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How Cold Therapy Kills Tumors and Benefits Cancer Patients

By Ty Bollinger

Central Tennessee is the place my family and I call home now, and it has a climate that you'd describe as temperate. While we experience all four seasons here, none of them (except for maybe summer) are really all that extreme. Even in the winter-time we have very few prolonged stretches of below-freezing conditions, along with getting minimal snow.

Neither Charlene nor I are big fans of arctic-like temperatures, and it's one of the many reasons why we love living in this part of the country. At the same time, there are definitely some drawbacks to not having frigid winters.

For one thing *pests* are much more problematic in areas like ours. That's because warmer conditions actually give insects and rodents a greater chance of long-term survival and increased population growth. Like nearly all living things, pests aren't particularly keen on boring through the bone-chilling cold.

The official *Farmers' Almanac* explains that disease-carrying ticks, spiders, fleas, roaches, and many other unsightly creepy-crawlers are far less of an issue in the

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Message From Ty Bollinger



Welcome to the May issue of your Heroes Against Cancer newsletter.

I'm kicking off this month's edition with a topic that many of you have gotten your fill of over the past several months... cold!

Now don't let bad memories of late winter storms turn you off from learning about a really intriguing cancer therapy. When I was filming for *The Truth About PET Cancer* I actually got to see how effective this treatment can be on pets. That experience prompted me to dig into how it can be used to benefit us humans as well.

While almost everyone knows that October is Breast Cancer Awareness Month, did you know that May is Bladder Cancer Awareness Month? Bladder cancer is on the top 10 list of most common cancers in both the U.S. and the world, but it certainly doesn't get a lot of attention in the mainstream media. And to be truthful, we haven't talked about it that much on TTAC either... until now.

Make sure you read this month's article on bladder cancer to get a good understanding of what bladder cancer is, the biggest risk factors, and steps you can take to minimize your personal risk.

In our Ask the Expert feature this month we're hearing from my good buddy Doc Nuzum on the topic of nutrition for immune support. We also asked Doc his thoughts on whether or not cancer patients can or should consume any fruit. There are varying opinions on this subject and Doc has a little different take than some other experts. Be sure to check out what advice Doc gives his cancer patients.

Plus, as always, Charlene has cooked up some tasty new recipes for you to try out at home.

Until next month...

Ty Bollinger

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colder north than they are in the warmer south. That's because, again, cold weather functions as one of nature's most powerful weapons against pestilence. This is the reason why there's typically many more unwanted critters the closer you get to the equator.¹

Why am I talking so much about the weather and cold, especially now that it's springtime here in the Northern Hemisphere? Because there are important lessons to be learned from the cold as far as us humans are concerned. Believe it or not, very cold temperatures can be used to keep the human body free of the pestilence known as disease – but many people are completely unaware of this.

Supporting Human Health With Cold Therapy: A Brief History

As you've probably already guessed, one of the main reasons I'm bringing up cold therapy at all is that it's highly relevant within the realm of treating cancer. The use of cold therapy in cancer remediation dates back to the mid-19th century, in fact. This was when an English physician by the name of Dr. James Arnott was the first to discover that essentially freezing cancer cells to death is a safe and effective way to destroy and eliminate them from the body.

Dr. Arnott discovered that mixing salt with crushed ice in a 1:2 ratio resulted in a highly effective cold-inducing remedy for annihilating cancer tumors. This led him to theorize that perhaps every type of inflammation inside the body might be quelled using very low temperatures – a hypothesis that would eventually prove to have plenty of merit.

This was the driving impetus behind Dr. Arnott's initial experiments with cold therapy, nearly all of which proved to be a success. He would learn that quickly lowering the temperature of a tumor to between -18 and

-24 degrees Celsius (-0.4 to -11.2° F) caused it to shrink and stop draining fluid – with the added benefit of relieving pain in the process.

Dr. Arnott would later write about how this congealing process directly targets inflammation, in turn destroying the vitality of cancer cells. And when applied early enough, cold therapy can even exert "curative action" on tumors, causing them to disappear from a patient's body entirely.²

These successes would further lead Dr. Arnott to develop his own customized suite of cold therapy equipment and tools that he used to administer what many now refer to as *cryosurgery* or *cryotherapy*. These terms basically describe the entire scope of cold therapy as applied in disease remediation. These technologies, which were featured at the Great Exhibition of London in 1851, would earn Dr. Arnott plenty of awards throughout his life, as well as world renown.

Palliative care in the treatment of cancer was Dr. Arnott's initial and primary focus. However, his discoveries as to its benefits in treating cancer directly helped to pave the way for cold therapy's eventual use as a first-line treatment for a host of different cancers. This included cancers of the breast, uterine, and skin.

Cure for Toothache.

Dr. Arnott, of Brighton, says in the *London Lancet*. "A degree of cold below the freezing point of water is, I believe, a new agent in therapeutics, which would, probably, be usefully employed for various other important purposes. A solution of salt, of a very low temperature, by acting on the exposed nerve, might at once, and permanently, remove toothache.

This early news clip about Dr. Arnott's discoveries appeared in *Scientific American* back in October 1848 (Vol 4, No. 4, pg 32)

Beyond just cancer, Dr. Arnott's work also revealed that cryotherapy can be a valuable tool in addressing many other human ailments as well. This included everything from acne and neuralgia, to chronic pain and even the common headache. Cold therapy's unique numbing effect laid the groundwork for its continued use and refinement throughout the 19th century and into today.³

How Cold Therapy Works at the Cellular Level to Destroy Tumors

It shouldn't come as much of a surprise that cold therapy has indeed come a long way since the days of Dr. Arnott, even earning fancy new names like *cryoablation* that insinuate just how far it's advanced technologically. But the gist of what it does has remained the same throughout time, maintaining one basic and essential purpose: to destroy something that's really harmful by exposing it to something that's really cold.

When it comes to treating internal cancers, this is precisely what takes place. A cryosurgeon inserts what's known as a "cryoprobe" (aka "freeze wand") into a patient's body, delivering a blast of icy terror to the site of a tumor. Using nitrogen, nitrous oxide, or argon gas to accomplish this, the cryoprobe effectively freezes the tumor and its malignant cells to death by changing the material state of their water content from liquid to solid.



Dr. Martin Goldstein, DVM, demonstrating cryosurgery on a pet patient for *The Truth About PET Cancer*

Have you ever tried to quickly chill a glass bottle of your favorite beverage by sticking it in the freezer – only to later discover that its contents expanded and burst through the glass because you forgot to take it out in time? If so, then you already know more than you think you do about how cold therapy works its "magic" in destroying cancer cells.

It's obviously a bit more complicated than that, involving a whole lot more precision and a whole lot less accidental freezer waste, but you get the idea. If you're at all familiar with the concept of *apoptosis*, or programmed cell death, you can think of cold therapy as an instigator of this. In this case its weapon of choice being sudden frostbite.

Cold therapy has also been shown to actually *destroy* cell tissue after freezing it. Waste cleanup is an important part of any effective cancer treatment regimen, as lingering dead cell tissue is toxic to the body. Therefore this is an important facet to cold therapy's mode of action in targeting cancer. The "freeze wands" by which it's applied in the body function as a type of zapper to aid the body in getting rid of all material fallout.

"Minor freezing injury features only inflammatory responses, which have some therapeutic uses," explains a 2005 study on the molecular impact of cold therapy that was published in the journal *BJU International*.⁴ "Severe freezing injury destroys cells and tissues, which is the prime requirement for treating tumours, producing coagulation necrosis in the frozen tissue in the days after thawing."

There's also evidence to suggest that cold therapy induces vasculature stasis in tumors by causing a microcirculatory failure of their blood supply, leading to ischemia-induced rapid cell death. In simpler terms, cryotherapy basically slows or halts the food supply of tumors, effectively starving them out of house and home.⁵

It's a multi-pronged process, as you can see, that basically involves disrupting, dehydrating, swelling, thermally shocking, and toxifying cancer cells so that they have no chance of winning against their host. And all of this is accomplished with the simple and precise application of extreme cold temperatures.⁶

The Best Cancer Treatments Come With Minimal Side Effects

One of the most appealing aspects to cold therapy is that, unlike traditional chemotherapy and radiation treatments, its side effects are minimal. Even compared to other surgical procedures like mastectomy and lumpectomy that similarly involve probing the body with foreign instruments, cold therapy is a much gentler process. When performed correctly it leaves no trace of damage in the patient.

Using either ultrasound or MRI (magnetic resonance imaging), the cold therapy process can be performed relatively safely and with amazing precision, ensuring that all healthy tissue in close proximity to unhealthy tissue remains mostly or entirely unscathed throughout the surgery. The National Cancer Institute (NCI) describes cold therapy as being "less invasive" than other forms of surgery, as the biggest impact on the body is typically just the small incision that must be made in order to insert the cryoprobe "freeze wand."

The advantages of cold therapy far outweigh any potential disadvantages, in other words. It's a relatively inexpensive procedure compared to other conventional cancer therapies, and it requires much shorter recovery time, often requiring only the use of local anesthesia. Cold therapy can also be repeated as many times as needed in order to neutralize the cancer threat. This is one reason why many patients who've tried everything else without success opt for it.

As an example of its minimal side effects, women with cervical intraepithelial neoplasia who choose cold therapy understand that it can cause cramping, bleeding, and generalized pain. But what it doesn't cause is infertility, as is the case with some conventional treatments for this condition. In patients with skin cancer, cold therapy can cause swelling and scarring. But again, it's nothing compared to the prolific immune system destruction that typically results from a prolonged chemotherapy regimen.



Cryosurgery has a number of advantages over conventional cancer surgery including less damage to surrounding tissues and faster recovery times

The NCI lists four types of cancer conditions as viable candidates for treatment with cold therapy. They are:

- early-stage skin cancer
- pre-cancerous skin growths
- pre-cancerous conditions of the cervix
- retinoblastoma (a type of childhood eye cancer)

However, there's also evidence to suggest that cold therapy works for other types of cancers as well, including those of the bone, breast, prostate, colon, and kidney.⁷

Cold therapy can also be applied alongside other cancer treatments for improved overall benefits. Wearing down tumors and attacking their support structures using other treatment means often precedes the use of cold therapy, which in many cases is administered only *after* these other procedures have failed to deliver the final death blow. Since cold therapy seems to work best in smaller, localized areas, utilizing a multi-pronged approach tends to produce greater long-term efficacy and success.

This seems to embody the general consensus of the NCI's compiled research on cold therapy, which it also suggests works best on cancers that haven't yet spread to other parts of the body. Once a tumor or cancer metastasizes, that's when cold therapy begins to lose its comprehensive effectiveness. That being said, it can still serve as a viable support tool in the larger cancer-fighting arsenal.

Case Studies in Cold Therapy

Cancer cells, like all cells, are composed primarily of water. As I mentioned earlier in the beverage in the freezer analogy, when this water is frozen it creates ice crystals that basically cause the cell to burst and die. Keeping this in mind, let's take a closer look at some of the specific published research on cold therapy that demonstrates its efficacy in an array of cancer applications.

These case studies illustrate the benefits of cold therapy for cancer in one of three ways. First, as a primary mode of attack against cancer. Secondly, as an adjunct or "salvage" therapy that some patients choose to employ as a last resort therapy when all else fails. Thirdly, cold therapy can even be used simply to mitigate the harmful side effects caused by conventional cancer treatments like chemotherapy and radiation.

One example of this third way was explained in research published in the *Journal of the National Cancer Institute*.

Researchers subjected chemotherapy patients to weekly treatments of cold therapy, which involved having them wear frozen gloves and socks for 90-minute intervals. The cold therapy helped to minimize or even completely eliminate the symptoms of chemotherapy-induced peripheral neuropathy. The result was improved quality of life for patients with regards to the pain, numbness, and tingling they had otherwise experienced.⁸



Several studies have found significant benefit from using cold therapy as an adjunct treatment to chemotherapy

As an adjunct (supplemental) treatment combined with chemotherapy, cold therapy has been shown to aid in the comprehensive destruction of cancer cells. Based on the findings of one particular study, previously administered chemotherapeutic agents actually helped cold therapy to more comprehensively destroy the cancer cells being targeted, while also helping to minimize the incidence of adverse events.⁹

In another study, conducted by the same authors, exposing prostate cancer cells to 5-fluorouracil, an injectable chemotherapy drug, for two to four days before freezing them as part of a cold therapy regimen helped to completely destroy the entire malignant cell line. This was even the case when less-extreme temperatures were used, suggesting that employing both techniques in tandem results in less of each having to be used in order to get the job done. A big benefit of this, of course, is the minimized risk of side effects.¹⁰

Cancer-specific cytotoxic drugs are also made more beneficial when used alongside cold therapy. Though much debate remains over the timing of administration for these drugs, studies suggest that when they're given right after cold therapy during the tissue "thawing" phase – but before the induced failure of the microcirculation process – they tend to remain present in the targeted tissue for a much longer period of time. This results in improved overall efficacy.¹¹

In cases where cold therapy seemingly doesn't work as expected, studies involving the use of follow-up treatment with radiotherapy reveal that it often helps to lay the preliminary groundwork for cancer cell destruction. *In vitro* experiments on cancer cells that have previously been "cooled" show that they have a much greater sensitivity to irradiation after exposure to cold therapy. This suggests that for some cancers, cold therapy functions as a highly effective form of *pre-treatment* for cancer, including difficult-to-treat prostate cancers.¹²

Further evidence of cold therapy's benefits as a pre-treatment for cancer have been shown with regards to the immunological response it provokes inside the body. Research published back in 1967 uncovered this phenomenon in depth, revealing cold therapy's profoundly beneficial provocation of the immune system to actively fight cancer tumors on its own.¹³

As I mentioned earlier, freezing cancer cells can also help to make them more susceptible to destruction by other treatments, including anti-cancer drugs. Cancers that aren't necessarily all that responsive to cryotherapy alone, it turns out, can still benefit from its adjunct use alongside treatments with anti-cancer drugs. Cold therapy helps to improve both their efficacy and accuracy, as well as minimize their indiscriminate destruction of healthy tissue.¹⁴

Additional Uses & Benefits of Cold Therapy

Other specific examples of cold therapy's benefits as spelled out in the scientific literature include its uses in the treatment of:

» **Cancers of the mouth and lip.** A 1965 paper published in the journal *Cancer* found that liquid nitrogen-based cryotherapy was able to effectively control malignant and benign lesions of both the lip and oral cavity in five test patients, all of whom were determined months after their treatments were completed to have been cured of their conditions.¹⁵

Patients with oral mucositis, a painful form of inflammation and ulceration of the mouth caused by high-dose chemotherapy and radiation treatments, have also been shown to benefit from cold therapy.



A number of studies have demonstrated the significant benefit of oral cryotherapy for patients suffering from a painful condition known as oral mucositis

A comprehensive review of 14 different studies published between 1991 and 2015, which together included 1316 participants, found that oral cryotherapy is highly effective in, at the very least, reducing the symptoms of oral mucositis – including even very severe cases of it.¹⁶

In treating oral cancers directly, combination treatments of cryotherapy along with shave excision, for instance, have been shown to help completely destroy oral cancer cell tissue, preventing it from spreading elsewhere and recurring.¹⁷

» **Breast cancer.** Cold therapy is still considered by many health authorities to be an “experimental” procedure with regards to breast cancer. But a comprehensive review of published science on the subject suggests that it’s preferable to either a mastectomy or lumpectomy, with multiple reported successes in treating supposedly “inoperable” forms of breast cancer.¹⁸



Cryosurgery shows promise as a treatment option for supposedly “incurable” breast cancer

» **Prostate cancer.** One of its “crown jewel” applications, the successful use of cold therapy in treating prostate cancer has an impressive scientific track record, to say the least. One case study published in the journal *Prostate Cancer* found that it results in a 94.4% overall survival rate, which is only outdone by its 98.1% cancer-specific survival rate.¹⁹

In fact, cold therapy is so effective at treating prostate cancer that the United States Health Care Financing



The U.S. Health Care Financing Administration (HCFA) first granted approval for Medicare reimbursements of cryosurgical procedures for primary, localized prostate cancer cases almost 20 years ago

Administration granted approval for Medicare reimbursements of cryosurgical procedures for primary, localized prostate cancer cases beginning back in July 1999.²⁰

» **Cancers of the esophagus and gut.** At the Medical University of South Carolina, Dr. Brenda Hoffman, MD, has successfully used cold therapy to treat more than 50 patients with either esophageal or upper gastrointestinal (GI) tumors. Not only has cold therapy proven to be easier on patients’ bodies, but it results in a quick turnaround, often allowing patients to return home the same day as their surgeries.²¹

» **Mesothelioma.** Research out of the University of California, Los Angeles (UCLA), found that extreme cold is one of mesothelioma’s worst enemies. While extreme heat was found to have almost no effect on mesothelioma cells, extreme cold destroyed almost every single one of them in a petri dish in just five minutes.²²

» **Liver cancer.** More than 90% of patients diagnosed with primary and metastatic liver tumors aren’t eligible for surgical resection, which just so happens to be one

of the only recognized treatment options for this particular condition. But research suggests that cold therapy just might be the safe and effective solution that liver cancer patients need, as evidence points to survival rates upwards of 40%.²³

Conclusion

The moral of the story here is simple... cold therapy works and it doesn't harm the body anywhere close to the degree that the standard "slash," "cut," and "burn" procedures do. I happen to think cold therapy is among the most promising "alternative" cancer treatments available to patients today, and it deserves far more credit than it currently receives.

Truth be told, it's hardly alternative when you consider the fact that it's been around for almost 200 years. Yet because many cancer patients (and conventional doctors) still don't know much, if anything, about it, cold therapy remains something of an elusive natural remedy. That's why I'm doing my part to bring it to your attention, loudly and clearly, so that you can in turn raise awareness with your own healthcare provider(s), and/or consider it as a treatment option if the need ever arises.



Cryotherapy is also a common treatment for the removal of benign conditions including skin lesions, moles, and warts

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.

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Ask the Expert: The Best Foods for Fortifying Your Immune System & How Much Fruit Should You Consume?

With Dr. Daniel Nuzum

Editor's Note: Nutrition is a big topic that comes up frequently at The Truth About Cancer. It can be confusing because there are lots of opinions out there, and not even all of our experts agree on all points. We recently had a chance to sit down with Doc Nuzum and find out what foods he recommends his patients consume regularly to build a strong immune system. He also shared his thoughts on whether or not it's "safe" for cancer patients to eat fruit.

Q: What are your favorite foods for fortifying the immune system?

A: Always, always, always mushrooms, herbs, and spices. So here's an interesting thing. The spicier the herb,

the more molecular oxygen it contains. Molecular oxygen is what people are getting when they're in a hyperbaric oxygen chamber.

Some of my favorites are ginger; it's spicy, but it's pungent spicy. Cayenne pepper, garlic, turmeric – those are all pungent, but not necessarily hot. If you think of habaneros and things like that, they have molecular oxygen, and that's partly why they're so hot. The chemicals in them that are "hot" have a lot of molecular oxygen.

Really all the herbs and spices are fortifying in some way. If you take an herb like parsley, it may taste mild and not "spicy", but it is good for chelating (pulling)

heavy metals out of the body. It actually helps to pull heavy metals out of the kidneys themselves.

Heavy metals in the kidneys form kind of like slivers, and they lodge into what are called nephrons of the kidney cells. Parsley and cilantro will go into those cells and dissolve those deposits (slivers) in there so they can move on out. That's why kidney function improves while people are taking these herbs.

Q: Would you rank mushrooms, herbs, and spices above fruits and vegetables in terms of nutrition?

A: Yes, absolutely. However, fruits and vegetables have what we would call protectants and are highly beneficial. They contain super-powered antioxidant phytochemicals. This includes things like proanthocyanidins in grape seeds, pycnogenol from pine bark, and the sulfur-based compounds out of cruciferous vegetables.



Proanthocyanidins are powerful antioxidants found in a number of plant sources including grape seeds & skin, blueberries, bilberries, cranberries, black currants, and unsweetened chocolate

Blueberries, acai berries, maca berries, goji berries, all these different things, they have pigments and polysaccharides. Those are the two big compounds. Then the third group would be flavonoids. This is the other group of compounds in these fruits and vegetables that are protectants.

These compounds actually protect our healthy cells. So, if you can protect enough healthy cells and keep them from being consumed by cancer cells, the cancer cells run out of food. And so, by eating these healthy fruits and vegetables, you help starve cancer.

Q: What are your thoughts on the sugar in fruit? Do you recommend your patients eat fruit?

A: This is a good question. The glucose (sugar) molecule is $C_6H_{12}O_6$. It doesn't matter if it comes from an orange, or if we go down to the gas station and get one of those candied orange slices. What happens though is if we take an orange slice from an organic orange versus this candied orange slice, they may have the same amount in milligram amounts, or even gram amounts, of $C_6H_{12}O_6$ – that sugar molecule.

But what you have in the organic orange slice is fuel that your mitochondria will use. What you have in the candied orange gummy slice is a sugar that your body will try to use but can't use very efficiently because the carbon, the C part, has already been spent. It's not carrying an electrical charge. But the slice of organic orange is carrying an electrical charge that your mitochondria need in order to activate the Krebs cycle. And the Krebs cycle is where they produce energy.

If you think about your body as an engine and you have different fuel sources, you would never put crude oil in there because it gunks up the whole system and you'll wreck your engine. This is what happens when we eat these refined sugars consistently. It wrecks our engines, or our mitochondria, because they burn up. Processed sugars are poisonous to our mitochondria from the standpoint that they cause our mitochondria to oxidize really fast. And oxidation equals aging.

It's like if you had a wood stove and you had two options for fuel. On one side you had a little bit of fire-starting material, and you had four hard wooden logs. Or over

on the other side you had a stack of papers. Which one would burn out first? If you wadded up all those papers and put them in the wood stove you'd produce a lot of ash. But then you wouldn't be able to burn anything in the stove because you'd have so much ash from all that paper.

If you took the wood and put it in there one log at a time, it'd burn for a long time, and eventually you'd have to clean it out, but it would take a while. Whereas the quick flash of heat that would come off of the wads of paper would burn out real quick and create a lot of ash.



Your mitochondria can burn the sugar in fruit efficiently to produce energy, but the sugar in candy creates oxidative waste that ages the body

In this analogy the ash equals waste; oxidized waste. So, when we eat the slice of organic orange, that's like burning logs of wood in our mitochondria. It burns efficiently and creates some waste, but not that much. When we consume candy, we throw this fast-burning fuel into our mitochondria, but it causes a lot of waste. That waste builds up in the mitochondria and they can't burn anything anymore.

Here's a good example to illustrate. When they do a PET scan they give the person 200 grams of corn syrup. Why don't they give them orange juice instead? Because even though you could have the same amount of sugar,

the tumors hardly show up with the orange juice. Originally they did give people orange juice, but had to switch to corn syrup because the tumors wouldn't light up enough.

When you give a patient corn syrup, those tumors light up right off the bat. Within three to five minutes, the tumors are lighting up with that 200 grams of corn syrup. By the way, that's likely around the equivalent of three 32-ounce sodas, and how many people are drinking three or more sodas a day?

The thing is, tumors don't want the fruit sugar because it comes with vitamins and minerals and phytochemicals and all these things that are poisonous to it. So, cancer cells will take fruit sugar if they have to, but they don't want it.

Q: Do you give your cancer patients a limit as to how much fruit they should consume each day?

A: No, but here's my rule of thumb. For every serving of fruit they eat, they have to eat two servings of vegetables. For example, if they have four ounces of fruit, they have to have eight ounces of vegetables. In severe cases, it's three times the vegetables.



Doc's rule of thumb for his patients: for every ounce of fruit, consume two to three ounces of vegetables

A severe case would be if they're stage three or four. That's when I get a little more strict on the sugars. But what I've found is if we don't give these patients some of the fruit sugars (carbohydrates), they go into a catabolic state, where they lose all kinds of metabolically active tissues. And that leaves space for tumors to grow.

What I see is that a lot of people aren't doing the balance of vegetables as they need to. When you're taking in leafy greens and cauliflower and broccoli (e.g. you're eating 12 ounces of those things at a sitting), that's a lot of food. But there's not a lot of carbohydrate in there. There's some, but it's going to be very low.

If they're consuming that with some other protein source, and then a little bit of sugar from an orange or an apple or berries, it doesn't take much, but if they add some of that into their system, it has an anti-catabolic effect. In other words, an anti-cachexic affect. That's important because if they waste away to nothing, they have nothing to fight the cancer with.



A limited amount of carbohydrate from fruit, when consumed along with vegetables and protein, can help prevent cachexia in cancer patients

About Dr. Daniel Nuzum



Daniel Nuzum NMD, DO, DN is a certified Doctor of Natural Medicine, medical acupuncturist and nutritional supplement formulator with a passion to help others find their "vitality for life." He is also a licensed Tribal Practitioner, a counsel licensed

Doctor of Natural Medicine and an osteopathic doctor.

In 2002, he founded Nuzum's Naturals located in Nampa, Idaho. The clinic served the entire Treasure Valley until Dr. Nuzum chose to focus on creating formulas and supplements that will have an impact on global health.

His vast background is in many facets of natural medicine and deeply inspired by a passion for people and helping others. Dr. Nuzum frequently pursues opportunities to educate and has appeared in all The Truth About Cancer docu-series. He is also the lead formulator for Organixx supplements.

Charlene's Cancer-Fighting Kitchen



Nasturtium and Baby Greens Salad With Pecans & Basil Dressing



Looking for something different to brighten up a salad? Nasturtium flowers have a slightly spicy flavor and mustard-like aroma, and are a beautiful and nutrient-dense addition to most any salad. The phenols in the pigments of nasturtium flowers help neutralize the damaging effects of free radicals, helping to protect us from chronic diseases such as cancer and cardiovascular disease.

Both the leaves and petals of the nasturtium plant contain high levels of vitamin C and iron. They have the ability to improve the immune system, tackling sore throats, coughs, and colds, as well as bacterial and fungal infections. These plants also contain high amounts of manganese, iron, flavonoids, and beta carotene, and are a natural hay fever remedy!

The leaves also have antibiotic and antimicrobial properties which are at their most effective just before the plant flowers. Nasturtium leaves are very effective in promoting the formation of new blood cells in the body.

Yield: 4 servings

Preparation time: 10 minutes

Dressing Ingredients:

- 1 teaspoon fresh garlic, minced
- 3 tablespoons freshly squeezed lemon juice
OR white balsamic vinegar
- 3 tablespoons basil, rolled and thinly sliced
- ¼ cup extra virgin olive oil
- Celtic sea salt and freshly ground pepper, to taste

Salad Ingredients:

- 5 ounces mixed baby greens (baby chard, arugula, spinach, rouxai, watercress, red oakleaf)
- 25 nasturtium leaves
- 12 nasturtium flowers
- ½ cup raw pecans

Directions:

1. Prepare dressing by mixing garlic with lemon juice or vinegar, garlic, and basil. Slowly whisk in olive oil. Season with salt and pepper. Set aside.
2. Place baby greens and nasturtium leaves in a large salad bowl. Add pecans and toss with half of the dressing. Add more dressing, if needed, to coat. Season with additional salt and pepper, if desired.
3. Nestle the flowers and serve. It is best to add the flowers after the vinaigrette to preserve their shape and avoid bruising.

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.



Chicken and Chickpea Stew



On nights when you'd like a hot meal, this warming dish will satisfy the family while keeping the animal protein to a minimum. One serving idea is to serve the stew over rice with some steamed broccoli on the side. Or, to make the meal lower carb, substitute veggies of choice (i.e. diced zucchini) for the chickpeas and serve over cauliflower rice.

When purchasing tomato products (such as tomato sauce or paste), look for organic jarred sources instead of cans. Tomatoes are highly acidic and will draw more of the BPA and other chemicals out of the can lining. If using canned beans or chickpeas, look for cans with a BPA-free lining, or cook your own dried beans.

Yield: 4 servings
Preparation time: 45 minutes + time for roasting peppers in advance if making your own

Ingredients:

- 4 tablespoons olive oil, divided
- 3 skinless, boneless, organic pastured chicken thighs
- Coarse Celtic sea salt, to taste
- 3 cloves garlic, minced
- 2 tablespoons ground cumin
- 2 tablespoons tomato paste (preferably from a jar)
- ¾ teaspoon red pepper flakes
- 2 bay leaves
- 1 cup bone, chicken, OR vegetable broth
- 2 15-ounce cans chickpeas, rinsed and drained
OR 1 ½ cups cooked chickpeas
- 1 cup roasted red peppers, sliced into ribbons (from a jar or your own, see recipe on pg 17)
- 2 tablespoons fresh lemon juice, more for finishing
- 4 tablespoons chopped flat-leaf parsley

Directions:

1. Season chicken with salt. Heat 2 tablespoons oil in a medium sized pot over low heat. Add the chicken to pot and cook, turning once, until browned, about 8-10 minutes. Transfer to a plate and set aside.
2. Using the same pot add some oil, then the garlic and cook, stirring occasionally, until fragrant, 30-60 seconds. Add cumin, tomato paste, and red pepper flakes. Stir until a smooth paste forms, about 1 minute.



3. Add reserved chicken with any accumulated juices, along with the bay leaves, broth, and 2 1/2 cups water. Scrape up any browned bits.
4. Bring to a boil; reduce heat to medium-low and simmer, uncovered, stirring occasionally, for 20 minutes.
5. Transfer chicken again to a plate. Add the chickpeas to the pot; bring to a simmer and cook 5 minutes. (If using veggies in place of chickpeas, adjust cooking time accordingly.)
6. Carefully shred the chicken or cut into chunks and add back into the pot. Add the red pepper ribbons. Stir in the remaining 2 tablespoons oil and 2 tablespoons lemon juice. Simmer 1 minute. Season with salt and more lemon juice, if desired. Garnish with parsley.

DIY Roasted Red Peppers

Cut each pepper in half and remove seeds. Place the peppers cut-side-down on a rimmed baking sheet lined with parchment paper.

Roast at 450° F in a pre-heated oven for about 25 minutes until the skins are completely wrinkled and somewhat charred, rotating the baking sheet as necessary.

Remove peppers from baking sheet with tongs and transfer to a bowl; cover until cool enough to handle. Remove skins and slice into ribbons. Store in a covered container in the fridge for up to a week.





Parsley Dim Sum



These steamed dumplings couldn't be simpler. In just 20 minutes you can have delicious Dim Sum at home, using organic ingredients. You will need a steamer basket and suitable wok or saucepan filled with water. The steamer tray of a rice cooker would work.

If you don't have time to make the dipping sauce, you can substitute organic soy sauce. One of the key ingredients in the dipping sauce is hoisin sauce. Most store-bought brands of hoisin are loaded with sugar and other unhealthy ingredients. In just a few minutes you can whip up your own homemade version which is far healthier.

The featured ingredient in the dumplings is parsley. Many people think of parsley as merely a garnish, but this common herb is truly a superfood. Parsley helps control diabetes, improves bone health, strengthens the immune system, and protects the heart and brain.

It's also a strong anti-inflammatory, purifies the blood, detoxifies the body (especially from metals), and promotes the elimination of carcinogens.

Yield: 4-6 servings
Preparation time: 35 minutes (not including hoisin sauce & dipping sauce which can be made ahead of time or while the dumplings are cooking)

Ingredients:

- 2-3 cloves garlic, finely minced
- 1 cup parsley, finely chopped
- 2 tablespoons spring onions, finely chopped
- 1 tablespoons organic miso paste (whichever variety you prefer)
- 2 tablespoons tamari OR coconut aminos OR organic soy sauce
- 1 teaspoon sesame oil
- 24 wonton wrappers, or enough home-made dough to make 24 pieces

Directions:

1. Combine all ingredients except for wrappers in a food processor and process until well mashed, but with some small chunks remaining.
2. Lay wrappers on a flat surface and brush with water so wrapper is slightly wet. Place one heaping teaspoon of filling mixture onto each wrapper.
3. Fold wrapper in half, enclosing filling, and press edges firmly to seal.
4. Fill a wok or large saucepan ½ full with water and bring to a boil. Fit steamer into wok and line inside loosely with parchment paper, if desired.
5. Steam in batches until slightly translucent, making sure to separate each dumpling in the steamer so they don't stick together.
6. Serve with tamari sauce, soy sauce, or dipping sauce (see recipes on pg 19).



Dipping Sauce

- 2 tablespoons organic soy sauce
- 2 tablespoons hoisin sauce (see recipe below)
- 1 teaspoon sesame seed oil
- ¼ teaspoon fresh ginger, minced
- Splash of brown rice vinegar

Directions:

1. Mix all the ingredients in a bowl, adding additional soy sauce or brown rice vinegar if the sauce is too thick.

Hoisin Sauce

- 1 tablespoon sesame oil
- 1 clove garlic, minced
- ½ tsp 5-Spice powder
- ½ cup red miso
- ½ cup pure maple syrup
- 2 tablespoons brown rice vinegar

Directions:

1. Heat oil over med-low heat. Add garlic and 5-Spice powder. Cook 30 seconds.
2. Whisk in remaining ingredients. Bring to a boil and cook 3-4 minutes until lightly thickened. Let cool.

Note: This sauce will keep well for a few days, and often even a few weeks, in a sealed glass container in the fridge.

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 TheTruthAboutCancer.com and Organixx.com along with Ty and their partner, Jonathan Hunsaker. She is a former model/actress/fitness buff, and lover of healthy food and healthy living.

After losing various family members to conventional cancer treatments, Charlene and Ty learned the truth about cancer and the cancer industry, and together work tirelessly helping others to learn the truth that sets them free to live healthy, happy lives.

Charlene speaks at various conferences and is a guest on various health related radio shows together with Ty, helping people to learn that cancer does NOT have to be a death sentence. Together they host a biweekly internet news show program, *TTAC Global Health News*.





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Understanding Bladder Cancer: Statistics, Signs & Prevention

By Suresh Nair, PhD

Bladder cancer is one of the most common cancers in the U.S. In men, it's the fourth most commonly diagnosed cancer, although it occurs much less frequently in women. The American Cancer Society estimates that in 2018 there will be over 81,000 new cases of bladder cancer diagnosed (62,380 in men and 18,810 in women) and around 17,000 deaths from this disease (12,520 in men and 4,720 in women).¹

Bladder cancer typically afflicts older people. Roughly 9 out of 10 individuals who develop this disease are over the age of 55, while the average age at the time of diagnosis is 73 years. The chance that an American man will develop this cancer during his lifetime is about 1 in 27.

For an American woman, the risk is much lower, at about 1 in 89. Generally speaking, Caucasians are more likely to be afflicted with bladder cancer than African Americans or Hispanic Americans.²

Fortunately, 50% of all cases of bladder cancers are detected early, while they are still confined to the inner layer of the bladder wall. A third will have invaded into deeper layers but will still only be in the bladder. In most of the remaining cases, bladder cancer cells will have spread to nearby tissues or lymph nodes outside the bladder. Very rarely, in about four percent of bladder cancer cases, it is likely to have metastasized, or spread to distant parts of the body.³

The Role of the Urinary Bladder

The urinary bladder is a hollow, balloon-shaped organ with flexible, muscular walls situated in the pelvis in the lower part of the abdomen.^{4,5} Your bladder's main job is to store urine made by the kidneys, your body's natural blood filters. The kidneys work to control the amount of water and other substances dissolved in your body's fluids by filtering excess fluid and waste products out of your blood. These waste products may include extra food components that your body doesn't need and can't store, as well as toxic compounds made in your body's cells during their daily metabolic activities.

Typically, urine contains urea, creatinine, and electrolytes such as sodium, potassium, calcium, chloride and bicarbonate, along with water. As urine is made, it is sent into each kidney's collecting tubules and exits into the urinary bladder through a long tube called a ureter. The bladder stores the urine until it is full, or nearly full, and it's then forced out through the urethra and out of the body.^{6,7}



The *bladder* is a pear-sized muscular sac in the pelvis located behind the pubic bone. It collects urine produced by the kidneys and excretes it from the body via the urethra

What Is Bladder Cancer?

Bladder cancer develops when different types of cells in the bladder start to grow uncontrollably. Depending on the cell affected, three types of cancer can occur in the cells lining the bladder:⁸

» **Transitional cell carcinoma** – this most common form of bladder cancer begins in the innermost tissue layer, which contains *urothelial cells* – hence also known as urothelial carcinoma. Urothelial cells are known as transitional cells because they can change their shape, stretching when the bladder is full and shrinking when it's empty. Most bladder cancers begin in transitional cells.

Transitional cell carcinoma can either be low-grade or high-grade:

- **Low-grade** – this form can recur after treatment, but rarely spreads.
- **High-grade** – this form usually recurs after treatment and often spreads into the muscle layer of the bladder, to other parts of the body, and to lymph nodes when it becomes known as invasive bladder cancer. Almost all deaths from bladder cancer are due to high-grade disease.

» **Squamous cell carcinoma** – these cancers begin after long-term infections or irritation in thin, flat cells lining the bladder, known as squamous cells.

» **Adenocarcinoma** – these very rare cancers begin in the glandular cells that are found in the lining of the bladder, which make mucus.

Bladder cancer can also spread to other parts of the body and form tumors elsewhere – known as metastatic tumors – in one of three ways. Bladder cancer can spread from where it began by directly growing into nearby tissues. Alternatively, it can get into the lymphatic system and move to other parts of the body. Finally, it can enter the bloodstream and travel to distant parts of the body via the blood vessels. Such a metastatic tumor growing anywhere else in the body would still be bladder cancer. For example, if bladder cancer cells spread to bone and formed a tumor there, it would be called metastatic bladder cancer in the bone.

Common Signs of Bladder Cancer

Not surprisingly, the common signs of bladder cancer primarily have to do with urination. This can include:

- visible blood in the urine
- irritation or pain during urination
- frequent urination, particularly through the night
- urinary urgency (an inability to hold the urine for long after first feeling the need to go)
- feeling a strong need to urinate, but not being able to go

Other signs to watch out for include pelvic or back pain, including low back pain on only one side of the body.

Risk Factors for Bladder Cancer: Why Should You Know About Them?

A risk factor is anything that increases your chances of contracting or developing a disease; for example Alzheimer's disease or cancer. Different diseases have different risk factors. Some risk factors (like smoking) can be changed, while other factors such as race, age, or family history, obviously cannot be mitigated.

Having one or more risk factors simply means that your chance of developing a particular disease is greater than the average – but it's very important to remember that this doesn't automatically mean you will get the disease. For example, many people with one or more of the risk factors for bladder cancer described below will never end up with bladder cancer.

Still, it's important to be aware of these risk factors, and take action where possible to maximize your odds of staying healthy. Also, if you feel that you are at higher risk of getting bladder cancer, you can get yourself tested so that bladder cancer (if present), can be detected early, when intervention is most likely to be effective.

Let's take a closer look at some of the known risk factors for bladder cancer.

Bladder Cancer Risk Factors That Can Be Controlled

» **Smoking cigarettes** – this is a strong risk factor for bladder cancer. In both men and women, smoking causes about half of all bladder cancers. When compared to people who have never smoked, former and current smokers – both men and women – have a higher risk of getting bladder cancer.⁹ Stopping smoking immediately lowers risk, although risk for smokers remains higher than nonsmokers even if they had quit 10 years prior.



Close to 50% of all cases of bladder cancer are caused by smoking

Pipe and cigar use is also linked to a greater risk of bladder cancer in men. Overall, men have nearly four times the risk of women for developing this disease, regardless of whether they smoked or not. Also, the composition of cigarettes has changed over the past 50 years, so that they now contain higher levels of cancer-causing compounds such as beta-naphthylamine – a known bladder carcinogen – and nitrosamines. In fact, a recent report from the New England Bladder Study suggests that even though the total number of smokers in the U.S. has declined, smoking cigarettes may be more strongly linked to bladder cancer risk than ever before.¹⁰

» **Workplace exposures** – certain industrial chemicals have been linked to a greater risk of developing bladder cancer. So-called “aromatic amines” such as benzidine and beta-naphthylamine, which are used in the dye industry, are known to cause bladder cancer.^{11, 12} It is estimated that occupational exposures to aromatic amines might explain up to a quarter of all cases of bladder cancer in and around areas with industries which still use these compounds.

The higher than average risk was still apparent 30 years or more after the last known exposure. Similarly, people who work with metalworking fluids – such as sheet metalworkers and machine operators – have a significantly higher risk of bladder cancer, which increases with duration of employment.¹³ Other industries that carry a high risk of bladder cancer include rubber, leather, textiles, paint products, and printing companies. Painters, machinists, printers, hairdressers, and truck drivers all have a greater than average risk of getting bladder cancer.



Workers in fields that use aromatic amines are at a higher risk of bladder cancer and need to follow safe work practices to minimize exposure

The evidence also indicates that aromatic amines may be responsible for the higher risk of bladder cancer in smokers as well. So, it makes sense that smokers who work with cancer-causing chemicals have an especially high risk of getting bladder cancer.^{14,15}

» **Diabetes** – In a 2017 meta-analysis of 21 cohort studies, diabetes was clearly linked to an increased risk of bladder cancer and bladder cancer deaths, when compared with non-diabetic participants. Obviously, diabetes combined with smoking and workplace exposure to toxic chemicals is likely to drastically worsen this risk.¹⁶

» **Pioglitazone** – As mentioned above, people with diabetes are at increased risk of bladder cancer. According to the U.S. Food and Drug Administration (FDA), pioglitazone (brand name Actos), an anti-diabetic drug, increases bladder cancer risk further.¹⁷ However, a recent meta-analysis suggests that there is no link between use of pioglitazone and the risk of bladder cancer.¹⁸

» **Aristolochic acids** – these are natural compounds present in plants known as Aristolochia, which are used in some herbal medicinal products. Unfortunately, cancers of the upper urinary tract and bladder have been reported in some individuals who had kidney damage caused by consuming herbal products containing aristolochic acids.¹⁹

» **Arsenic in drinking water** – In 2016 a study was carried out by researchers at the National Cancer Institute (NCI) and their colleagues at the Geisel School of Medicine at Dartmouth, as well as the departments of health for Maine, New Hampshire, and Vermont and the U.S. Geological Survey. Researchers found that drinking water from private wells, especially dug wells established during the first half of the 20th century, may have contributed to the greater than average risk of bladder cancer seen in Maine, New Hampshire, and Vermont.²⁰ These wells are believed to contain low to moderate levels of arsenic. Previous studies have shown that consumption of water containing high concentrations of arsenic increases the risk of bladder cancer.^{21,22}



Drinking more water throughout the day helps to lower bladder cancer risk

» **Not drinking enough fluids** – people who drink a lot of fluids, especially water, tend to have lower rates of bladder cancer.²³ This might be because they empty their bladders more often, which likely keeps harmful chemicals from lingering in the bladder.²⁴

» **Chemotherapy** – taking the chemotherapy drug cyclophosphamide (Cytoxan) for a long time can irritate the bladder and increase the risk of bladder cancer – which is why patients are usually given the lowest possible effective dose of this drug, told to drink plenty of fluids, and carefully monitored for the presence of blood and blood cells in their urine.²⁵

» **Radiation therapy** – people treated with radiation to the pelvis are more likely to later develop bladder cancer.²⁶

Other Bladder Cancer Risk Factors

» **Race and ethnicity** – As mentioned earlier, Caucasians in the U.S. are about twice as likely to develop bladder cancer as African Americans and Hispanic Americans. Asian Americans and American Indians have slightly lower rates of bladder cancer. The reasons for these racial and ethnic differences are not yet clear.²⁷

» **Chronic bladder irritation and infections** – urinary infections, kidney and bladder stones, and bladder catheters that have been left in place too long have been linked with a greater risk of getting bladder cancer, although it's not clear if they actually *cause* bladder cancer.²⁸

» **Age** – the risk of bladder cancer increases with age, with 90% of bladder cancer found in those over age 55.

» **Gender** – for as yet unknown reasons, bladder cancer is much more common in men than in women.



Bladder cancer is diagnosed most often in Caucasian men over the age of 55

» **Schistosomiasis** – this is an infection with a parasitic worm that can get into the bladder. Bladder cancers are more frequent in countries where this parasite is common, mainly in Africa and the Middle East. Schistosomiasis and schistosomiasis-associated bladder cancer are rare in the U.S.

» **Personal history** – having a cancer in the lining of any part of the urinary tract raises the risk of getting another cancer – either in the same area, or in another part of the urinary tract. This is true even when the first tumor is removed completely. For this reason, people who have already experienced one episode of bladder cancer need to remain vigilant²⁹ and follow an anti-cancer lifestyle.

» **Family history** – having family members with bladder cancer increases bladder cancer risk. This may be because members of the same family are sometimes exposed to the same cancer-causing chemicals. Alternatively, family members may also share genetic alterations or defects that make it difficult for their bodies to break down toxins, which can make it more likely that they develop bladder cancer.

» **Gene mutations** – mutations in the telomerase reverse transcriptase (TERT), transforming protein 21 (HRas), tumor protein 53 (TP53), and retinoblastoma (RB1) genes can increase the risk of developing bladder cancer. All of these genes play an important role in managing cell division, which normally prevents cells in the body from dividing too quickly. Mutations in these managing genes makes it easier for cancer cells to form.³⁰

4 Steps to Lower Your Odds of Ever Getting Bladder Cancer

1 | Don't smoke – as we saw earlier, smoking cigarettes, cigars, and pipes is believed to be responsible for up to 50% of all bladder cancer cases – and stopping smoking immediately lowers bladder cancer risk. Lowering your risk of both lung and bladder cancer are excellent reasons to quit smoking immediately.

2 | Limit exposure to chemicals (especially aromatic amines) in the workplace – workers in industries such as rubber, leather, printing materials, textiles, metalworking, and paint who use chemicals like aromatic amines and metalworking fluids run a greater risk of developing bladder cancer. The best way to minimize your exposure to such chemicals is to carefully follow good work safety practices. Regular exposure to diesel fumes might also raise bladder cancer risk, along with the risk of getting other cancers – so, limiting this exposure is also a good idea.

3 | Drink plenty of liquids – studies in animals have shown that frequent urination lowers the levels of potential carcinogens in the urothelial layer of the bladder. Similarly, in us humans, drinking more fluids (especially water) is likely to reduce contact between potential carcinogens and the bladder lining by diluting waste products in the urine and prompting frequent voiding of the bladder.^{31,32}

4 | Drink green tea and eat a healthy diet with lots of fresh, locally grown, non-irradiated, non-GMO fruits & vegetables – studies looking for strong connections between dietary factors and bladder cancer risk have reported inconsistent results. This is likely because of lack of details of how foods (including fruits and vegetables) were consumed, smoking status, and other information. Some evidence suggests that excessive consumption of processed meat may increase bladder cancer risk, while tea polyphenols, vitamin A and carotenoids appear to lower risk.³³⁻³⁵

Green tea polyphenols such as the catechins EGCG and ECG have been shown to have antioxidant and anti-inflammatory actions in multiple laboratory, animal, and human studies. Further, a diet rich in fruits, and especially vegetables, has been shown to have protective effects against cancer in general – and is most likely one of your very best protectants against bladder cancer as well.³⁶⁻³⁸

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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.

Suresh is a regular contributor to The Truth About Cancer, and has also written hundreds of articles for other websites and publications on health, alternative health, fitness, and nutrition as well as various other medical and clinical topics.

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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