

**Anticancer**  
LIFESTYLE PROGRAM

# **The Anti-Inflammatory Diet E-Book**

**By Crystal Pace, RDN**

REGISTERED DIETITIAN WITH THE  
ANTICANCER LIFESTYLE PROGRAM





# ABOUT CRYSTAL

Crystal is a Registered Dietitian (RD) with the Anticancer Lifestyle Program. She is also a yoga teacher and health coach who is passionate about Anticancer living. After graduating with her B.S. degree in nutrition from the University of New Hampshire, Crystal went on to pursue her M.S. degree in nutrition from New York University.

Crystal believes in the importance of looking at all aspects of lifestyle, and taking a personalized, holistic approach toward optimal health and well-being. She coaches in the ACLP module areas of Diet, Fitness, and Mindset. In her free time, Crystal enjoys trying new recipes, visiting farms, shopping at farmers markets, doing yoga, being outdoors, traveling, reading and most importantly: living an Anticancer lifestyle!







## IN THIS E-BOOK, YOU WILL LEARN ABOUT:

- Inflammation and its role in chronic disease
- Foods that may raise or lower inflammation
- Which herbs and spices can reduce inflammation
- Other lifestyle habits that can help control inflammation

(**Please note** that some individuals may experience inflammation when consuming particular foods, such as gluten-containing grains. The purpose of this e-Book is to summarize the scientific literature related to general anti-inflammatory eating. If you have personal food allergies, intolerances, and/or sensitivities, be sure to work individually with a qualified Registered Dietitian Nutritionist.)



# THERE ARE TWO TYPES OF INFLAMMATION: ACUTE AND CHRONIC

**ACUTE inflammation** is one of the many responses of the immune system used to defend the body from injury. Common symptoms include redness, heat, pain, and swelling due to inflammatory chemicals being released into the bloodstream traveling to the site of injury. This response is inherently protective. It helps to eliminate harmful substances and heal damaged tissue. It is essential for healing wounds and combating infection.

**Acute inflammation is short-term, temporary, and self-limiting.** A blood test, called C-Reactive Protein, can be taken to determine if acute inflammation is present; however, it is not a reliable diagnostic for chronic inflammation. Blood tests for inflammation are a clue, but should only be thought of as one piece of the entire inflammation puzzle.

**CHRONIC inflammation** occurs when the inflammatory response fails to resolve, and/or when harmful, poisonous, or unpleasant stimuli persist in the body. Chronic inflammation, sometimes referred to “silent” inflammation, is often painless, but as inflammatory chemicals are continually released into the bloodstream, over time they can damage our organs and tissues, and eventually may increase risk for chronic diseases, such as diabetes, cancer (especially colorectal cancer), coronary artery disease, stroke, cardiovascular disease, rheumatoid arthritis, metabolic syndrome and asthma.

**Think of chronic inflammation as putting your body into a constant state of alert.** It can be caused by auto-immune disorders, long-term exposure to irritants (such as pollution and toxic chemicals), and a range of other lifestyle factors, such as dietary factors, smoking, alcohol consumption, and chronic stress.



# OBESITY AND INFLAMMATION

**Research shows that obesity is associated with inflammation.** Fat cells may increase inflammation in the body by producing and releasing inflammatory chemicals (such as cytokines). Fat cells also have the potential to increase the amount of circulating hormones, such as estrogen. **According to the Centers for Disease Control (CDC), It is estimated that 40% of adult cancers are correlated with overweight and obesity alone.** Note that this does not mean inflammation or body weight caused these cancers and other disorders, only that they are linked in ways we have yet to fully understand.

It is important to emphasize that many factors play a role in someone's weight including - but not limited to - the following: genetics, medications, medical conditions, socioeconomic factors, diet, exercise, weight stigma, racism, race or ethnicity, weight cycling, trauma, sex, history of dieting, certain medical conditions, increased stress, and not enough sleep. **Try to focus on modifying behaviors that you can control - such as how you manage stress, how much you sleep and move, and what you eat - versus focusing on some number on the scale.** Research supports that engaging in health-promoting behaviors can positively impact our health and disease risk regardless of changes in weight.





# WHAT EXACTLY IS AN ANTI-INFLAMMATORY DIET?

Inflammation is a process that is strongly influenced by lifestyle factors such as one's diet. (In this context, the word "diet" refers to the kind of food a person habitually eats.) **Inflammatory diets have been linked to numerous cancers, including colorectal, breast, head and neck, gynecological, prostate, esophageal, and others.**

While there is no single definition of an anti-inflammatory diet, these diets differ markedly when compared to the Standard American Diet (which has the appropriate acronym of SAD), which is high in red meat, sugar, refined or processed carbohydrates, and lower in fish, fruit and vegetable consumption.







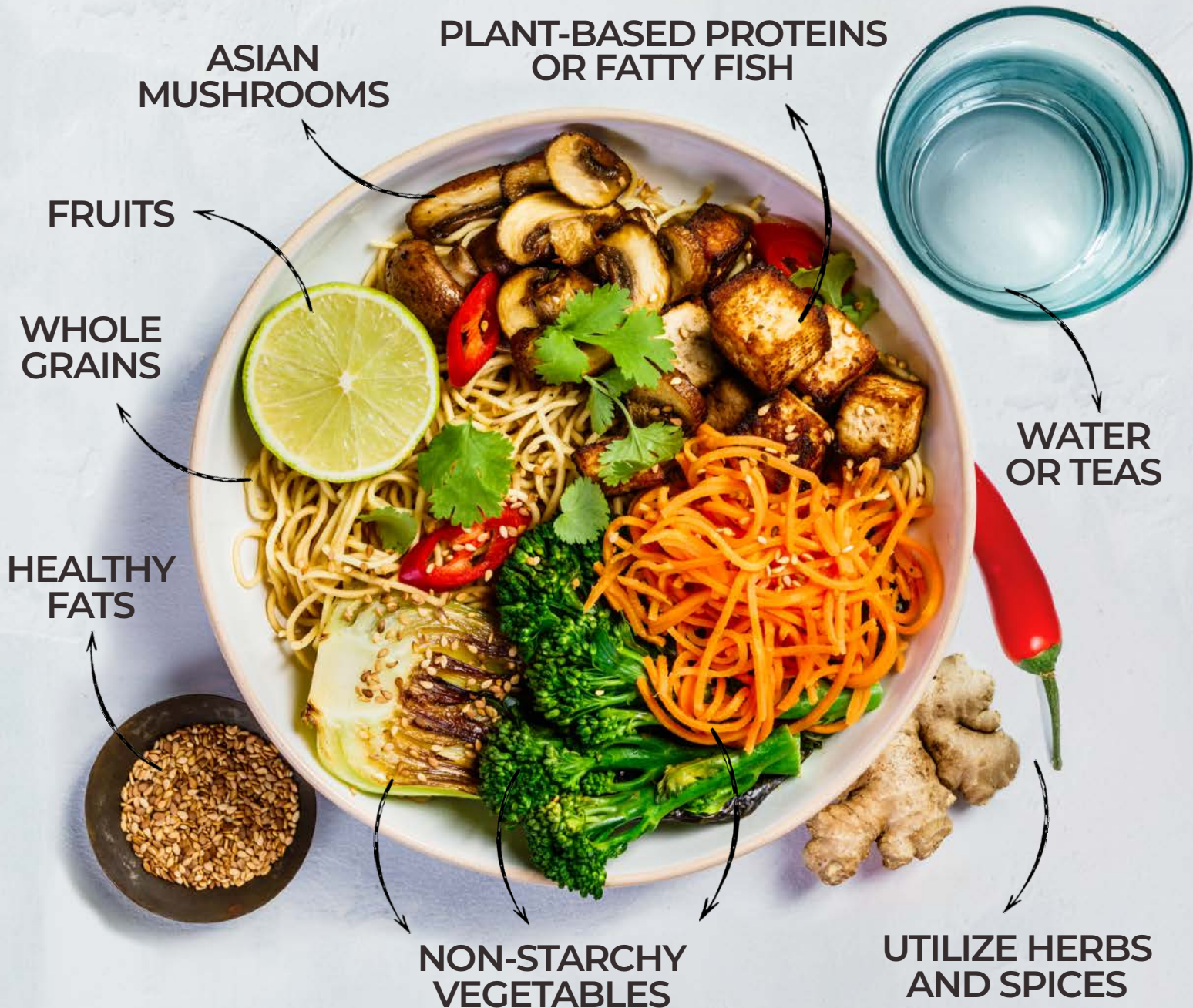
The diets most commonly considered as anti-inflammatory incorporate aspects of the Mediterranean and Okinawan diets.

The Mediterranean diet is high in fruits, vegetables, fish, olive oil and moderate red wine intake. The Okinawan diet is high in vegetables and fruits, and low in dairy and red meat. This diet is lower in fat intake than the Mediterranean diet. **Anti-inflammatory diets are rich in Vitamins C and E, other antioxidants, fiber, flavonoids, magnesium, carotenoids, omega 3 fatty acids, polyunsaturated fatty acids, monounsaturated fatty acids, zinc and probiotics.**

**This can be contrasted with the typical Western diet, which is associated with inflammation.** This diet is typically high in protein (particularly animal proteins), fried foods, sugar, and refined carbohydrates. It is low in fiber, fruits, vegetables, and associated nutrients. High iron diets have also been linked to inflammation.



# AN ANTI-INFLAMMATORY PLATE MIGHT INCLUDE:





# CARBOHYDRATES AND INFLAMMATION

**Excessive consumption of refined carbohydrates can increase inflammation.** Examples include:

- Sugary foods such as sweets
- White bread
- Bagels
- White pasta
- White rice
- Sugary beverages

**Refined carbohydrates are highly processed and stripped of many nutrients.** Excess consumption of refined carbohydrates can cause hyperglycemia (high levels of sugar in the blood). Chronic hyperglycemia can lead to increased production of free radicals and pro-inflammatory cytokines, the release of inflammatory chemicals, and greater insulin production, which in turn can cause a spike in IGF-1 (insulin-like growth factor 1). High levels of IGF-1 are associated with increased risk of a number of common cancers, including lung, breast, colorectal, and prostate. In other words, **excess consumption of refined carbohydrates can lead to a hazardous cascade of health problems.**

**Instead of refined sugars, choose whole grains,** which have all their original parts present (bran, germ and endosperm). Examples of whole grains include buckwheat, barley, rye and wild rice.





**BUCKWHEAT**



**FARRO**



**STEEL CUT OATS**



**WILD RICE**

These whole grains are also high in fiber which has been shown to reduce inflammatory markers. Choose whole grain bread over white or refined bread. **When reading nutrition labels, look for the word “whole” in the ingredient list and avoid “enriched” grain products.**



# FATS AND INFLAMMATION

**Omega-3 fats may lower inflammation.** Sources of omega-3 fats include:

- Fresh water fatty fish (such as salmon, sardines, mackerel, halibut, herring and anchovies)
- Chia seeds
- Flaxseeds (ground)
- Walnuts
- Hemp seeds
- Seaweed





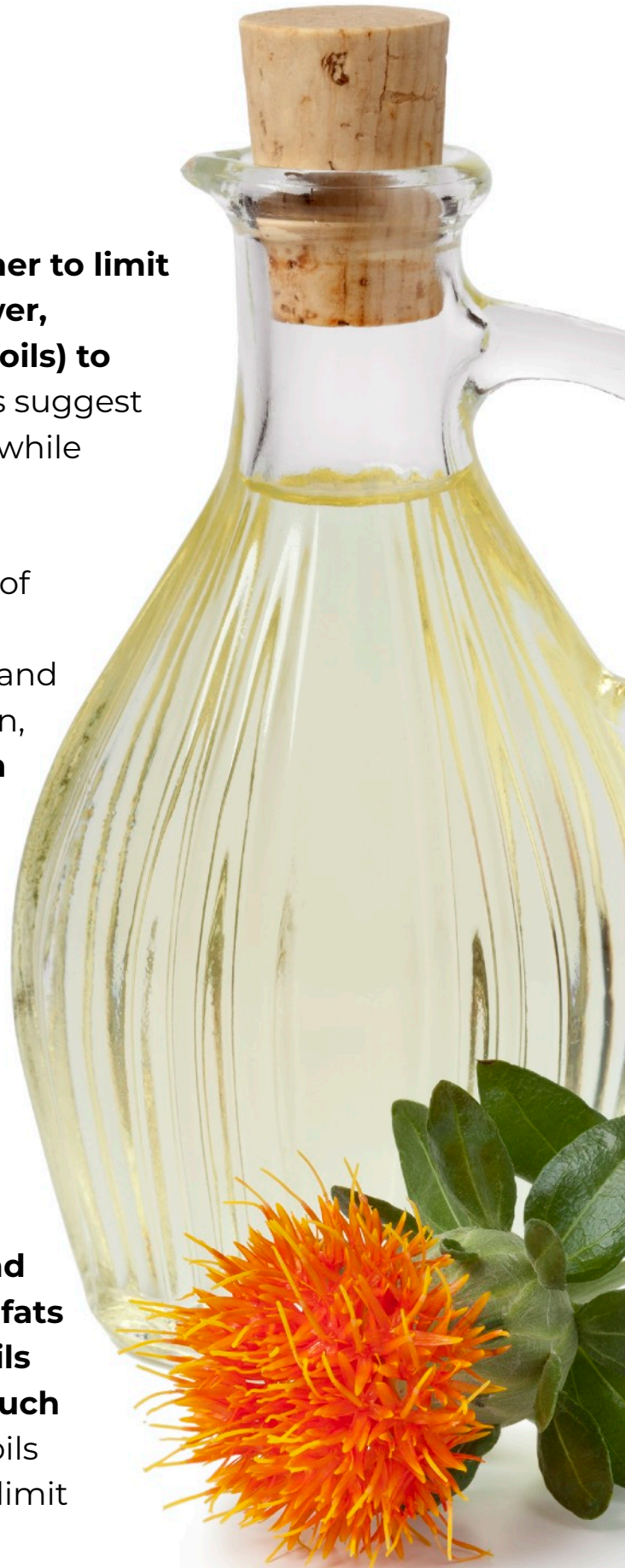


## OMEGA-6 FATS


**Currently, research is mixed about whether to limit oils high in omega-6 fats (such as safflower, sunflower, corn, soybean, and vegetable oils) to help manage inflammation.** Some studies suggest that these oils may increase inflammation while other studies show the opposite.

Many people consume excessive amounts of omega-6 fats, and inadequate amounts of omega-3 fats. We need both omega-3 fats and omega-6 fats to help manage inflammation, and the ratio is very important. **Oils high in omega-6 fats are found in many highly processed foods typical of the Western diet, and processed foods have been associated with increased inflammation.** By eating less processed foods, you will be consuming less of the oils high in omega-6 fats.

At this time it is not recommended to avoid these oils completely to manage inflammation. **We do however recommend limiting your use of oils high in omega-6 fats when cooking, and swapping them for oils higher in monounsaturated fatty acids, such as olive oil.** Since most corn and soybean oils are genetically modified, you may want to limit your use of them for that reason as well.







**Aim to use other oils such as olive oil** (preferably extra virgin olive oil) **and avocado oil** more often than vegetable oils. While olive oil can be used for lower heat cooking, it is best to use avocado oil for higher heat cooking.

**When choosing fish, wild-caught fish is preferable to farm-raised fish.** Fish in the wild eat a natural diet while farmed fish eat a diet that is usually made up of dried pellets that contain soy and/or corn. Farm-raised fish may also be higher in contaminants and have a higher incidence of disease due to farming conditions. Wild-caught tends to have higher levels of omega-3 fatty acids, particularly fresh water fatty fish such as salmon, lake trout, mackerel and sardines. Remember that the nutrition quality of the seafood depends on what the fish eats — or as author Michael Pollan puts it, “You are what what you eat eats.”

Consider using the **Environmental Working Group's (EWG) Good Seafood Guide**, or the **Monterey Bay Aquarium's Seafood Watch Guide** to purchase safer seafood.





## FATS FROM NUTS

**Consumption of nuts has been linked to lower inflammatory markers,** which may result from high omega-3 fats in nuts such as walnuts.



## FATS TO AVOID

**Avoid trans fats as they are strongly pro-inflammatory.** Sources of trans fats include products with “partially hydrogenated oils” in the ingredient lists (such as baked goods). They are also found in small amounts in meat and dairy products from ruminant animals (cattle, sheep and goats).





## POLYPHENOLS

**Polyphenols are a large class of plant-based compounds that are important for human health.** They are powerful antioxidants with anti-inflammatory effects capable of preventing or reversing cellular damage, activating the immune system, promoting good gut bacteria, and reducing cancer risk. It's best to consume polyphenols through foods naturally containing them, rather than as supplements.

**Foods high in polyphenols include** herbs, spices, cocoa, berries (especially dark in color), flaxseeds, chestnuts, hazelnut, olives, capers, pecans, sweet cherries, apple, spinach, shallot, almonds, red onion, elderberry, capers, prunes, almonds, and more.

**Herbs and spices high in polyphenols include** cloves, dried peppermint, star anise, dried oregano, celery seed, dried rosemary, dried thyme, curry powder, dried ginger, fresh thyme, dried lemon verbena, and more.





## FRUITS AND VEGETABLES

**Diets high in fruits and vegetables correlate with lower inflammatory markers in the blood.** They contain vitamins, minerals and phytonutrients including polyphenols. **Aim for a variety of colors and types and choose organic or homegrown when possible** due to lower levels of pesticides and more antioxidants. Seasonal produce is recommended because it yields more available nutrients and antioxidant properties and often at a cheaper cost.

**Choose frozen when eating out of season** as many fruits and vegetables retain and even enhance nutrients when frozen, providing a good alternative when eaten out of season. Frozen fruits and vegetables are usually picked at peak ripeness and then blanched and frozen immediately.





## CALORIC INTAKE

**Eating more than your body needs or over-consuming food can increase inflammation.**

Exact reasons why are unknown at this time. Possible mechanisms include increased consumption of inflammatory foods when one overeats, stress on digestive tract, etc. It is important to learn to practice honoring your fullness levels. (For more on this, please see the ACLP website for my [webinar](#) and [ebook](#), both titled “Food and You: Gaining Control Over Out-of-Control Eating.”)





# PROTEIN SOURCES

**Aim for more plant-based sources of protein** such as tofu, beans, lentils, nuts, seeds, peas and whole grains like quinoa. If desired, add small amounts of wild fatty fish like salmon or mackerel, and lean meats. High animal protein intake has been associated with increased levels of inflammation in the body.

The type of fat in the protein source determines its inflammatory potential. **Animal meats contain cholesterol** which is present in meat, eggs, and fish and promotes inflammation through accumulation in immune cells and via other mechanisms. **Saturated fatty acids (found mainly animal foods) may promote inflammation** through various mechanisms, including activating certain genes that have been associated with increased inflammation.





**Soy contains phytonutrients, protein and healthy fats that contribute to its anti-inflammatory properties.** Soy has been found to decrease the inflammatory markers interleukin 6, TNF-alpha and CRP. Phytoestrogens in soy contribute to soy's ability to reduce systemic inflammation. **Whole soy-based foods include edamame, tempeh, miso, tofu and soy milk.** If soy yogurt is consumed, choose soy yogurt made with soy milk from whole soybeans, which is indicated if the ingredient list is limited to filtered water and soybeans and excludes added sugars and fillers.

**Enjoy legumes including beans, lentils, peanuts and peas as healthful protein sources. Mushrooms are another good option** as they have polyphenols, anti-inflammatory phytonutrients and protein. **Be sure to cook them** and avoid eating them raw, for a couple of reasons: first, mushrooms contain traces of carcinogenic compounds that are destroyed by heat. Second, since mushrooms have a tough cellular structure that is softened by heat, cooking releases more of their nutrients.







## ANIMAL MEATS

**Choose animal meats from animals that have been raised the way nature intended, with access to the outdoors.** Grass-fed beef has a higher amount of beneficial omega-3 fats when compared to conventional beef. **Organically produced meats and dairy have been shown to have higher levels of omega-3 fats when compared to conventional counterparts.**

**Cook animal meats at low temperatures as high temperatures produce more pro-inflammatory chemicals** such as heterocyclic amines (HCAs) and polycyclic aromatic hydrocarbons. These have been shown to cause cancer in animal models. Though a direct link to cancer in humans has not been established, epidemiological studies (meaning studies of large populations) have found **strong associations between increased consumption of meat cooked well-done or grilled, and cancer.**





**Marinating meat prior to cooking can reduce heterocyclic amines (HCAs)**, so consider marinating, mixing or rubbing meat with any of the following prior to cooking: olive oil, cider vinegar, garlic, mustard, lemon juice, salt, herb and spice rubs, homemade sauces, onions or red wine. **Removing skin before cooking chicken reduces HCA production significantly.**

**The jury is still out on eggs.** Eggs are likely a “neutral” food when it comes to inflammation. However, controversy exists regarding the impact of eggs on chronic diseases, including cancer. **Prostate cancer patients specifically should limit or avoid consumption. If consuming eggs, choose organic or free range.**





A top-down photograph of a tea ceremony setup on a light-colored, textured surface. In the upper left, a vibrant green fern frond is partially visible. Below it, two small black ceramic cups are filled with dark tea; the one on the left has a white tea bag. To the right of these cups is a larger black ceramic cup filled with loose-leaf tea. In the lower left, a light blue wooden tray holds a variety of dried ingredients, including what appear to be dried fruits, herbs, and small pieces of wood or bark. In the bottom left corner, the lid of a black, textured ceramic teapot is visible.

## OTHER THINGS TO CONSIDER

Consuming green tea, black tea, rooibos tea, red wine, blueberries, blackberries, red grapes, kiwi, watermelon, parsley, spinach, and cruciferous veggies can all inhibit mutagenic activity (meaning change in the cell's DNA) of certain HCAs. The bacteria found in fermented dairy foods also have this effect. Thus, incorporating any of these foods into meals containing barbecued meat or poultry may lessen the mutagenic effect.

**Drinking tea can have an anti-inflammatory benefit. Tea contains antioxidants and polyphenols.** Green, black and white teas contain the highest amounts of these beneficial compounds. Be mindful of where you are sourcing your tea from — **ideally, choose organic.** Herbal teas can also have antioxidant and anti-inflammatory benefits.





## ALCOHOL IS A KNOWN CARCINOGEN

Moderate intake of alcohol — considered to be one drink per day for women and two drinks per day for men — is a component of both the Mediterranean and Okinawan diets.

However, heavy drinking is associated with increased levels of C-Reactive Protein, a measure of inflammation. The importance of moderation needs to be emphasized. **Alcohol is a known carcinogen. No amount of alcohol is considered safe for cancer.**







## HERBS AND SPICES

When it comes to herbs and spices, the more the better, so include them as often as possible!

**Ginger** and **turmeric** are the two herbs with the largest amount of data supporting their impact on inflammation. They are known to inhibit pro-inflammatory cytokines including IL-2, TNF-alpha, IL-8 and other pro-inflammatory compounds. **Pair turmeric with black pepper and a fat for maximum absorption.**

**Garlic, cayenne and oregano** also have anti-inflammatory properties.





## OTHER LIFESTYLE FACTORS THAT IMPACT INFLAMMATION

Consider how you consume food. Do you eat fast, or when distracted? Eating slowly, mindfully and honoring fullness (versus overeating) can decrease the impact of inflammation on the body.

Other lifestyle factors that impact inflammation include: increased stress, sleep disruption, exposure to toxins, lack of connection to the natural world and other beings, lack of physical activity and tobacco use.

Always remember that **studies have found that the overall composition of your diet is more important for predicting the risk of chronic disease and mortality than specific nutrients.** For example, consuming a form of saturated fat in a recipe that is high in fruits and vegetables and other plant-based foods is not going to cause inflammation. It is more important to look at the overall quality of your diet.



# ANTI-INFLAMMATORY FOODS: A REVIEW

Non-Starchy Vegetables & Mushrooms	Fruits	Whole Grains	Soy, Fish, & Other Protein Sources	Oils and Other Fats	Beverages	Herbs & Spices
Organic and seasonal when possible		Eat more whole grains.	Aim to eat more plant-based proteins.	Enjoy more plant-based fats.	Drink mostly water.	Incorporate more herbs & spices into your diet!
<p><b>Consume more vegetables especially:</b></p> <p><b>Dark Leafy Greens:</b> Spinach, kale, lettuce (dark leaf lettuces such as red or green leaf lettuce), Swiss chard, collard greens, mustard greens, turnip greens, dandelion greens, etc.</p> <p><b>Cruciferous Veggies:</b> Broccoli, Bok Choy, Brussels Sprouts, Cauliflower, Turnips, Cabbage, Radishes</p> <p><b>Allium Vegetables:</b> Garlic, onion, leek, chives, shallots</p> <p><b>Cooked Asian Mushrooms:</b> Shiitake, maitake enokidake, oyster</p>	<p><b>Consume more fresh fruits especially:</b></p> <p><b>Berries:</b></p> <ul style="list-style-type: none"> <li>• Strawberries</li> <li>• Blueberries</li> <li>• Raspberries</li> <li>• Blackberries</li> </ul> <p><b>Red Grapes</b></p> <p><b>Cherries</b></p> <p><b>Apples</b></p> <p><b>Watermelon</b></p> <p><b>Kiwi</b></p> <p><b>Prunes</b></p>	<p><b>Whole Grains Such as:</b></p> <ul style="list-style-type: none"> <li>• Brown Rice</li> <li>• Buckwheat</li> <li>• Farro</li> <li>• Millet</li> <li>• Rye</li> <li>• Steel-Cut Oats</li> <li>• Quinoa</li> <li>• Wild Rice</li> <li>• Barley</li> </ul>	<p><b>Whole, Soy-Based Foods:</b></p> <ul style="list-style-type: none"> <li>• Edamame</li> <li>• Tofu</li> <li>• Tempeh</li> <li>• Soy milk made with whole soybeans</li> </ul> <p><b>Wild, Fatty Fish Rich in Omega-3 Fats:</b></p> <ul style="list-style-type: none"> <li>• Anchovies</li> <li>• Salmon</li> <li>• Sardines</li> <li>• Lake trout</li> <li>• Mackerel</li> <li>• Halibut</li> <li>• Herring</li> </ul> <p><b>Beans and lentils (all kinds)</b></p> <p><b>Other protein sources to eat less often:</b></p> <ul style="list-style-type: none"> <li>• Sustainably sourced, organic animal proteins such as poultry, dairy products, and eggs.</li> </ul> <p><b>Note: Nuts, seeds, and peas are also high in plant-based protein!</b></p>	<p><b>*Oil for low or no heat cooking:</b></p> <ul style="list-style-type: none"> <li>• Extra Virgin Olive Oil</li> </ul> <p><b>*Oil for high heat cooking:</b></p> <ul style="list-style-type: none"> <li>• Avocado oil</li> </ul> <p><b>Nuts such as:</b></p> <ul style="list-style-type: none"> <li>• Almonds</li> <li>• Walnuts</li> <li>• Pecans</li> <li>• Chestnuts</li> <li>• Pistachios</li> <li>• Hazelnuts</li> </ul> <p><b>Seeds such as:</b></p> <ul style="list-style-type: none"> <li>• Ground flaxseeds</li> <li>• Chia seeds</li> <li>• Hemp seeds</li> <li>• Pumpkin seeds</li> <li>• Sunflower seeds</li> </ul> <p><b>*Oils: Use sparingly!</b></p>	<p><b>Water</b></p> <p><b>Unsweetened, organic teas including:</b></p> <ul style="list-style-type: none"> <li>• Green tea</li> <li>• Black tea</li> <li>• White tea</li> <li>• Rooibos tea</li> </ul>	<ul style="list-style-type: none"> <li>• Turmeric (Consume with black pepper and a fat source such as olive oil for maximum absorption.)</li> <li>• Ginger</li> <li>• Parsley</li> <li>• Cloves</li> <li>• Cayenne</li> <li>• Oregano</li> <li>• Dried garlic</li> <li>• Peppermint</li> <li>• Star anise</li> <li>• Celery seed</li> <li>• Rosemary</li> <li>• Curry powder</li> <li>• Lemon</li> <li>• Verbena</li> </ul>
						<p><b>Other Anti-Inflammatory Foods:</b></p> <ul style="list-style-type: none"> <li>-Cocoa (Choose dark chocolate with ≥70% cocoa.)</li> <li>-Capers</li> <li>- Seaweed (high in omega-3 fats.)</li> </ul>



# EAT LESS

## Consider Avoiding:

- \* **Sugar-sweetened beverages** (sodas, juices, sweetened teas, energy drinks, etc.)
- \* **Processed meats** (bacon, salami, bologna, pastrami, spam, etc.)
- \* Products that contain **hydrogenated oils (trans fats)** in the ingredient lists (such as baked goods made with hydrogenated oils)
- \* **Fried foods** (such as fried chicken, fried vegetables, etc.)
- \* **Conventionally produced animal products** such as eggs, poultry, beef, pork, lamb, etc.
- \* **Farm-raised fish**


## Consider Limiting:

- \* **Animal products** (whether conventional or organic), especially red meats, including beef, pork, and lamb.
- \* **Oils high in omega-6 fats** such as: Vegetable oil, corn oil, soybean oil, cottonseed oil, peanut oil, etc.
- \* **Refined carbohydrates** (white pasta, white rice, white bread, crackers made with white flour, sweets, etc.)
- \* **Sugars and syrups** (all forms including honey, maple syrup, agave, cane sugar, coconut sugar, etc.)
- \* **Processed foods, including fast foods**
- \* **Meats cooked at very high temperatures** (such as grilled or broiled meats). Be sure to marinate, mix, or rub prior to cooking meat at high temperatures with any of the following: olive oil, cider vinegar, red wine, garlic, mustard, lemon juice, herb and spice rubs, homemade sauces, onions. Also, consider removing the skin on poultry before cooking.

## A note on alcohol:

**Aim to avoid or drink less alcohol.** Too much alcohol can raise inflammation, and alcohol is a known carcinogen (potential cancer-causing compound).





**“LET FOOD BE  
THY MEDICINE  
AND MEDICINE  
THY FOOD.”**

*- Hippocrates*



**Anticancer**  
LIFESTYLE PROGRAM



We hope you enjoyed this eBook. Please consider making a **tax-deductible** donation to our nonprofit. Your support, in any amount, will help us continue offering free resources to all.

Thank you!

[MAKE A DONATION](#)

We value your feedback! Please fill out our one-minute survey about this eBook.

[TAKE OUR SURVEY](#)

To sign up for our free course, please visit the Anticancer Lifestyle Program website.

[www.anticancerlifestyle.org](http://www.anticancerlifestyle.org)

The Anticancer Lifestyle Online Course is a free, expert-led program that helps you make healthy and informed lifestyle choices to reduce your risk of cancer, cancer recurrence, and chronic illness. Our self-paced course is filled with evidence-based tools, tips, and information to promote well-being in the areas of Diet, Fitness, Mindset, and Environment.