
MWSHS Student Newsletter

Spring 2026

MWSHS Alum Profile:

Tom Pothen

"A few years ago," Tom Pothen told us, "I watched *Fantastic Fungi* on Netflix. This led me down a rabbit hole of exploring the incredible powers of mushrooms, which then segued to herbs and other natural healing substances. From there, I started ingesting anything I could find about herbal healing—from books to online articles. After coming across the website of the American Herbalists Guild, I discovered MWSHS. Now, I'm hooked and want to learn whatever I can to help people to live healthier and happier lives!"

Tom breezed through the first three modules of our Master-Herbalist Program faster than any student has in past years! How did he do that? He informed us as follows: "I am a big fan of the self-paced, asynchronous structure of the Master-Herbalist Program! I am an individual who is big on habits, and with a house full of small children this meant to wake up every morning about an hour before the rest of the family in order to hit the books. This extra time when the house was quiet was the perfect time to make progress on the program. I urge anybody who wants to make progress in the program—or really in anything else—to set non-negotiable progress goals. Even if you only get to the books for fifteen minutes a day, you will quickly see progress towards completing the program."

Tom shared the following encouragement to new students and to those considering becoming a student with MWSHS: "It may seem daunting, but with every step you take you are a little closer to being an expert in a holistic study that predates history. I am now the 'go-to' person at work, with my friends, and with my family when someone isn't feeling quite right and needs an edge to live a happier and a healthier life."

As to Tom's present interests, he informs us: "Currently I am in the ideation phase of what my wellness practice will be. I am also an amateur mycologist and much of my herbal work incorporates mushrooms. Recently, I have been researching longevity and how holistic healing can help with this. I am designing herbal remedies to address major chronic health problems and considering social media strategies." [Pothen profile continued in column two.]



Recent Graduate

We offer congratulations to the following recent graduate of the Western-Herbalism module.

Nikki Stoddard

We very much look forward to hearing more from this graduate as she continues to apply what she has learned in her life!

Register Now for
Holistic Assessment-Skills Workshop
on **April 26th, 2026**
(See page 2 for Details)

MWSHS Profile of Tom Pothen, continued

"In future months, I plan to start soft launching brands of teas that address health issues such as blood pressure, weight, mental clarity, immunity, etc. With the knowledge gained from the Midwest School of Herbal Studies I feel I have what it takes to accomplish my mission and to make the world a healthier place."

We wondered if Tom has any long-range goals and we were interested to learn that he does, indeed. He explained here: "Long -range goals of mine are to start a 'longevity coaching practice.' I worked in the fitness industry for many years and have a bachelor's degree in health science. One of the biggest realizations I made in this work is that in the modern world most of the diseases and causes of death we encounter are self-inflicted, habit-based, and preventable. I want to work with people on becoming healthier and happier. Part of this would be one-on-one wellness coaching and the other part would be a line of supplements and teas geared to address common chronic illnesses and overall wellness. I believe that all people have room to grow into a better version of themselves. There are many tools—most of them accessible and affordable—that people can use to enhance themselves. I find herbs an affordable piece to add to anyone's health regimen and want to help people find what works best for them when it comes to enhancing their lives."

To this, we say; "Go get 'em, Tom! Truly, it's been our privilege to work with you in the study of healing plants!"

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WORKSHOP CREDIT OPTIONS

Except where noted, all of the below-listed events qualify as Workshop credits toward the Master-Herbalist program. Each hour of *verified* attendance (e.g., per instructor-completed workshop-credit slips as supplied by MWSHS) counts toward an equivalent hour of Workshop Category #3 credits (up to the student limit of 20 hours), unless another category is specified or unless one attends a particular workshop at one of these events that is *strictly* in one of these other categories.

"Where Do I Find Qualifying Workshops in My Local Area?"

Aside from the *MWSHS Student Newsletter*, which lists resources from around the country of which we become aware, you can check holistic newspapers often available in larger cities. You might also check local, independently-owned health food stores and food co-ops, which may have bulletin boards or knowledgeable staff who may be aware of local teachers of holistic-assessment skills or who may lead wild-plant walks. (Local nature centers, plant nurseries, greenhouses, horticultural clubs, and native-plant-appreciation societies may know of local wild-plant-walk instructors as well.) Finally, check listings for local naturopaths, herbalists, acupuncturists, or Ayurvedic practitioners who may be willing to mentor you on some of these skills or allow you to "shadow" them as they see clients.

Workshops, Conferences, Lectures, & Events in Herbal Studies Across North America

→ **MWSHS' Holistic Assessment-Skills Workshop** is scheduled for Sun. Apr. 26th, 2026, 1:30-5:30 PM, and will take place in **New Brighton, MN**. The theme is: "*Holistic Assessment of Energetics, Blood, Digestion, and the Genitourinary System.*" Details and registration are on our website, under the tab "Events/Lesson Questions," with you can access with the general student password, or you can mail us a check for \$45, enclosing a slip with your name and cell-phone number. (MWSHS, P O Box 120096, New Brighton MN 55112) or call in your registration to us on a Mon-Wed early afternoon at 651-484-0487. This workshop counts as 4 hours toward the Holistic Assessment-skills workshop category.

→ **Medicines from the Earth Symposium**, May 15-17, 2026, **Black Mountain, NC**. For more info: <https://www.botanicalmedicine.org/pages/upcoming-conferences>

→ **4th Ojai Herbal Symposium**, May 30-31, 2026, Krotina Hill, near **Ojai, CA**. For more info: <https://ojaiherbal.org/home-2023/>

→ **Wild Indigo Herb Fest**, June 12-14, 2026 at Terrapin Hill Farm, **Harrodsburg, KY**. An educational event to celebrate wild food and medicine. For more info: <https://wildindigoherbfest.com/about/>

What Student Attendees Said About Our December "Holistic Assessment Skills" Workshop

"Fantastic! Great info. Had a blast learning!"

"Wonderful! Packed with helpful information."

"Very interesting. I especially liked the demos."

"Very informative and will be useful information for future practice."

"I really enjoyed having the opportunity to work on the assessment skills in person and to ask questions. It was a very good experience."

"To spend the day with others sharing the same passion makes me feel very grateful."

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The Dark Side of Coffee

by Matthew Alfs, MH, RH(AHG)

Coffee is one of the world's most popular hot drinks. While a number of different compounds in this brew have been associated with healthful effects (antioxidant activity and protection against several neurological diseases, non-alcoholic fatty liver disease, cirrhosis, and some forms of cancer) and studies enumerating such have been highlighted in the media, the drink's negative health effects and contraindications are rarely mentioned. This reporting imbalance is likely largely due to the influence of the multi-billion-dollar coffee industry (shamelessly built on the Atlantic Slave Trade, which forced enslaved persons to work on plantations in the Caribbean and Central and South America under deplorable conditions), which crafts media narratives through strategic marketing and the creation of visually compelling content on social media platforms.¹

In an effort to provide some balance, however, I present the following treatise on the "dark side" of coffee....

Let me begin by highlighting a recent finding that did, amazingly, make some headlines: "Scientists warn that your morning cup of coffee is likely full of invisible microplastics."² That headline refers to a study, published in the journal *Science of the Total Environment*, which found that fragments of microplastics (MPs), followed by fibers, were abundant in coffee, and that these included polypropylene, polystyrene, polyethylene, and polyethylene terephthalate, with plastic packaging materials largely contributing to the totality of these microplastics.



The authors concluded their abstract with this warning: "These findings underscore the potential risk associated with MPs contamination in daily beverages. Continued

exposure to MPs through commonly consumed beverages may contribute substantially to daily intakes of MPs, leading to potential adverse implications for human health."³ "Adverse implications," indeed, as voluminous published research has shown that consumption of microplastics engenders inflammation, oxidative stress, cellular dysfunction, gut-barrier disruption, cardiovascular stress, neurotoxicity, hepatotoxicity, and immune dysregulation.

While this study highlights some of the undesirable contaminants in coffee, let's take a look at some of the major natural constituents, many of which will be discussed below relative to coffee's deleterious effects on human health. First of all, coffee contains purine alkaloids such as theophylline, theobromine, and the well-known caffeine (these three alkaloids often being referred to as methylxanthines in the scientific literature), with content of the latter in an eight-ounce cup typically between 95 and 200 mg, depending on brewing method. (Compare this to eight ounces of black tea which contains 30-70 mg, the same amount of green tea which contains only 20-45 mg, and the same amount of cocoa which contains only 12.5-16 mg. Note, here, that abundant research demonstrates that ingestion of over 400 mg/day of caffeine can have adverse effects—many of which will be documented below—and so the FDA recommends that adults consume no more than that amount per day.) It also contains the pyridine alkaloid trigonelline, phenolic plant acids such as caffeic acid and chlorogenic acid (the latter forming 5-10% of coffee's dry weight—being one of the highest sources of this compound in the plant kingdom) and organic acids such as malic acid, acetic acid, citric acid, formic acid (infamous for being the compound in the venom of red ants that produces the terrible stinging sensation experienced when bitten by these insects), and succinic acid. (Collectively, the aforementioned seven acids are largely responsible for coffee's *highly acidic nature*.) Coffee also contains aldehydes (e.g., 2-methylbutanal, furfural), pyrazines (e.g., 2,3-dimethylpyrazine), furanones (e.g., furaneol), sulfur-containing compounds (e.g., 2-furfuryl thiol), diterpenoid alcohols (cafestol and kahweol), and the

enzyme thiaminase. Nutrient-wise, it contains carbohydrates (60% of coffee's dry weight—a significant percentage of which is sucrose), lipids, amino acids, and potassium (averaging 116mg per 8-oz cup).

Discussed below are some specific concerns relative to a variety of bodily functions...

The Diuretic Effects of Coffee and the Risk of Dehydration

It has been amply demonstrated that the methylxanthines in coffee work against water balance by acting as diuretics. For caffeine, the diuretic effect is linked to its ability to inhibit receptors for the signaling molecule adenosine in the kidneys, which enhances glomerular filtration and fluid output. This effect becomes especially significant with reference to water-soluble vitamins and certain key minerals, as will be addressed below. Drinking over 400mg of caffeine a day can even lead to varying degrees of dehydration in some individuals, especially if caffeinated drinks are the major source of fluid that is imbibed.⁴ Dehydration is a dangerous condition that can, among many other things, cause confusion, lightheadedness, and fatigue.



Coffee Can Elevate Homocysteine—A Risk Factor for Alzheimer's Disease and Cardiovascular Disease

A 2008 study of 10,601 healthy, middle-aged Norwegian men and women found that participants drinking four or more cups of coffee a day had a mean homocysteine concentration that was 6.8% ($P < 0.001$) higher than abstainers.⁵ Homocysteine is an amino acid that, when elevated, markedly increases the risk for cardiovascular disease, stroke, and Alzheimer's disease.

A 2023 meta-analysis revealed that it is the diterpenoid alcohols (cafestol and kahweol) in

coffee that significantly increase bodily levels of homocysteine.⁶ Coffee's depletion of vitamins B₆ and B₉, as detailed below, may also be a factor in its elevation of homocysteine levels, since these vitamins keep homocysteine in a healthy range.

Coffee Inhibits Collagen Production in the Skin

A pivotal 2014 cell-culture study demonstrated that the caffeine in coffee inhibits the biosynthesis of collagen—a major structural component in the body—in human skin fibroblasts, and that in a dose-dependent manner.⁷ With all of the hype about collagen in the health-and-wellness media, why is this research not even mentioned?

Coffee Can Adversely Affect Fertility

Males:

When 80 non-smoking men between the ages of 22 and 80 (with a mean age of 46.4) were assessed as to experiencing any sperm DNA damage due to the influence of several lifestyle factors, it was found that men who consumed more than three cups of coffee per day had approximately 20% higher percentage tail DNA under neutral but not alkaline conditions compared with men who consumed no caffeine. The authors of the study summed up their findings here as follows: "Independent of age, men with substantial daily caffeine consumption have increased sperm DNA damage associated with double-strand DNA breaks."⁸

A 2027 meta-analysis of 28 papers reporting observational information on coffee/caffeine intake and reproductive outcomes in 19,967 men found caffeine intake connected with aneuploidy and DNA breaks, with coffee drinking in particular being associated with prolonged time to pregnancy in some—but not all—studies. The conclusion of the authors was: "The literature suggests that caffeine intake, possibly through sperm DNA damage, may negatively affect male reproductive function."⁹

Females:

In a study published in *Lancet*, 104 healthy women who had been attempting to become pregnant were found to be only half as likely to achieve such a state, per cycle, if they consumed more than the equivalent of a single cup of coffee per day, with the likelihood worsening with increased consumption.¹⁰

In a study of 3,187 women aged 25-44 years from five European countries that was published in the *American Journal of Epidemiology*, a “significantly increased odds ratio (OR) of 1.45 (95% confidence interval (CI) 1.03-2.04) for subfecundity in the first pregnancy was observed for women drinking more than 500 mg of caffeine per day.”¹¹

Coffee Adversely Affects Nutrient Utilization

Because of coffee’s diuretic effect, water-soluble B-vitamins can be depleted as a result of the fluid loss, as well as certain key minerals. Moreover, not many people are aware that taking a multi-vitamin at the same time as a cup of coffee can interfere with the body’s absorption of crucial nutrients.¹²



Vitamin B₁ (Thiamine)

Coffee can significantly reduce bodily levels of thiamine (vitamin B₁), not only because of its diuretic effects and the impact of that upon water-soluble vitamins as mentioned above, but also because of its content of tannins, which bind to this B vitamin, forming insoluble complexes that are poorly absorbed in the intestine. In addition, coffee also contains thiaminase, the enzyme that breaks down thiamine, which may also be a factor.¹³

Vitamin B₆ (Pyridoxine, Pyridoxyl-5-phosphate)

Caffeine can cause depletion of vitamin B₆.¹⁴ A 2008 study of 10,601 healthy, middle-aged Norwegian men and women found that participants drinking four or more cups of coffee a day had 14.1% lower plasma concentrations of

pyridoxal-5-phosphate (the active form of vitamin B₆) than did abstainers.¹⁵

Vitamin B₉ (Folate)

The same 2008 study of 10,601 healthy, middle-aged Norwegian men and women cited above found that participants drinking four or more cups of coffee a day had 11.7% lower plasma concentrations of folate than abstainers and that the mean homocysteine concentration was 6.8% ($P < 0.001$) higher.¹⁶

In a study published in 2018 in the *Journal of Epidemiology*, the authors observed that “research indicates that higher caffeine intake is associated with lower serum folate levels, even when dietary folate consumption increases. This effect may be due to caffeine’s diuretic properties, which can increase the excretion of water-soluble vitamins like folate, or its influence on homocysteine metabolism, a process that consumes folate.”¹⁷ Perhaps in elucidation of the latter suggestion, a 2003 study found that supplementation with folic acid decreased the homocysteine-increasing effect of filtered coffee.¹⁸

Vitamin D

In a 2022 study implanting data collected from the 2005-2006 National Health and Nutrition Examination Survey (NHANES) in which vitamin-D levels and dietary caffeine intake were extracted from 13,134 individuals, it was discovered that “higher dietary intakes of caffeine were associated with 25(OH)D deficiency in a representative sample of the American population.”¹⁹

A study published in the *Journal of Steroid Biochemist and Molecular Biology* determined that caffeine may interfere with the body’s ability to metabolize vitamin D. Examining the effects of caffeine at a cellular level, the researchers concluded that the alkaloid alters the function of osteoblasts (cells that form new bone) and reduces the expression of vitamin-D receptors in them, impairing the body’s ability to utilize that vitamin-hormone effectively.²⁰ Indeed, one could say succinctly, then, that caffeine inhibits vitamin-D receptors, thereby limiting the amount of this vitamin-hormone that will be absorbed.²¹

Calcium

Several studies have found that the caffeine in coffee leeches calcium out of the body. In a

study by Bergman et al. published in *Life Sciences*, 37 women aged 31-78 years consumed a decaffeinated beverage to which 6 mg caffeine/kg lean body mass or no caffeine were added, on two separate mornings. In the treatment group, there was an increase in the urinary output of calcium, magnesium, sodium, chloride, and potassium in the two hours following ingestion when compared to the control group. The percent reabsorption of calcium (98.6% to 97.5%, p less than .001) and magnesium (97.0% to 94.2%, p less than .0001) decreased significantly during the post-caffeine period. These results induced the authors to conclude: "Therefore, caffeine-induced urinary loss of calcium and magnesium is largely attributable to a reduction in calcium and magnesium renal reabsorption, although the physiological mechanism and tubular segment affected remain to be established."²²

In a second study, R.P. Heany and R.R. Recker looked at the effects of different levels of caffeine intake on calcium balance and on certain of its components from 170 studies in normal middle-aged, premenopausal women, with the result that "caffeine intake was associated with higher levels of both urinary calcium and intestinal calcium secretion."²³ A study published two years later found that for every 150 mg of caffeine consumed (about 1 to 1.5 cups of coffee), approximately 5 mg of calcium is lost from the body.²⁴ Then, in a 2021, double-blind clinical trial, participants chewed caffeine or placebo gum for 5 minutes at 2-hour intervals over a 6-hour treatment period (thus ingesting 800 mg caffeine, total). This trial revealed that caffeine increased renal calcium clearance by a whopping 77%! The authors concluded: "This study confirmed that caffeine does increase renal calcium clearance and fosters further investigation into safe consumption of caffeine."²⁵

While some researchers infer that this loss can be compensated by a rich intake of calcium-rich foods, a 1993 study by L. K. Massey and S. J. Whiting, while similarly proposing that "increased urinary and intestinal losses may be compensated for by increased intestinal calcium absorption," also found that "older women do not seem to compensate adequately to maintain their former calcium balance, especially when calcium intakes are below recommendations."²⁶ I posit that such a

failure on the part of coffee-drinking senior women to 'maintain their former calcium balance' by eating calcium-rich foods may be because calcium absorption from foods requires an adequate level and strength of gastric juice and that such is often impaired in seniors owing to the development of atrophic gastritis.²⁷ Another factor may be the consistently depressed vitamin-D levels that have been demonstrated in seniors,²⁸ in that this vitamin-hormone is required for calcium absorption.

Iron

Of all nutrients, iron is the one that is most adversely affected by coffee consumption. This was demonstrated over forty years ago in a landmark study that evinced that drinking coffee with a hamburger meal reduced iron absorption from that meal by 39%, with continued significant reduction even when drunk one hour later.²⁹ A 2023 study on iron supplements revealed that coffee decreased absorption of them by a staggering 54% to 66%.³⁰ A mini-review published in that same year consolidated existing evidence confirming that coffee—due to its content of chlorogenic acid and other phenols—inhibits especially non-heme (plant-derived) iron absorption.³¹ The mechanism is that the polyphenols in coffee bind to iron, reducing its bioavailability. The upshot is that any beverage containing caffeine should be separated from iron-containing foods or supplements by at least one hour.³²

Magnesium

Caffeine can interfere with nutrient absorption of essential minerals, including magnesium.³³ In the 1990 article published in *Life Sciences* cited under "calcium," above, it was found that caffeine also negatively affected reabsorption of magnesium in the kidneys of adult women, thereby increasing loss of this mineral through the urine.³⁴ A study published four years later uncovered similar results, revealing a net 14-hour increase in urinary excretion of magnesium.³⁵ This becomes especially serious in view of the fact that magnesium is the nutrient in the American diet that is most deficient, with 3 out of 5 Americans consuming less than the recommended daily allowance (RDA), according to the National Health and Nutrition Examination Survey (NHANES) and numerous other data sources.

Zinc

Neither can zinc escape coffee's nutrient-sapping effects: A 1975 clinical trial published in *Clinical Pharmacology & Therapeutics* found that coffee significantly inhibited zinc absorption in healthy human volunteers, revealing reduced peak serum zinc levels after ingestion of zinc sulfate with coffee compared to fasting conditions.³⁶ A 2021 review published in the journal *Nutrients*, in referring to research published by Van Dyck et al., noted that drinking coffee after meals impairs the absorption of zinc as well as several other minerals, including iron and calcium³⁷

Potassium

A 1986 letter by A.P. Passmore, G.B. Kondowe, and G.D. Johnston published in *Annals of Internal Medicine* reported that caffeine ingestion (180mg and 360 mg) caused hypokalemia (low potassium levels) in healthy male volunteers. Their study used a double-blind, randomized, crossover design with the eight participants, who received either placebo or caffeine (45, 90, 180, or 360 mg) on five occasions at least 7 days apart. The authors observed a dose-dependent decrease in serum potassium, with the most pronounced effects (= significant hypokalemia) at 360 mg of caffeine ingestion. This amount is roughly equivalent to that contained in 2½ to 3 cups of coffee.³⁸ In accord with this finding, the scientific literature contains numerous case reports of coffee-induced hypokalemia.³⁹ Although the exact mechanism of this phenomenon has not as yet been elucidated, the prevailing theory is that potassium is lost via methylxanthine-induced diuresis. What is especially striking about this research is the fact that this depletion occurred despite the fact that each cup of coffee contains about 116mg of potassium, as we noted in the constituents paragraph, above.

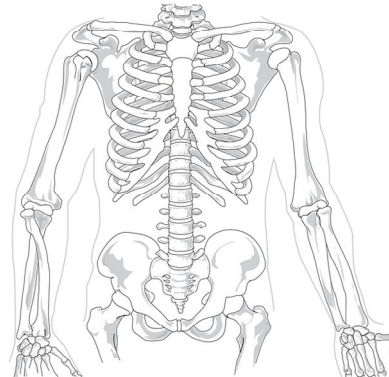
Coffee Can Diminish Bone Density and Increase Risk of Fractures

When considering coffee's diminishment of vitamin D and the five minerals (calcium, iron, magnesium, zinc, and potassium) as noted above, one fact becomes strikingly apparent: *all six of these nutrients are crucial to bone density*. In view of this, it would be reasonable to suspect that coffee would have a negative effect on bone density and, indeed, this is what

the scientific literature reveals. For example, a 2001 study published in the *American Journal of Clinical Nutrition* did cross-sectional measurements of bone mineral density (BMD) in 489 elderly women (aged 65-77 y) and from longitudinal measurements made in 96 of these women who were treated with a placebo for 3 years. An important finding was that participants who drank 400 mg/caffeine a day had "significantly higher rates of bone loss at the spine than did those with low intakes," inducing the study authors to conclude: "Intakes of caffeine in amounts >300 mg/d (approximately 514 g, or 18 oz, brewed coffee) accelerate bone loss at the spine in elderly postmenopausal women."⁴⁰ Then, in a 2012 meta-analysis of 10 prospective studies covering 214,059 participants and 9,597 fracture cases, it was determined that there was "overall 3.5% higher fracture risk for an increment of one cup of coffee per day." The study authors concluded: "This meta-analysis suggests an overall harm of coffee intake in increasing the risk of fractures, especially for women."⁴¹

One year later, a study published in the *American Journal of Epidemiology* found that drinking more than ≥4 cups daily of coffee is associated with slightly lower bone density.⁴² Most recently, a 2025 investigation from Flinders University monitored 9,704 women aged 65 and older for ten years to examine whether regularly drinking coffee or tea was connected to changes in bone mineral density (BMD). The findings were that drinking five or more cups of coffee per day was associated with lower BMD, whereas tea, in marked contrast, was found to *increase* hip BMD.⁴³

The results from the abovementioned studies should not be surprising given coffee's depletion of the six nutrients referenced above, all of which play a key role in bone density.



Coffee Can Raise Cholesterol Levels

Coffee has a negative impact upon cholesterol, because coffee beans contain cafestol and kahweol, two ingredients that raise LDL cholesterol levels.⁴⁴ In fact, as an essay in the journal *Molecular Endocrinology* succinctly put it: “Cafestol... is the most potent cholesterol-elevating compound known in the human diet.”⁴⁵ Not surprisingly, then, a 2001 meta-analysis of 14 published trials relative to coffee drinking and lipids uncovered a dose-response relation between the consumption of this beverage and both total cholesterol and LDL cholesterol, and most especially in patients with existing hyperlipidemia and in those using caffeinated or boiled coffee, but with “very little increase” observed from filtered coffee.⁴⁶

Coffee and the Risk of Certain Cancers

It was noted in the introductory paragraph to this article that coffee drinking has been associated with prevention of several kinds of cancer. Conversely, it has also been associated with an *increased* risk of a number of other types of cancer, as follows:

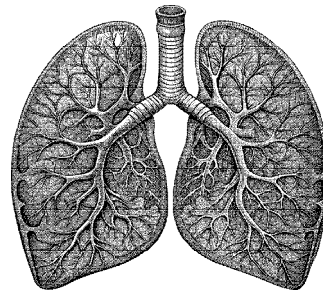
Bladder Cancer

A number of studies from the 1970s onward have associated the consumption of both caffeinated and decaffeinated coffee with an increased risk of bladder cancer, starting with a study by P. Cole published in 1971.⁴⁷ Although a few other studies muddled this conclusion, a 1991 study confirmed the connection for men—both smokers and non-smokers.⁴⁸ Likewise, a 1993 study found strikingly similar results to the 1991 study, observing an increase in bladder cancer among non-smoking males.⁴⁹ Then, in a meta-analysis of 34 case-control studies and 6 cohort studies published in 2015, a clearly increased risk of bladder cancer was observed in coffee drinkers and especially among male consumers and non-smoking drinkers.⁵⁰ A 2025 meta-analysis found a strong connection between decaffeinated coffee and the risk of bladder cancer in men.⁵¹

Lung Cancer

One of the strongest associations of coffee with a form of cancer is with lung cancer, one of the deadliest of all cancers. A 2005 study by Baker et al. examined 993 individuals (624 male and 369 female) with primary, incident

lung cancer and observed an elevated risk for drinkers of at least two cups of caffeinated coffee per day.⁵² This was confirmed in a meta-analysis by Tang et al., published five years later, which examined five prospective studies and eight case-control studies consisting of 5,347 lung cancer cases and 104,911 non-cases. The authors noted that “the combined results indicated a significant positive association between highest coffee intake and lung cancer” and observed that coffee consumption of only two cups per day was associated with a 14% increased risk of developing lung cancer. Furthermore, this risk was seen to be highest amongst Americans and Japanese. The authors summed up as follows: “In conclusion, results from this meta-analysis indicate that high or an increased consumption of coffee may increase the risk of lung cancer.”⁵³ Likewise, in a 2012 meta-analysis by Wang et al., a linear relationship between coffee consumption and increased risk of lung cancer was reported, especially in those who drank ≥ 3 cups coffee per day. This was in marked contrast to consumption of green tea, which was found to be protective,⁵⁴ as has been demonstrated in other studies.



Laryngeal Cancer

A meta-analysis examining 2,803 cases of laryngeal cancer and 503,234 controls from ten independent studies found that “coffee consumption was significantly associated with the laryngeal carcinoma” and that there was a dose-response relationship. This was in contrast to tea drinking, which was found not to be associated with laryngeal cancer.⁵⁵

Gastric (Stomach) Cancer

In a population-based cohort study of 61,433 Swedish women with a mean follow-up of 15.7 years, during which timeframe 160 incident cases of stomach cancer were diagnosed, it was found that “coffee consumption was positively associated with the risk of stomach cancer,” even in women who drank only 2-3 cups a day.

Furthermore, an “increase of 1 cup of coffee per day was associated with a statistically significant 22% increased risk of stomach cancer,” so that the hazard ratio was increased from 1.49 with two cups a day to 1.86 with four or more cups a day, as compared to nonconsumers.⁵⁶

Nine studies involving fifteen independent prospective cohorts were examined in a 2015 meta-analysis, in which a total of 2019 incident cases of gastric cancer were ascertained among 1,289,314 participants, with mean follow-up periods ranging from 8 to 18 years. A linear regression model revealed that the combined relative risk (RR) of every 3 cups/day increment of total coffee consumption was 1.07 and that in comparison with the lowest category of coffee consumption, the relative risk of gastric cancer was 1.18 for 6.5 cups/day. Moreover, subgroup analysis uncovered an elevated risk in the U.S. population for 6.5 cups/day.⁵⁷

Then, in a 2016 meta-analysis of thirteen cohort studies of 3,484 patients afflicted with stomach cancer from among 1,324,559 participants, “a significantly increased risk was found between gastric cardia cancer [cancer in the upper part of the stomach where it joins the esophagus] and coffee consumption,” with the risk being most prominent among Americans.⁵⁸ Similar results were derived from a 2022 pooled analysis that was done for eighteen studies incorporating 8,198 cases of gastric cancer and 21,419 controls, in which it was found that consumption of ≥ 7 cups of coffee daily increased the risk of stomach cancer by 20%, with a strong positive association discovered for the intake of ≥ 5 cups of coffee daily and gastric cardia cancer.⁵⁹

Esophageal Cancer

A 2019 study by Tran et al was conducted to determine the relationship of coffee consumption to cancers of the GI tract, which included 471,779 participants among whom 365,157 reported drinking coffee, 104,465 reported they did not drink coffee, and 2157 participants (0.5%) for whom coffee consumption could not be determined. This study “found an increased risk of oesophageal squamous cell carcinoma with high intake of coffee.”⁶⁰ (Esophageal cancer is one of the deadliest of all cancers.) A few years earlier, a multi-center study analyzing data from the

European Prospective Investigation into Cancer and Nutrition cohort found “an association between estimated dietary acrylamide intake and an increased risk of developing EC [esophageal cancer].”⁶¹ Additional studies have found associations between typical dietary intake of this acrylamide, a compound in coffee, and other types of cancer, including endometrial and ovarian, such as done by K.M. Wilson et al and Hogerverst et al.⁶² However, what is acrylamide?

Acrylamide in Coffee and the Risk of Cancer

Acrylamide is a highly water-soluble compound formed during the process of cooking, principally by the Maillard reaction between the amino acid asparagine and reducing sugars. When coffee beans are roasted at high temperatures, acrylamide is produced during this process. Roasted coffee, in fact, is a significant source of acrylamide, delivering up to 39% of this substance in the adult diet, with one cup of roasted coffee containing, on average, 0.45 μg [micrograms] of acrylamide (but with instant coffee containing a much higher amount—anywhere from 0.9 to 3.21 micrograms) and the concentration in coffee ranging from an average of 249 $\mu\text{g}/\text{kg}$ to 710 $\mu\text{g}/\text{kg}$ (dry powder) for roasted coffee and instant coffee, respectively. (In the U.S., analyses have shown that Nescafe, Folger’s, Tasters’ Choice, and Maxwell House instant coffees have the highest amount, while Folger’s, Tasters’ Choice, and Maxwell House have the highest amount in non-instant coffee.) Americans consume an average 0.4 to 1.31-1.9 $\mu\text{g}/\text{kg}$ body weight per day from the totality of foods containing this compound, which means that a 137-pound [62-kg] person consumes about 25–120 $\mu\text{g}/\text{day}$ of acrylamide.

Yet, why is the acrylamide content of coffee of significance to our study? For starters, it is because numerous animal studies have demonstrated that this organic compound is highly carcinogenic.⁶³ In 1994, it was evaluated by the International Agency of Research on Cancer and deemed “probably carcinogenic to humans” (IARC Group 2A). In fact, since 2002 it has been classified as a toxic, harmful, and carcinogenic substance and extensive efforts have been made by public research institutions and industries to investigate ways to reduce acrylamide formation during food processing,

but with little success. The concern here is that acrylamide binds to DNA and causes replication problems producing mutations that can cause cancer. Therefore, in March of 2018, a judge ruled, relative to California's Proposition 65, that coffee sellers in that state should post warnings about acrylamide in foods if the maximum allowable daily exposure level to that compound exceeds 0.2 micrograms per day. (This was the "no significant risk level" [NSRL] set by the state for acrylamide as a carcinogen.) While it has yet to be proven whether the extent of acrylamide in coffee and other foods typically consumed by people actually produces cancer, we have already highlighted several studies, above, in which a strong connection has been made, e.g., in the 2010 study by Wilson et al. associating elevated risk of endometrial and ovarian cancer with an acrylamide intake of only 26 µg /day and that by Hogenvorst et al with an intake of only 40.2 µg /day.

Furan and Cancer

The high temperatures used in the roasting of coffee beans also produce furan (C₄H₄O).a volatile compound (boiling temp. of 31.4 oC). Its toxicity has been well established and, like acrylamide, it has been classified as a "possible human carcinogen" (Group 2B) by the International Agency for Research on Cancer.⁶⁴ Levels of furan in brewed coffee are typically near or below 120 µg/L, but it can reach significantly higher levels in roasted whole beans or ground coffee.⁶⁵

Whether acrylamide, furan, or other factors (e.g., the contaminants in coffee found in the study referenced at the beginning of this article? the inhibition of vitamin D documented under our subhead "Coffee Adversely Affects Nutrient Levels"?) are responsible for the connection between coffee and the several kinds of cancer discussed above remains inconclusive at present.

Coffee and the Risk and Severity of Fibrocystic Breast Disease (FBD)

In a 1979 study by four surgeons led by J. P. Minton, it was discovered that "methylxanthine consumption is associated with the development of fibrocystic disease of the breast. Methylxanthine abstention is associated with resolution of signs and symptoms of fibrocystic disease. Abstinance from methylxanthine con-

sumption decreased breast biopsies and the need for major breast surgery because of benign disease."⁶⁶ In a study published two years later by the Minton group, it was similarly found that "complete abstention from methylxanthine consumption resulted in complete resolution of the disease in 82.5% and significant improvement in 15% of those studied. Thus 97.5% showed clinical benefit from total methylxanthine abstention."⁶⁷

A year later, in a clinical trial of 158 women "with a breast concern," half of them were encouraged to follow a caffeine-free diet and the other half were not diet restricted in any way. Four months later, mammograms "found a statistically significant reduction in clinically palpable breast findings in the abstaining group as compared with controls."⁶⁸

In a hospital-based, case-control study in Connecticut involving 1,700 females, including 634 women with fibrocystic breast disease and 1,066 controls, it was revealed that women who drink 31-250 mg of caffeine/day had a 1.5-fold rise in the chances of developing fibrocystic breast disease while females who drink over 500 mg/day had a 2.3 increase in the probability of developing breast cysts.⁶⁹

In yet another study, 200 women were examined over a 9-month period to determine methylxanthine (caffeine, theophylline, and theobromine) effects on fibrocystic breast disease. The authors concluded: "On analyzing the effect of each of the methylxanthines on FBD severity, there is clear evidence that total methylxanthines was a contributing factor in FBD severity with or without adjustment for relevant variables, such as age, menopause, pregnancies, and groups.... In conclusion, given a population of women between the ages of 30 and 50 yr who are already at risk for FBD, the addition of methylxanthines to their diet may, in fact, increase that risk and contribute to the severity of FBD."⁷⁰

In a later study by two of these same study authors and several others, "fibrocystic breast disease was found to be positively correlated with both caffeine and total methylxanthine ingestion."⁷¹

In a published study by L. C. Russell of 138 FBD patients complaining of breast pain, the participants were counseled to discontinue or severely restrict caffeinated products. After one year of good compliance by 113 of them, it was

discovered that 61% reported a decrease or even an absence of breast pain. The authors concluded: “This study supports the findings of others in that caffeine restriction is an effective means of management of breast pain associated with fibrocystic disease.”⁷²

In my own practice in working with women with FBD, the majority of them have similarly reported a reduction in breast pain upon caffeine discontinuance or significant reduction.

Eight Health Conditions Aside from FBD in Which Coffee Should Be Avoided

#1 - Acid Reflux/GERD

I’ll never forget an experience I had in the late 1990s when a woman came to see me on behalf of her husband, who was scheduled for an operation in a number of weeks to repair his esophagus, which had been badly damaged from acid reflux. She said he was terrified to be anesthetized for the operation and wondered if there was anything he might be able to do to offset the procedure. I asked if he was a heavy coffee drinker and she replied that he was. I then informed her that, at this point in time, his best bet would be to quit coffee. A couple of months after this conversation, she stopped by to inform me that he did discontinue drinking coffee and that a pre-op exam showed that the esophagus had healed to the point where there was no longer any need for an operation! Needless to say, her husband was jubilant.

Yet, not only do clinicians see this aggravation pattern again and again in patients, but numerous studies in the scientific literature have shared the same conclusion, revealing aggravation levels between 10-48%, depending on coffee doses.⁷³ One of these studies, employing 16 healthy volunteers, demonstrated that “regular coffee induced a significant ($P < 0.05$) gastro-oesophageal reflux compared with tap water and normal tea, which were not different from each other,” so that the authors concluding: “Coffee, in contrast to tea, increases gastro-oesophageal reflux.”⁷⁴ This study, coupled with a few others, also revealed that the use of decaffeinated coffee markedly reduced—but did not eliminate—gastric reflux.⁷⁵

Yet, how does coffee accentuate gastric reflux? This seems partly due to the beverage’s highly acidic nature, as we noted earlier when

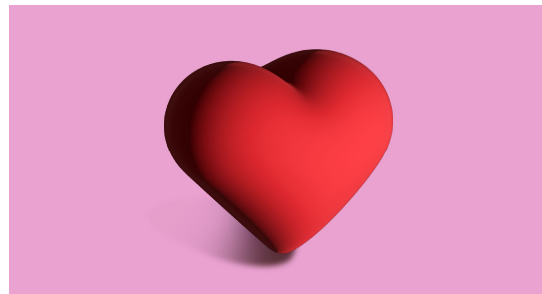
reviewing the ingredients in coffee. (This conclusion harmonizes with the observation that other acidic drinks—e.g., citrus and tomato juices—tend to aggravate acid reflux.) Research also shows, however, that coffee can relax the lower esophageal sphincter,⁷⁶ allowing acid to reflux more easily from the stomach to the esophagus.

#2—Cardiovascular Disorders

Pre-existing cardiovascular disorders can be most sensitive to the negative effects of coffee, and especially to its high caffeine content.

a. Tachycardia/Hyperthyroidism

The heart can be powerfully affected by coffee. Here, because caffeine inhibits the body’s action of adenosine, a compound in the body’s cells that slows heart rate and dilates the coronary arteries, the result can be tachycardia (elevated heart rate) due to increased activation of the beta-1 adrenergic receptor, which caffeine accomplishes by antagonizing adenosine A1 receptors and thereby increasing the release of norepinephrine (a neurotransmitter inhibited by adenosine), which then binds to, and activates, beta-1 adrenergic receptors.⁷⁷ Caffeine also inhibits phosphodiesterase, an enzyme that breaks down cyclic adenosine monophosphate (cAMP), leading to increased levels of cAMP in cells. This elevation enhances cardiac contractility and can contribute to at least a temporary increase in heart rate.⁷⁸



Not surprisingly, published studies have shown that ingestion of coffee approximating 400-500mg/day or more of caffeine has resulted in significant increases in heart rate.⁷⁹ This reality is why more than 75% of U.S. physicians urge abstinence or reduction in caffeine intake for patients with palpitations, tachycardia, or arrhythmia.⁸⁰ This reality also contraindicates the use of regular, caffeinated

coffee for anybody suffering from hyperthyroidism, in which disorder the heart rate is already dangerously elevated.

b. Coronary Artery Disease and Myocardial Infarction

In a study published in 2019, 55 patients (84% of whom were male) with pronounced myocardial ischemia (where blood flow and thus oxygen to the heart muscle is reduced) who habitually drank three cups of coffee or four cups of tea a day underwent repeat adenosine stress perfusion imaging by cardiovascular magnetic resonance (CMR) after ingestion of two cups of coffee (about 200 mg of caffeine) one hour before examination, to investigate the impact of caffeine on their myocardial perfusion (the actual flow of blood through the myocardium), via the myocardial perfusion reserve index (MPRI). The result was reduced global MPRI results, which were driven by a decreased MPRI of the remote myocardium.⁸¹ Then, in a 2006 study by M. Namdar and colleagues of healthy volunteers performing supine bicycle exercise who had consumed only 200mg of caffeine 50 minutes beforehand, the results were “significantly decreased exercise-induced MFR [myocardial flow reserve].”⁸²

The logical conclusion is that a worsening of myocardial perfusion could conceivably result in acute myocardial infarction (a “heart attack”), especially in the context of exercise and especially in those with preexisting coronary artery disease, vasospastic tendency, or high cardiovascular risk. Not surprisingly, then, in a 2018 meta-analysis by L. Mo and colleagues of seventeen studies with 233,617 participants, it was discovered that compared with drinking one cup of coffee a day, drinking 3-4 cups or more was “significantly associated with the risk of MI [myocardial infarction],” but that such an association was curiously “only found in men but not in women.”⁸³

In another study, published in the *New England Journal of Medicine*, 1,130 male medical students were followed for 19 to 35 years as to any connection between coffee drinking and coronary heart disease, as evidenced by myocardial infarction, angina, and sudden cardiac death. The findings were staggering: “After adjustment for age, current smoking, hypertension status, and base-line

level of serum cholesterol,” wrote the authors, “the estimated relative risk for men drinking five or more cups of coffee per day (using the most recent coffee intake measure), as compared with those drinking none, was 2.49 (maximum width of 95 percent confidence interval, 1.08 to 5.77).” Their conclusion: “These findings support an independent, dose-responsive association of coffee consumption with clinically evident coronary heart disease, which is consistent with a twofold to threefold elevation in risk among heavy coffee drinkers.”⁸⁴

Then, in an interesting paper published in *JAMA* in 2006, 2,014 individuals who had experienced a first acute nonfatal MI were ranged against 2,014 population-based controls. Among the test subjects and the controls, over half (55% and 54%, respectively) were found to possess a cytochrome P450 liver enzyme variant that results in slow metabolism and elimination of caffeine from the body, with the balance of participants possessed of a variant that more quickly metabolized and eliminated caffeine. A questionnaire was used to determine the relative intake of caffeinated coffee in all participants. The result, according to the authors: “Intake of coffee was associated with an increased risk of nonfatal MI only among individuals with slow caffeine metabolism, suggesting that caffeine plays a role in this association.”⁸⁵ (Bear in mind here that the *majority* of study participants were slow metabolizers, which ratio might be expected to be reflected in the general population.)

Yet, even here, somewhat different results emerged from a 2019 study examining the relationship between cardiovascular disease and coffee drinking among 347,077 individuals in the UK Biobank, including 8,368 incident CVD cases, where it was found that the risk of CVD was elevated by 22% among those who reported drinking >6 cups/day compared with participants drinking 1-2 cups/day, but that “this association was unaffected by genetic variants influencing caffeine metabolism.”⁸⁶

c. Hypertension

Hypertension has long been recognized as a precursor to a wide variety of cardiovascular disorders, including coronary artery disease, heart failure, atrial fibrillation, ischemic and

hemorrhagic strokes, aortic aneurysms, left ventricular hypertrophy, and peripheral artery disease. A number of published studies have shown that coffee can be an aggravator of this condition, while some suggest that it could even be causal. As to the latter....

In a clinical trial published in the medical journal *Hypertension*, it was found that when 33 men and 31 women drank six cups a day of unfiltered, boiled coffee, “mean ambulatory systolic blood pressure rose significantly relative to those who consumed boiled-and-filtered coffee,” with the strongest effect on women over men.⁸⁷ Three years later, in a randomized clinical trial published in the *American Journal of Cardiology*, 150 men with normal blood pressure who were habitual coffee drinkers were allowed to consume such for two months, then for two more months randomized to (1) consume either equal amount of same or (2) to drink decaffeinated coffee or (3) to discontinue drinking any coffee. The interesting result was that the subjects who drank the decaffeinated coffee experienced “significant reductions in mean ambulatory systolic BP in the AM and PM and reductions in mean ambulatory diastolic BP during the afternoon and evening. The group randomized to no coffee revealed significant reductions in ambulatory systolic BP during the morning, afternoon, and evening, and significant reductions in ambulatory diastolic BP during the afternoon and evening. The authors concluded that “cessation of caffeinated coffee results in significant reductions in ambulatory systolic and diastolic BP in normotensive men, which are not apparent from resting BP measurements.”⁸⁸

In a more recent clinical trial of 205 healthy, elderly people, who indulged in coffee over a period of two years, the results were that daily consumers experienced a “significant increase” in systolic blood pressure compared to participants who never or rarely drank coffee.⁸⁹

Then, in a meta-analysis of eleven controlled trials in which coffee drinking was the sole difference between intervention and control groups and where mean blood pressure change was reported for each group or period, as well as where treatment lasted for >24 hours, the median dose of five cups of coffee per day produced an increase in systolic and diastolic blood pressure and “multiple linear regression

analysis identified an independent, positive relationship between cups of coffee consumed and subsequent change in systolic blood pressure, independent of age of study participants and study design characteristics.” The authors reached the following conclusion: “Our findings provide support for a relationship between coffee consumption and higher blood pressure.”⁹⁰

In a 2004 review of scientific literature to determine whether dietary caffeine might contribute to cardiovascular concerns and to what extent, the author found that “there is extensive evidence that caffeine at dietary doses increases BP” and, while acknowledging that “overall, the impact of dietary caffeine on population BP levels is likely to be modest, probably in the region of 4/2 mm Hg,” yet goes on to point out that “at these levels, however, population studies of BP indicate that caffeine use could account for premature deaths in the region of 14% for coronary heart disease and 20% for stroke.” He thus advises: “Accordingly, strategies for encouraging reduced dietary levels of caffeine deserve serious consideration.”⁹¹

What, though, does research indicate as to the effects of coffee on persons already possessed of high blood pressure?

In a study published in the journal *Hypertension*, 22 normotensive and 26 hypertensive, nonsmoking men and women with an average age of 72.1 years were assessed as to the effects of regular coffee consumption on 24-hour ambulatory blood pressure. While there was “no *significant* [emphasis added] differences” between coffee drinkers and abstainers in trial participants with normal blood pressure, yet subjects in the hypertensive group experienced a rise in mean 24-hour systolic blood pressure of greater than 4.8 mm Hg and in mean diastolic blood pressure higher than 3.0 mm Hg as compared to abstainers—significant rises. The authors summarized their findings as follows: “In older men and women with treated or untreated hypertension, ABP [ambulatory blood pressure] increased in coffee drinkers and decreased in abstainers. Restriction of coffee intake may be beneficial in older hypertensive individuals.”⁹²

Habitual coffee use and its impact upon hypertensive older folks was also investigated in a study published in 2016, in which data was

obtained from the Seniors-Study on Nutrition and Cardiovascular Risk in Spain (ENRICA) that included 1,164 persons aged ≥ 63 years who were habitual coffee drinkers and among whom 715 were hypertensive. The results revealed that the hypertensive persons consuming ≥ 3 cups of coffee/day showed higher 24-h systolic BP (by 3.25 mm Hg), and diastolic BP (2.24 mm Hg) than non-coffee drinkers. Moreover, the authors found that “compared to non-coffee drinkers, the odds ratios (95% confidence interval) for uncontrolled BP among those consuming 1, 2, and ≥ 3 cups of coffee/day were, respectively: 1.95 (1.15-3.30), 1.41 (0.75-2.68), and 2.55 (1.28-5.09),” leading them to conclude: “Habitual coffee consumption was associated with uncontrolled BP in a hypertensive older population.”⁹³

Finally, in a recent and most interesting study of 6,574 men and 12,035 women aged 40-79, drinking only two or more cups of coffee a day *doubled* the instances of death from cardiovascular disease in those participants having pronounced (grade 2-3) hypertension! This was in marked contrast with green-tea drinkers, upon whom there was no measureable fatal impact.⁹⁴

Although the caffeine content of coffee might appear to be the major factor in the rise in blood pressure revealed in the above-mentioned studies, yet one wonders here as to what role the leeching of magnesium from the body by coffee (as earlier discussed) might have played in the results from the studies reviewed and, moreover, how the reduced stomach acid from atrophic gastritis in many seniors and the consequent inhibition of absorption of magnesium from food (as also discussed earlier) might have factored into the studies conducted on them. This is because magnesium is a vasodilator that has consistently been shown to decrease the risk for hypertension by 5% for each 100 mg/day increase in uptake.⁹⁵ Concordantly, in a meta-analysis of randomized trials, a median dose of 368mg/day of magnesium for three months was found to significantly reduce systolic and diastolic blood pressure.⁹⁶ In fact, the evidence is so strong in this direction that, in January of 2022, the U.S. Food and Drug Administration (FDA) even announced a qualified health claim recognizing a potential link between

magnesium consumption and a reduced risk of high blood pressure—an extraordinary move from this largely pharma-captured body.

#3 – Anxiety and Panic Disorders

One of the most widely recognized deleterious effects of caffeine is its aggravating role in anxiety. In fact, caffeine-induced anxiety is so common that it is even listed as a disorder in the Diagnostic and Statistical Manual of Mental Disorders (DSM) published by the American Psychiatric Association. These effects are linked to caffeine's antagonism of adenosine receptors, which can trigger symptoms like nervousness, restlessness, and—as we saw earlier—an increased heart rate. A meta-analysis by Chen Liu and colleagues showed that caffeine intake significantly increased anxiety risk in an analysis of 546 healthy individuals without psychiatric disorders from 14 different studies. In fact, subgroup analyses revealed that the effect was strongly dose-dependent, with caffeine intake above 400mg/day leading to “a highly significant increase in the risk for anxiety” (a standard mean difference of 2.86). However, even dosage under 400 mg/day “moderately increased the risk.”⁹⁷

As for panic attacks, a 2022 meta-analysis reviewed ten placebo-controlled studies and found that 51.1% of patients with panic disorder experienced a panic attack after caffeine administration, compared to 0% after placebo! Additionally, individuals with panic disorder were significantly more vulnerable than healthy controls (53.9% vs. 1.7%).⁹⁸ An earlier study found that 71% of patients with panic disorder reported caffeine-induced symptoms similar to their spontaneous panic attacks.⁹⁹

#4 Adrenal-Gland/HPA Dysfunction

It is widely appreciated, and heavily documented in the scientific literature, that the caffeine in coffee upregulates—through increased stimulation of the pituitary gland's adrenocorticotrophic hormone—the production of the adrenal glands' longest-lasting “fight-or-flight” hormone, cortisol.¹⁰⁰ Cortisol is a hormone with many bodily functions, a few of which are to increase blood pressure and blood sugar, support adaption to stress, and augment the awakening response after a night's sleep. However, elevated levels of this hormone can

lead to hypertension, hyperglycemia, a “wired” feeling, and, if occurring the evening, insomnia (discussed under the next subhead). Here, if a person’s adrenal glands are already being taxed from stress and sugary and starchy foods, the last thing that such a one should want is to add to that situation with caffeinated products. In my clinical practice, I have worked quite a bit with adrenal-stressed individuals and I can say that eliminating the “axis of evil for the adrenal glands,” as I like to call it—namely, stress, sugary/starchy foods, and caffeine—does wonders toward helping persons to achieve adrenal healing.

#5 – *Insomnia*

Because caffeine stimulates cortisol production and because cortisol opposes a hormone connected with sleep, melatonin,¹⁰¹ as well as because it blocks adenosine receptors in the brain that help promote sleepiness, drinking coffee in the evening can interfere with relaxation and nighttime sleep. Caffeine’s negative effects upon nighttime sleep is well-documented in the scientific literature.¹⁰²

Most people are aware of caffeine’s arousing effects and therefore avoid sipping coffee in the evening. What is not commonly known, however, is that because the half-life of caffeine in the blood ranges from 1.5 to 9.5 hours (the average being 5-6 hours), this means that even coffee drunk 6-8 hours before bedtime can interfere with nighttime sleep—not only getting to sleep, but also *staying* asleep. Moreover, long-term sleep disruption from caffeine has been linked to increased risks of cardiovascular disease, metabolic syndrome, early dementia, and other serious health issues.

#6 – *Pregnancy*

(Why Coffee Is a “No-No” for Pregnant Women)

The nurturing of a new life in the womb is a precious privilege and an awesome responsibility that should be undertaken with great care, effort, and conscience. Sadly, however, many women are not aware that drinking coffee during pregnancy can inveigh against such a healthy nurturing. The stark reality is that numerous studies have shown that coffee consumption during pregnancy can increase the risk of numerous harms or undesirable outcomes. In a 2021 review published in *BMJ Evidenced-Based Medicine*, J. James, in sum-

marizing published studies, noted: “Of 11 studies reporting 17 meta-analyses, there was unanimity among 14 analyses in finding maternal caffeine consumption to be associated with increased risk for the four outcome categories of miscarriage, stillbirth, low birth weight and/or small for gestational age, and childhood acute leukaemia.”¹⁰³ In a 2023 review published in the journal *Cureus*, the authors, in searching the relevant databases on caffeine use during pregnancy, summarized their investigation as follows: “Our findings reveal that caffeine intake during pregnancy has notable effects on human fetal development. It... can lead to reduced growth and a lower birth weight....Caffeine increases uterine contractions, potentially resulting in spontaneous abortion. In some cases, it even contributes to the development of pre-eclampsia in the later stages of pregnancy.”¹⁰⁴



Quite similarly, a 2025 review by R. Dube and colleagues drawn from searches in PubMed, Scopus, and Embase, pointed out: “The results of our comprehensive literature search of case-control studies, cohort studies, randomized control trials, and meta-analyses, imply that caffeine use during pregnancy is linked to miscarriage, stillbirth, low birth weight, and babies that are small for gestational age. It was also found that there may be effects on the neurodevelopment of the child and links to obesity and acute leukemia. These effects can even be seen at doses well below the daily advised limit of 200 mg [of caffeine a day].”¹⁰⁵

As to miscarriage/spontaneous abortion specifically, J. Lyngsø and colleagues, in a 2017 review examining the relationship between coffee consumption and pregnancy

complications in case-control and cohort studies, observed: “The pooled results showed that coffee/caffeine consumption is associated with a significantly increased risk of SAB [spontaneous abortion] for 300 mg caffeine/day (relative risk [RR]: 1.37, 95% confidence interval [95% CI]: 1.19; 1.57) and for 600 mg caffeine/day (RR: 2.32, 95% CI: 1.62; 3.31.... Results from this meta-analysis support the growing evidence of an association between coffee/caffeine intake and the risk of SAB.”¹⁰⁶

D. C. Greenwood and colleagues, in investigating a cohort of 2,643 pregnant women, aged 18-45 years who were attending two UK maternity units between 8 and 12 weeks gestation, discovered a “strong association between caffeine intake in the first trimester and subsequent late miscarriage and stillbirth, adjusting for confounders” and that “women whose pregnancies resulted in late miscarriage or stillbirth had higher caffeine intakes (geometric mean = 145 mg/day; 95% CI: 85-249) than those with live births (103 mg/day; 95% CI: 98-108).”¹⁰⁷ In a 2015 review by J. Li and colleagues, PubMed was searched and yielded 26 studies that were deemed to be relevant and of good quality on coffee and pregnancy—twenty on caffeine and eight on coffee. “After adjustment for heterogeneity,” explained the authors, “caffeine consumption was associated with an increased risk of pregnancy loss (OR 1.32, 95% confidence interval [CI] 1.24-1.40), as was coffee consumption (OR 1.11, 95% CI 1.02-1.21). A dose-response analysis suggested that risk of pregnancy loss rose by 19% for every increase in caffeine intake of 150 mg/day and by 8% for every increase in coffee intake of two cups per day.”¹⁰⁸

As was noted in the 2021 review by James, referred to above, the scientific literature actually reveals an increase in childhood leukemia in children born from mothers who consumed caffeine. However, what do the studies actually say, and is there a threshold amount of coffee/caffeine that is connected to this unfortunate outcome? In 2014, a meta-analysis by J. Cheng et al was published that revealed some unsettling results. The authors summarized these as follows: “When analysis was conducted by subtypes of childhood AL [acute leukemia], maternal coffee consumption (high-level drinkers vs non/lowest drinkers)

was statistically significantly associated with childhood ALL [acute lymphoblastic leukemia] (1.65; 95% CI, 1.28-2.12) and childhood AML [acute myeloid leukemia] (1.58; 95% CI, 1.20-2.08). We observed the linear dose-response relationship of coffee consumption and childhood AL (P for nonlinearity = .68), including childhood ALL and childhood AML; with increased coffee consumption, the risk of childhood AL increased.”¹⁰⁹ In a 2018 study by E. Milne and colleagues pooling data from eight case-control studies participating in the Childhood Leukemia International Consortium that encompassed 2,552 cases and 4,876 controls, the authors concluded that “despite some limitations, our findings suggest that high coffee intake during pregnancy may increase risk of childhood ALL [acute lymphoblastic leukemia]. Thus, current advice to limit caffeine intake during pregnancy to reduce risk of preterm birth may have additional benefits.”¹¹⁰

#7 – COVID-19/Long-COVID

Health journalist Bill Sardi, citing the experience of virologists who were advising a district health department in the Dominican Republic to help COVID-19 patients to recover using the amino acid lysine, reported that coffee consumption was the *most common factor* characterizing long-term COVID-19 treatment-resistant sufferers. Sardi referred here to one of the research virologists, Alexander Chaihorsky, M.S., who, he said, “explains that coffee elevates arginase levels in the blood that takes arginine from body stores and throws it into the blood. Now then, L-arginine, which is required for replication of the virus, is elevated, Dr. Chaihorsky teaches. This is why the researchers advise against coffee drinking during COVID-19 infection.”¹¹¹ A preprint prepared by the researchers is available on ResearchGate.¹¹²

8 – Incontinence/Overactive Bladder Syndrome

Incontinence and overactive bladder syndrome are embarrassing issues that afflict many persons, but especially women and older persons—both males and females. We have already seen that caffeine increases urine production, but it can even do so to the point of decreasing the threshold of sensation at the filling phase, in conjunction with an increase in

flow rate and the volume of urine voided.¹¹³ It also does something else that contributes to these conditions: it increases the risk of instability of the bladder's detrusor muscle.¹¹⁴ In view of these effects, it should not be surprising that surveys and clinical trials published in the medical literature have shown that caffeine can contribute to the risk of, as well as worsen existing, overactive bladder syndrome and incontinence.¹¹⁵

Coffee's Addictive Power

Caffeine, like other psychoactive substances, can induce abuse and dependence.¹¹⁶ Fred Rogers, host of the beloved PBS television show *Mr. Rogers' Neighborhood*, was one who clearly saw the sad effects of coffee addiction in people he knew, so that he made a firm decision not to drink it, as he did not want to become addicted himself. Instead, he drank Postum, a popular coffee substitute—one of many such drinks available on the market.¹¹⁷



A number of herbalists who have given up coffee have opted for one of these blends or simply for roasted chicory root, dandelion root, or cleavers fruits as tasty substitutes, all of which individual herbs offer many health benefits aside from what many consider to be a pleasant taste that is somewhat similar to coffee.

However, because the caffeine in coffee increases the “feel-good” neurotransmitter dopamine, as do other addictive drugs,¹¹⁸ this beverage can be difficult to quit. Moreover,

discontinuing it can—especially if done abruptly—lead to highly unpleasant withdrawal effects, including irritability, nervousness, and restlessness, as well as muscle fatigue, constipation, headache, and a reduction in energy—any or all of which may persist up to nine days (typically). Many coffee addicts lack the intestinal fortitude to quit, being afraid of the withdrawal effects. But many of those who have mustered up the gumption to discontinue its use have reported an enhanced sense of well-being, a greater peace of mind, and an improved overall health, as reported in the books *Kicking the Coffee Habit* by former coffee consumer Charles F. Wetherall and *Caffeine Blues* by clinical nutritionist Stephen Cherniske. I have also witnessed these results in my own clinical practice. Here, I especially remember a woman who was used to drinking double-digit amounts of cups of coffee a day, and who was a mental and physical wreck as a result when she came to see me. Once she ditched The Bean, however, her whole life changed for the better, reflected in her newfound smile and health improvements as evidenced in subsequent visits to see me. She informed me, too, that her acquaintances were happy that they no longer had to deal with her “coffee breath!”

In my clinical practice in working with many addicts, I have found that implementing a formula of two parts milky oat seed (*Avena sativa*) tincture or glycerite and one part skullcap (*Scutellaria lateriflora*) tincture or glycerite, taken 3-6 times a day (as needed), has often proven helpful in successfully enabling addicts to quit many types of addictions, including coffee. Both of these herbs support nervous strength, focus, and a sense of calm and, moreover, they have a remarkable synergy.

Coffee and You

What, though, about you, dear reader? In considering the potential benefits of coffee (acknowledged in the opening paragraph of the present article) vs. its many detriments (as evidenced throughout the remainder of the present article), will you continue to drink this beverage (that is, if you are, in fact, presently doing so) or will you finally decide to kick it to the curb? Truly, that is a decision that only you can make.

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Book Reviews

The Wild Medicine Solution: Healing with Aromatic, Bitter, and Tonic Plants

By Guido Masé Healing Arts Press, 2013,
309 pages

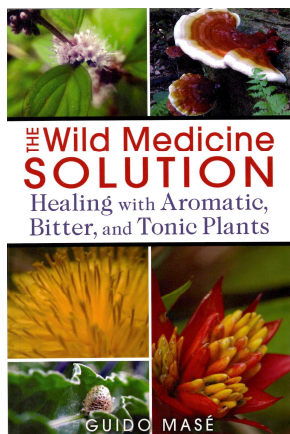
Reviewed by Sylvia Burgos Toftness

This book's straightforward title belies its depth and value to student and practicing herbalists. In it, Guido Masé takes a deep dive into three categories of whole medicinal plants—aromatics, bitters and tonics—and how their disappearance from our culture and cuisine has contributed to the rise of chronic illness in the U.S. and worldwide.

Throughout the book, Masé refers to complaints that have become all too familiar as our diets shifted from wild plants to intensely sugar-laden meals; as industrialization fostered sedentary life styles; and as we've tended to become isolated from family groups. The rogue gallery includes: anxiety, loneliness, sleeplessness, food sensitivities, diabetes, heart disease, and obesity, climbing cancer rates, rampant inflammation, and immune dysfunction. Masé also describes the inextricable links between the growth of industrialized agriculture and the pollution of soil, air and water.

Masé does not leave us bemoaning today's horrors, however. Instead, he brings his extensive training and clinical experience, wildly curious mind, great storytelling talent, and excellent writing to the challenge. Ultimately, he argues that wild botanical medicines are the solutions that can help us live well in a more toxic world.

Two foundational principles throughout the book are: our outer and inner ecosystems are interrelated; and, that both plants and human physiology are complex. He describes how aromatics, bitters and tonics have been used in traditional medicine throughout history. He then examines these plants from a pharmacological perspective, detailing physiological impact.



For example, Masé builds the case for aromatic herbs, such as peppermint, based on numbers of indicators, including heart rate variability (HRV), which mirrors other physiological processes consistently and predictably. He refers to traditional uses and to modern research to demonstrate how aromatics help relax smooth muscle in airways, in circulatory tissue, in the intestines, and in the uterus. He also stresses that aromatics are usually used in areas of mental stress and to induce sweating, thereby breaking fevers.

The section on bitters tells the tale of an ancient king who used an obsessively developed concoction of bitters to build his ability to withstand poisoning (by enemies). The aim was to strengthen and train the liver, kidneys, and gallbladder to excrete the toxins. As Masé tells it, this wasn't a bad idea. Our systems of elimination lose power if not challenged, and a diet of highly refined sugars and carbohydrates is our worse enemy. Bitter plants provide a cocktail of chemicals that activate our detoxification processes, and we need them in our *xenobiome* (the large and complex chemical environment in which our liver evolved and needs to function well.)

Masé points to traditional herbalism practice as well as to extensive modern research that shows that bitters also help people empty their stomachs more slowly and experience lower blood glucose levels.

As in the sections on aromatics and bitters, Masé refers to Western and Traditional Chinese Medicine practices with regard to tonics—wild plants that nourish and balance. Masé argues that tonic plants such as chocolate, astragalus, and hawthorn help with immunity chemistry of our blood and lymph and with the genetic expression of our DNA (epigenetics). How? Again, Masé cites scientific research to support the value of tonics today.

Wherein many approach chronic conditions by eliminating foods such as gluten, dairy, eggs, Masé presents reasons and pathways to restoring health and vitality by leaning heavily on these plants once again.

Sylvia Burgos Toftness is in the MWSHS Master-Herbalist program. Her work life has included television news, teaching English at the University of Minnesota, years in public relations, and grazing cattle. She and her husband David now devote their farm to medicinal permaculture.

