, the enzyme family that is home to EGFR and can function as an “on-switch” for cancer cell growth.

Cancer STOPPING Combination



The drug lenvatinib alone had no effect on the liver cancer cells. They were completely resistant to its effects. But combining the drug with curcumin restored its efficacy and the cancer cell numbers dropped by 80%!

This study represents more evidence to support the addition of curcumin to first-line treatment of cancer, especially for those with limited options to treat their disease. It shows that the addition of curcumin could mean the difference between a marginally effective treatment, and a truly life-extending one.

Other research has found that curcumin sensitizes human colon cancer cells that would otherwise resist chemotherapy treatment, boosting the effectiveness of the chemotherapy drug 5-FU against cancer stem cells, much like andrographis.

And in fact, both curcumin and andrographis have been studied individually and in combination to compare and gauge their effects on colon cancer cells. Even without the assistance of any chemotherapy drugs, the results have been impressive and show that botanical compounds alone can reduce tumor formation and growth and kill cancer cells outright.

Curcumin and Andrographis Stop Colon Cancer Spread

- ▶ Andrographis and curcumin combined reduced colon cancer cells by 75%.
- ▶ Both herbs in combination reduced colon cancer invasiveness (spread) by 85%.
- ▶ Together, andrographis and curcumin were 10 times stronger in activating the ferroptosis pathway, a natural process that kills cancer cells.

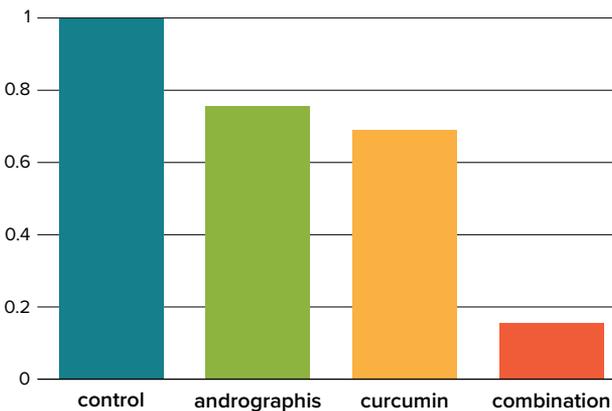
One way of reducing the need for chemotherapy drugs and other cancer interventions is to combine strong botanicals that have synergistic actions in stopping tumor development and proliferation.

Because previous cell research has shown that both curcumin and andrographis applied individually can stop the spread of colon cancer, researchers wanted to see how the two would perform as a team. The researchers also conducted sophisticated molecular pathway analyses to learn more about how andrographis and curcumin exert their anti-cancer effects.

As expected, curcumin and andrographis individually were very effective at reducing the number of colon cancer cells—each cut the number of cancer cells by up to 60 percent. But when combined, the results were even stronger, reducing them by 75 percent.

Similarly, curcumin and andrographis individually reduced colon cancer invasiveness by 45 to 75 percent. Here again, the combination was best, reducing cancer cell spread by 85 percent.

STOPS COLON CANCER SPREAD BY 85%



While andrographis and curcumin have strong anti-cancer actions individually, as a team they proved the most effective at stopping the spread of colon cancer cells, reducing invasiveness by 85%.

Combining these botanicals also made them 10 times more effective at activating ferroptosis, the cancer-stopping pathway mentioned in the andrographis chapter. This process floods cancer cells with iron and causes so much free radical damage to the cancer cells that it kills them.

Because of the aggressive nature of colorectal cancer, and the complications of chemotherapy, this research, like others in this booklet, provides great hope for identifying more effective and less toxic treatments that can be used to reduce the not only the burden of cancer, but the burdens of current conventional cancer therapies as well.



Curcumin Improves Radiation Therapy, Too.

Radiation therapy, like chemotherapy drugs, can save lives. But it is also limited because of its own dangers and side effects. Here again, curcumin may be of great assistance.

As an example, consider this placebo-controlled clinical trial testing whether curcumin could minimize mucositis, a side effect of radiation therapy, in patients undergoing treatment for head and neck squamous cell cancer.

Mucositis is a painful inflammatory disorder that can cause swelling, redness, and ulcers in the mouth, interfering with a patient's ability to eat and in extreme cases, causing death.

In this study, sixty-one patients received either 500 mg of curcumin with turmeric essential oil three times daily or placebo throughout four weeks of radiation therapy.

Symptom severity was measured along a scale from no complications (Grade 0) to severe (Grade 3). By week four, there were clear differences between the two groups. Additionally, over 73 percent in the curcumin group experienced only minor symptoms.

CURCUMIN (BCM-95)	PLACEBO
Grade 0: 6.7%	Grade 0: 0%
Grade 1: 73.3%	Grade 1: 19.3%
Grade 2: 20%	Grade 2: 67.7%
Grade 3: 0%	Grade 3: 12.9%

Researchers concluded that the curcumin “reduces the incidence and severity of radiation-induced mucositis, which can benefit patients undergoing radiation for head and neck cancer.” Additionally, there was no evidence that this curcumin interfered with the efficacy of the radiation therapy.

In another clinical study, curcumin alleviated side effects of one of the most common treatments for prostate cancer, external beam radiotherapy (EBRT)—the use of radiation to destroy tumors and cancer cells. This form of prostate cancer therapy can be extremely difficult for the patient. It's often accompanied by many symptoms, including sexual dysfunction, digestive problems, and urinary tract issues. The higher the dosage of radiation, the more effective it is, but the risk of adverse effects grows as well. Because of this, doctors must often use less radiation to limit side effects. Unfortunately, that makes the treatment less effective.

In this study, researchers tested the ability of curcumin to prevent the side effects of ERBT treatment in men with prostate cancer. Patients took three grams of curcumin (two 500 mg capsules, three times daily) or a placebo beginning one week before radiotherapy until the completion of the treatment.

By the end of the 20-week period, the most dramatic difference between the curcumin group and the placebo group was in urinary symptoms. The curcumin group saw a 50 percent reduction in the frequency of daytime urinations, a 20 percent reduction in sleep disturbances at night in order to urinate, and a 15 percent reduction in problems with urinary leakage.

A similar clinical study found that while prostate-specific antigen levels dropped in both the curcumin and placebo groups, only the curcumin group saw a higher total antioxidant capacity. That means that curcumin may be helping to preserve the body's own defenses, even in the case of the extreme stress of cancer and radiation treatment.

Bioavailability Makes Curcumin Effective

Curcumin is a key compound from turmeric (*Curcuma longa*). Because turmeric contains curcumin, there are many supplements that are simply powdered turmeric that may also be labeled as curcumin. However, as little as two percent of turmeric is curcumin.

And even though there are supplements that do contain curcumin extracted from turmeric, curcumin is not easily absorbed into the bloodstream.

The curcumin with turmeric essential oil mentioned in this booklet is preferred by researchers around the world and has been used in over 90 published studies. That's because it overcomes the common challenges of curcumin absorption by being combined with turmeric essential oil, which, aside from aiding in bioavailability, also helps fight inflammation that could begin the process of cancer development and growth.

Chapter Four | French Grape Seed Extract OPCs



Small, But Strong, Allies Against Tumors

Grape seed extracts have been a supplement staple for some time, but you may wonder why, of all things, grape seeds were first considered a source of important nutrients.

Scientists and medical researchers have long known that grapes provided a wealth of health benefits. While compounds in the skin of red grapes are valuable, it turns out that many of the true riches of grapes are found in the seeds. Those nutrient-dense components contain a wealth of beneficial compounds called oligomeric proanthocyanidins, or simply “OPCs.”

The OPCs in grape seeds are, in themselves, a rich source of antioxidants that protect against free radicals. In-vivo studies have shown that the OPCs from grape seeds are a better free radical scavenger and inhibitor of oxidative tissue damage than vitamin C, vitamin E, or beta-carotene.

These compounds also have anti-inflammatory properties, can help preserve healthy arteries and blood vessels, keep blood sugar levels in check, and may support the structure of joints in cases of rheumatoid arthritis. So overall, OPCs from grape seed deliver a multitude of physiological benefits that can lower the risk of a variety of illnesses—even cancer. But not every grape seed provides the right kind of OPCs to be effective.

In fact, it is in experimental cancer research that a specific French grape seed extract has shown great promise. This French grape seed extract features small, absorbable OPCs. By concentrating on high polyphenol content and only small, absorbable OPCs, this extract can provide health-promoting effects that other grape seed extracts simply can't match.

And it's because of these unique attributes that scientists are currently exploring its anticancer activities and ability to overcome chemoresistance.

French Grape Seed Extract OPCs Boost Chemo Effectiveness

As mentioned in cases of the other nutrients in this booklet, one of the biggest barriers to conventional cancer treatment is that cancer cells become resistant to chemotherapy drugs. Trying to overcome that with higher dosages isn't always an option because of the terrible side effects that they have on patients. But French grape seed OPCs may someday be used to alleviate that.

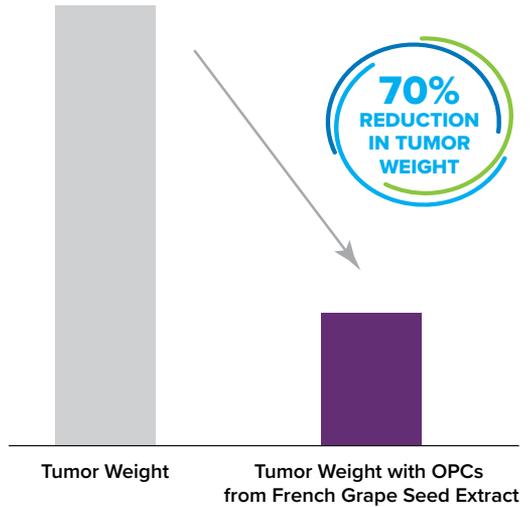
One groundbreaking study found that OPCs from French grape seed slowed the growth of chemo resistant cancer cells and inhibited the proteins (adenosine triphosphate-binding cassette (ABC) transporter proteins) that would otherwise help cancer cells thrive, ultimately reducing tumor weight by 70 percent. The OPCs sensitized those cancer cells, making the chemotherapy drugs much more effective. Like the other studies mentioned in this booklet, this could mean that lower doses of these drugs could be used in the future, creating fewer risks and being greatly more effective.

*When OPCs from French grape seed extract were combined with chemotherapy drugs 5-fluorouracil (5FU) and oxaliplatin, in treatment of resistant colon cancer (animal model), the result was a **70 percent reduction in tumor weight.***

Although this research focused on colorectal cancer, there are similar types of activity across nearly all kinds of malignancies, so French grape seed extract OPCs have potential applications for various cancers.

Additionally, because the OPCs from French grape seed extract are more absorbable than the large OPCs from unfractionated grape seed extract, they can be more effective at lower doses than standard grape seed extracts, as another scientific study discovered.

TUMOR REDUCTION CHART



French Grape Seed Extract OPCs Reduced Tumor Size by Up to 65% in 13 Days

- ▶ OPCs from French grape seed extract reduced tumor size by 65%.
- ▶ By contrast, the plain grape seed extract (commonly sourced from China) reduced tumor size by only 13% and 8%, at full and half doses, respectively.

This research found that in just 13 days, high dose of OPCs reduced tumor size by 65 percent. Even at low dose—half the dosage—these OPCs reduced tumor size by 40 percent. Additionally, there were no harmful effects on healthy cells—these actions were targeted to cancer cells only.

French Grape Seed (OPCs) Shown to REDUCE TUMOR SIZE BY UP TO 65% IN 13 DAYS

Compared to Regular Grape Seed Extract

Test Groups		Tumor size		Average % reduction over 13 days
		Day 1	Day 13	
Regular Grape Seed Extract (GSE)	50 mg			8%
Regular Grape Seed Extract (GSE)	100 mg			13%
French Grape Seed OPCs	50 mg			40%
French Grape Seed OPCs	100 mg			65%

Compared to standard grape seed extract at only 13 percent and 8 percent respectively, this study illustrates the dramatic difference that fully absorbable, low-molecular weight OPCs can make.

French Grape Seed Extract OPCs Suppress Tumor Growth by 90%

Other research with French grape seed extract OPCs has found that it downregulates a specific pathway in the body, called “Hippo-YAP,” which also stops cancer cells from regenerating. In other words, it stops the seeds of future cancers from sprouting.

Normally, this is a challenging pathway to block, but the OPCs performed remarkably well, reducing viable cancer stem cells by 71 percent. As part of this same research, an animal model of cancer found that these OPCs suppressed tumor growth by 90 percent in 14 days.

French Grape Seed Extract OPCs and Curcumin Fight Cancer Together

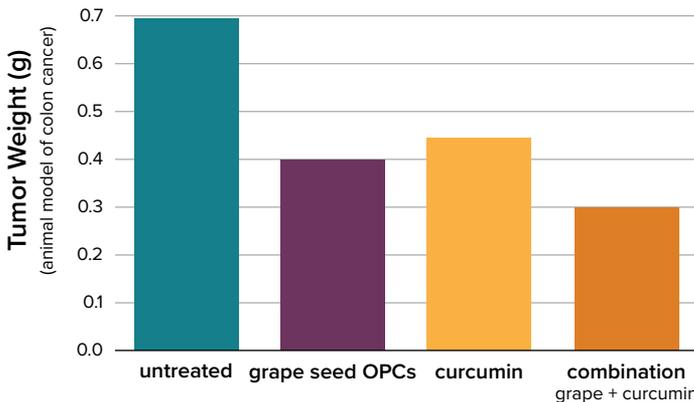
As mentioned earlier in this booklet, strong botanical nutrients can also work synergistically to stop cancer.

In another scientific study, researchers found that French grape seed extract OPCs and curcumin enhanced with turmeric essential oil work along multiple pathways in the body to reduce inflammatory damage to healthy DNA, stop cancer cells from replicating, and prevent the growth and development of tumors. These two botanical ingredients work along differing cancer-fighting paths, and because of this, they can cover more ground in the battle against cancer than either one could separately.

This combination of botanical ingredients is an excellent one-two punch for knocking out cancer, and both may be an excellent addition to standard therapies and make them more effective by overcoming chemo-resistant tumors.

CURCUMIN AND GRAPE SEED against Cancer

Combining curcumin and OPCs from grape seed shrank tumors more effectively than either nutrient on their own.



Stopping Tumors: Start with Your Diet

While cancer can seem like an unstoppable force, there are lifestyle habits you can cultivate that will keep you healthier overall and help prevent conditions from arising that can lead to inflammation, oxidative damage to DNA, and tumor formation. And one of the easiest ways to start is through your diet.

For example, sugar essentially feeds cancer. Because cancer cells use glucose differently than healthy cells, there is some research that indicates a high protein and high fat diet, including the keto diet, can help prevent cancer cells from feeding and duplicating. Because the keto diet reduces the overall load of blood sugar, it cuts out much of the fuel that cancer cells use for growing, which is often a faster process than what healthy cells need to thrive. Scientific research has shown that the high protein and fat content of a keto diet may inhibit brain cancers, and there is hope that additional studies will point to its effectiveness in slowing or preventing other cancers as well.

So consider starting with your diet first in order to keep cancer at bay. Here are some tips to keep in mind for a diet that can improve your overall well-being and help you resist threats to your health, both great and small.

Get Proteins in Your Diet Every Day and at Every Meal

Proteins are our original energy and power foods, and they are absolutely necessary to maintain a strong body. Remember that animal protein is rich in readily absorbable amino acids, which are the building blocks of a healthy mind and body.

MUST-HAVE PROTEINS

Grass-fed beef	Poultry
Bison	Salmon
Elk	Eggs
Venison	Nuts
Rabbit	



Enjoy an Abundance of Healthy Fats

The fear of fat has led to an epidemic of diseases that have occurred primarily because we have reversed the ratio of our food groups from high animal proteins/animal fats and low carbohydrates to high refined carbohydrates and sugar and little or no healthy animal protein and animal fats. Many Americans probably consume around 60 to 70 percent of their meals as carbohydrates (mostly refined and processed), and 20 to 30 percent unhealthy fats (omega-6 from vegetable oils, shortening and margarine) and only 10 percent from protein. That is certain to take a toll on overall health.

MUST-HAVE FATS

Cream and Butter	Olive oil
Raw milk from goats or cows when possible—but skip processed milk	Coconut oil
Lard	



Enrich Your Diet with Fruits and Vegetables

Choose colorful fruits and vegetables because that indicates they have high antioxidant value. Berries, for example, have compounds called anthocyanins—a type of flavonoid, which provide extremely potent antioxidant activity, protecting cells from the harmful effects of oxidation and inflammation.

Eat a variety of fruits and vegetables each day because they provide so many valuable nutrients. Getting the amount you need really isn't as difficult as you may think. After all, a serving of grapes, blueberries, and carrots is just one cup, and even one small apple counts as a serving.

MUST-HAVE FRUITS AND VEGETABLES

Aronia	Broccoli	Garlic
Blueberries	Brussels Sprouts	Onions
Cherries	Spinach and other greens	Sweet Potatoes (sparingly)
Grapes		
Pomegranate		



Begin Eating the Traditional Diet

As you start switching over to a traditional or ketogenic diet, remember to plan your meals. It'll stop you from being tempted to go to fast food or processed options that are laden with nitrates, sodium, and trans-fatty acids. After all, your foods can be nourishing, protective, and still astoundingly delicious.

Andrographis:

- ▶ **When fighting cancer:** 400 mg, 20% extract, 1 serving, three to four times daily
- ▶ **For cancer prevention:** 400 mg, 20% extract, 1 serving, twice daily

Berberine combined with gamma cyclodextrin:

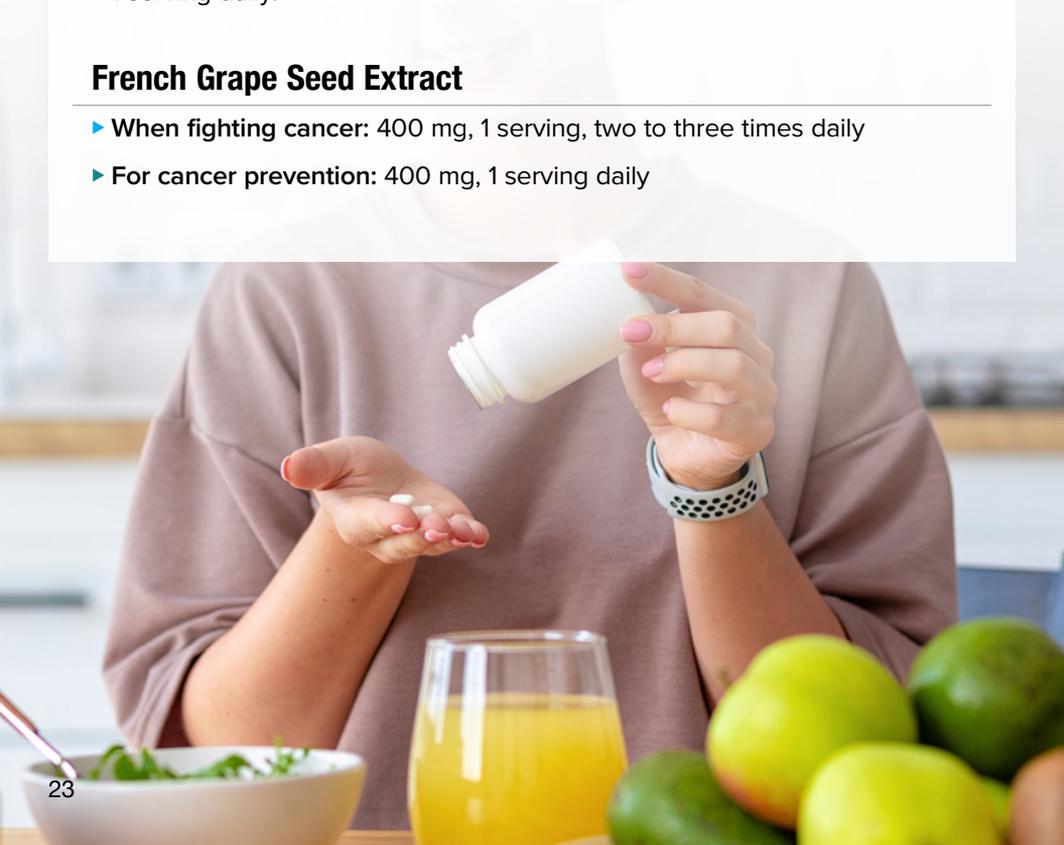
- ▶ **When fighting cancer:** 250 mg, 1 serving, twice daily
- ▶ **For cancer prevention:** 250 mg, 1 serving daily

Curcumin

- ▶ **When fighting cancer:** 750 mg (supplying 500 mg of pure curcuminoids), 1 serving, three to four times daily
- ▶ **For cancer prevention:** 750 mg (supplying 500 mg of pure curcuminoids), 1 serving daily.

French Grape Seed Extract

- ▶ **When fighting cancer:** 400 mg, 1 serving, two to three times daily
- ▶ **For cancer prevention:** 400 mg, 1 serving daily



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