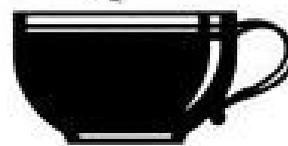


"Extraordinary and easy-to-read... The definitive work on caffeine and health." —Neil Solomon, M.D., Ph.D., former Maryland Secretary of Health & Mental Hygiene

# CAFFEINE

# BLUES



**WAKE UP TO THE  
HIDDEN DANGERS  
OF AMERICA'S  
#1 DRUG**

**STEPHEN CHERNISKE, M.S.**

Research and Clinical Nutritionist

Contents

ACKNOWLEDGMENTS

FOREWORD

INTRODUCTION

CHAPTER 1: Coffee and Caffeine: A Dose of Reality

CHAPTER 2: Are You Addicted?

CHAPTER 3: Caffeine and Your Body

CHAPTER 4: Caffeine and Your Mind

CHAPTER 5: Specific Health Disorders: The Caffeine Connection

CHAPTER 6: Caffeine and Women's Health

CHAPTER 7: Politics and Pushers

CHAPTER 8: The Hard Truth about Soft Drinks

CHAPTER 9: Options and Alternatives

CHAPTER 10: Off the Bean and On to Vitality Off the Bean

Conclusion

APPENDIX A

APPENDIX B

APPENDIX C

DON'T LET YOUR MORNING PICK-ME-UP TEAR YOU DOWN

- Caffeine can't provide energy, only chemical stimulation, an induced emergency state that can lead to irritability, mood swings, and panic attacks.
- Caffeine's ultimate mood effect can be letdown, which can lead to depression and chronic fatigue.
- Caffeine gives the illusion of heightened alertness by dilating pupils, quickening heart rate, and raising blood pressure. In fact, caffeine does not increase overall mental activity.

## FOREWORD

As a physician, I prescribe drugs with great care, because all drugs have effects and side effects. In addition, some can create a state of dependence. Clearly, caffeine is such a drug, and I find that very few people are aware of its side effects and dangers. In fact, most people do not even know how much caffeine they are consuming, and what concerns me is that this information is purposely withheld from consumers.

Caffeine is clearly addictive, completely unregulated, and its presence in our foods and beverages is often hidden! Almost daily I see a patient whose symptoms are made worse by the consumption of caffeine. The drug contributes to palpitations, panic attacks, hypoglycemia, gastritis, fatigue, insomnia, and PMS, to name a few. Some people are so sensitive to caffeine that they don't realize a fruit drink with hidden caffeine can cause their symptoms.

Although I know a few people who use caffeine prudently, most people I meet report drinking what you will discover are dangerous amounts of caffeine. Perhaps an occasional cup is safe, but by the time you realize that you can't make it through the day without caffeine, you're in trouble. Coffee, tea, soft drinks, caffeine-spiked beverages, and the other hidden forms of caffeine are promoted as harmless, energizing treats. I consider this deceptive and false advertising. And what concerns me most is the dramatically increasing use of caffeine by children, accompanied of course by large amounts of sugar or artificial sweeteners, which add to beverages' deleterious and addictive effects.

I find Caffeine Blues to be an extraordinary and important book. Knowledge is power, and this book will empower you to regain and protect your health. Finally, you have in your hands all the information you need to make an informed choice regarding caffeine use. Everyone needs to know the short- and long-term effects of caffeine. Everyone, including doctors, needs to become more aware of caffeine's role in cardiovascular disease, anxiety, depression, gastrointestinal disorders, and women's health. I've looked forward to this exposé for years, and I'm pleased that it is so well documented and readable.

I recommend it to my patients and keep a copy in the waiting room. I've known and learned from Stephen Cherniske for many years. His in-depth knowledge, experience, and scientific research on numerous topics in health and nutrition make him a natural to tell this shocking and critical story. I encourage you to trust his information and insight, as I do. Caffeine Blues will make my job a great deal easier. I suggest that you take the book seriously, and discover the truth that's been hidden from you for far too long.

This book not only blows the whistle on the caffeine industry, but it also provides you with a proven strategy to kick the habit without suffering through weeks of withdrawal. For many of my patients, kicking caffeine has been an important step on the road to optimum health. Enjoy the journey.

Jesse Lynn Hanley, M.D.

## INTRODUCTION

“Coffee?” she intoned. “Thank you,” I replied, taking a cup from the hostess in the airport lounge. I was waiting for an early-morning flight to Anchorage to give a weekend seminar on clinical nutrition. The flight was delayed, so I had another cup as I read the newspaper. I didn’t notice when she refilled my cup. When we finally boarded, a flight attendant had a cup of coffee in my hand before I had my seat belt fastened.

Breakfast was served twenty minutes later, along with another cup of coffee. Looking back, it seems extraordinary how all this took place, but at the time it appeared perfectly normal. The entire five-hour flight was punctuated with “Coffee?” “Cream and sugar?” “Can I warm that up for you?” “Coffee, sir?” Here I must tell you that I love coffee, and at that time was in the habit of drinking two cups every day. I also love to fly, because there are no clients, no charts, and, until recently, no phone. It’s usually one of the most relaxing times of my busy schedule. But this flight was a nightmare. I felt anxious. Instead of “zoning out,” thoughts raced through my mind with surprising intensity.

I felt flushed and heated; I loosened my tie but could not get comfortable. Finally, lunch was served, which provided a brief diversion—and another cup of coffee. By midflight, I was nearly panicked. For the first time in my life, I felt claustrophobic and fearful. I tried to figure out what was wrong, but I couldn’t put my finger on it. I tried to organize my lecture notes, but couldn’t concentrate. “Coffee?” the stewardess chimed. “Do you need a refill, sir?” I looked at my watch every fifteen minutes as the time dragged on. Finally, the Anchorage area came into view.

But as we approached the airport, the captain announced that weather conditions would delay our landing. Thirty minutes later, we were still circling the airport, and I did something I’d never done before: I yelled at the flight attendant. “When the hell are you going to land this plane?” I snapped. Slightly taken aback, she placed a hand on my shoulder and answered as if she were speaking to a three-year-old. I felt like an idiot. “I’m really not feeling myself,” I muttered. Flying north for these seminars is usually not a problem.

I gain an hour from Pacific Standard Time, and normally arrive for my presentation refreshed and well prepared. This time was different. Nothing seemed to go right. The hotel van was crowded. The university had neglected to reserve a room near the lecture hall. A box holding my slides had opened inside my suitcase, and it took me over an hour to put them back in order. I walked up to the speaker's podium feeling frazzled and disconnected, and my lecture proved to be just as bad.

For the first time in my professional career, I had lapses of memory and omitted important information. A number of slides were upside down. The usual flow of my presentation was completely gone. I consoled myself with the thought that I would do better the following day. Walking to the elevator, I was approached by a student who had taken a number of my previous classes. "Are you all right?" he asked. "You look terrible." Back in my room, I had to admit he was right. Instead of my usual healthy glow, there were dark circles under my eyes and deeply etched wrinkles.

I felt old. Still, I reasoned, after a good night's sleep, I'd be back to my energetic, positive self. Instead, I tossed and turned for hours until it hit me: insomnia. How many cups of coffee had I had that day? I couldn't remember, but it had to be at least six, maybe more. Strange as it may sound, I was relieved that I finally had an explanation for my terrible experience. Firmly resolved to quit coffee, I fell asleep around 2 A.M. I arose four hours later, feeling like I'd been hit by a bus. The first lecture began at 8 A.M., and I wanted to prepare well to make up for the previous day.

A cold shower served to rouse my tired body, and I managed to arrive at the lecture hall looking half decent. I carefully avoided the coffee urns that dotted the back and side aisles of the auditorium and, with a pitcher of water by my side, began the morning topic. By 10 A.M., I had a splitting headache. I announced a thirty-minute break and retreated to my room. Ice did nothing. Aspirin did nothing. My hands were shaking. I felt nauseous and was suddenly afraid that if I blew the second day, student evaluations would be dismal.

A single thought pounded in my head: "Have a cup of coffee. There's too much at stake." One large cup of coffee later, the headache was gone. Within an hour, I was a new man, pain free and alert. It was hard for me to admit that I was addicted to coffee, but the hell I had been through the day before was clearly a drug overdose, and the worse hell I had faced that morning was clearly a drug withdrawal. Quite simply, I was feeling better because I had my fix. This realization was frightening and unacceptable to me, so I decided then and there to kick the caffeine habit. I also left the conference resolved to research carefully the effects of caffeine. During six years of college, I had been told only that caffeine was a mild stimulant and its association with

health disorders was unproven. I was also told that caffeine is not addictive. Since I knew from my own painful experience that the opposite was true, I reasoned that perhaps I had been snowed on the whole topic.

What I quickly learned was that everyone has been snowed—researchers, doctors, journalists, and especially the public. The deception has been well coordinated by an industry whose goal is quite simple: to get as much caffeine into your body as possible. If the caffeine industry can accomplish that, they have you as a customer for life. They know caffeine saps your natural sense of vitality, leaving you dependent on their products to get through the day. They know that you actually crave their products and, more importantly, that you suffer when you don't consume them. It's a marketing dream, and it's legal.

No wonder more and more companies are jumping on the caffeine bandwagon, churning out products from specialized coffees and teas to "herbal" caffeinated energy pills, caffeine-laced fruit beverages, "supercharged" soft drinks, caffeinated beer, and even caffeinated bottled water.

### **A Clear and Present Danger**

Cardiologists report that caffeine raises blood pressure. Endocrinologists acknowledge that it contributes to adrenal exhaustion. Neurologists document changes in brain biochemistry. Researchers identify correlations between caffeine intake and certain types of cancer.

Internists say that coffee (even decaf) increases ulcer risk, and gynecologists say that caffeine intake contributes to hormone imbalance and a long list of health disorders in women. Why aren't health warnings required on coffee cans? Why, in the face of this mountain of data, are physicians not warning their patients? Because there is no comprehensive view of the problem. Everyone is looking at their own little piece of the puzzle. In 1993, a study published in the *Journal of the American Medical Association* found that regular drip coffee (the kind most people drink) raises blood cholesterol levels.

Nevertheless, the authors conclude that the increased risk to heart disease is small. Apparently, they're not talking to their colleagues who have found that caffeine also raises blood pressure, increases homocysteine (a biochemical that damages artery walls), promotes arrhythmias, and constricts blood vessels leading to the heart. Viewed together, these effects present a clear picture of caffeine's contribution to the nation's leading cause of death.

But in countless newspaper articles, the issue is presented in pieces, and the

truth is diluted by “experts” who are unwilling to take a stand and instead qualify their findings by saying, “There’s not enough evidence.”

## **Caffeine Myths Debunked**

In the pages of *Caffeine Blues*, I present the full scope of caffeine’s effects on physical, mental, and emotional well-being, and debunk the following popular misconceptions about caffeine:

1- Caffeine gives you energy. Wrong. Caffeine does not provide energy—only chemical stimulation. The perceived “energy” comes from the body’s struggle to adapt to increased blood levels of stress hormones. In most cases, this induced emergency state leads to well-defined side effects collectively known as caffeinism. Ironically, caffeinism is characterized by fatigue.

2- Caffeine gives you a “lift.” Wrong. Using coffee for mood enhancement is a short-term blessing and a long-term curse. While the initial adrenal stimulation may provide a transient antifatigue “lift,” caffeine’s ultimate mood effect is a letdown, either subtle or profound. Advertisers and coffee “institutes” have kept this side of caffeine from public view. In Chapter 4, you’ll find clear and unequivocal evidence of caffeine’s role in depression and anxiety. What’s more, caffeine is positively linked to panic attacks, a psychiatric disorder affecting an estimated 5 million Americans.

3- Caffeine sharpens your mind. Wrong. While caffeine users may feel more alert, the experience is simply one of increased sensory and motor activity (dilated pupils, increased heart rate, and higher blood pressure). The quality of thought and recall is improved no more than the quality of music is improved when played at a higher volume or speed. In Chapter 4, you will find a convincing argument, backed by clinical research, that caffeine actually decreases overall mental acuity.

## **The Dark Side of Caffeine**

There are plenty of people who don’t want you to know the truth about caffeine. If it were just a matter of “coffee jitters,” it wouldn’t be such an issue. But as you will see, the effects of caffeine are far-reaching and can be quite serious. Importantly, women are at higher risk than men, and children are the most vulnerable to caffeine because of their limited ability to detoxify the drug. Caffeine stays in a child’s brain and bloodstream much longer than an adult’s, and subsequent doses produce a cumulative increase in stress and addiction. Is it any wonder that soft drinks, to which manufacturers add caffeine, have become the most widely consumed beverages in America?.

The truth is, Americans of all ages are addicted to the caffeine in soft drinks! It's a fact that young children consume alarming amounts of caffeine, entering the cycle of dependency and nervous system dysfunction early in life. One study identified peak consumption periods at three, thirteen, and seventeen. These children are set up for a lifetime addiction with serious health consequences. In the following chapters, we'll explore caffeine's connection to hyperactivity, learning and behavior disorders, fatigue, cancer, heart disease, ulcers, headache, allergy, PMS, birth defects, and more.

### **Caffeine Is Literally a Pain in the Neck**

You'll learn that many of our physical experiences of tension and pain are directly related to the level of stress hormones in our bodies—and that caffeine acts as a pain trigger because it elevates blood levels of these biochemicals. Susan M., for example, came to me as a last-ditch effort to help with her neck and shoulder pain. She'd been to doctors, chiropractors, and acupuncturists, but the pain was relentless. Susan listed four cups of coffee per day on her diet diary, and I soon learned that her "cup" was a sixteen-ounce mug.

She was thus consuming over 900 milligrams of caffeine per day from coffee and, ironically, another 190 milligrams in her over-the-counter painkiller. Using the Off the Bean program outlined in Chapter 10, she gradually reduced her caffeine intake to almost zero. Three weeks later, she was pain free for the first time in twenty years. This case is not an isolated incident. Over the years, I have counseled hundreds of patients who could trace the beginnings of their chronic pain to a time when they started drinking large amounts of coffee. Often, it was during their college years, or when they started working in an office. And usually there was the vicious cycle of coffee and stress. Perhaps you have found yourself in a similar similar situation.

### **Unsafe at Any Speed?**

Newspaper and magazine articles appear every week identifying some health risk associated with caffeine. Invariably, however, they conclude with the absurd statement that "moderate intake" is no problem. The fact is that no scientist can tell you how much caffeine is safe for you to ingest because the effects of caffeine differ significantly from person to person. A multitude of individual differences enter the picture, including age, weight, sex, and numerous biochemical, psychological, and emotional factors. What is tolerable for one person may be excessive for another.

Moreover, what is tolerable caffeine intake at one point in your life may actually cause health problems just a few years later. If this sounds strange, remember that caffeine is a drug with cumulative effects over time. Also keep

in mind that of all of the thousands of research papers that have been published on caffeine, none have concluded that caffeine is good for you. Rather, the continuing debate in the popular and scientific press focuses entirely on the degree to which caffeine is injurious. Caffeine Blues will help you understand how your body works. With the right care, the human body is designed to last 100 years or more, but most of us fall apart after age sixty and die in our mid-seventies.

I have drawn upon thirty years of clinical and research experience and will give you graphic case histories culled from thousands of client files. But in the final analysis you are the only scientist who matters, and the only laboratory you need is your body. Health risks are rarely self-evident. For a cigarette smoker, the destruction of lung tissue occurs silently over many years—until one day it's too late.

Likewise, the first overt consequence of a high-fat diet is often a fatal heart attack. As a society, we therefore make education about such health issues a priority. We put warnings on cigarettes and encourage sensible eating. But I would like to remind you of a sobering fact. Cigarette companies fought successfully for years against warning labels, and only recently admitted that nicotine is addictive.

The caffeine industry has refused even to disclose the amount of caffeine in their products. Big business watches bottom-line profits, and addiction to any substance means higher levels of consumption and more product sales. The caffeine industry knows this better than anyone.

### **Caffeine Alternatives: There Is Hope**

Caffeine Blues presents a credible and carefully researched argument against the habitual consumption of caffeine, but, unlike other health exposés, it will not leave you feeling helpless. This book will give you a new view of life after caffeine as seen through the eyes of former coffeeholics. I am keenly aware that coffee plays a major role in most people's lives. Without their morning "wake-up" cup and their midmorning and midafternoon jolts, most of my clients were concerned that they would not be able to function effectively. These concerns led to my next research project: finding safe and effective alternatives to caffeine. I scrutinized botanical texts, ran hundreds of Medline computer searches, and ultimately traveled to three continents researching every legal substance purporting to have energy-enhancing effects.

This research was a real eye-opener. There was a tremendous amount of misinformation, especially concerning so-called herbal energizers. Most, like guarana, kola nut, yerba maté, and ma huang (ephedra), turned out to be

nothing more than plant sources of caffeine and other stimulant drugs. Their mode of action is exactly the same as coffee: stimulation of the central nervous system resulting in adrenal stress. The fact that these stimulant products are found in health-food stores and claim to be “all natural” is simply part of the hype that fills the energy market. These “alternatives” to coffee are thoroughly debunked in Chapter 7.

Let me state this clearly: A substance that purports to give you energy by stimulating your nervous system isn't giving you anything. It's harming you! Using stimulants is like whipping a horse. They work for a short time, but prove disastrous when used repeatedly. My goal was to find substances that would nourish the body, not stress the adrenals, substances that would enhance the metabolic efficiency of the body in order to fulfill our inherent potential for vitality and wellness. Eventually, I discovered a group of substances with true energizing properties.

Just as a tune-up can enhance the efficiency of your car's engine, this group of vitamins, minerals, herbs, coenzymes, and organic acids can dramatically improve your body's production of energy. And I'm not just talking about energy in the sense of strength, stamina, and endurance. Imagine every cell in your body operating at a higher level of efficiency, including your immune system, brain, and nervous system. This “tune-up” has already changed countless lives, and you too can experience the exhilaration of peak vitality and what I call high-level wellness.

It's ironic that all the things you thought you could get from caffeine can in fact be obtained only by getting off it. These breakthrough alternatives are presented in detail and supported with abundant scientific and medical references in Chapter 10. I'll show you how to quit coffee by drinking delicious, satisfying, healthful alternatives and rebuild your natural abundant energy supply without harmful stimulants.

### **Beating the Caffeine Blues**

Perhaps you've already thought about reducing your caffeine intake. But to make that decision, you need accurate information, and the facts on coffee have been slow in getting out. And you also need more than just information, since facts alone are not enough to motivate change. Caffeine Blues is designed to lead you through a discovery process that will increase your health awareness. For some people, awareness begins when they add up how much caffeine they consume every day.

Then they connect their caffeine intake to the tired feeling they have when they wake up, or the roller-coaster mood and energy swings they experience throughout the day. The challenge, of course, is to discover just how addicted

you are to caffeine, and how that addiction affects the quality of your life. I suggest that you try kicking the habit for sixty days—the minimum amount of time you’ll need to evaluate the benefits of a caffeine-free body and mind. For some people, I know that’s asking a lot. But don’t Worry. Chapter 10 will give you an effective, clinically proven, and pain-free method for reducing or eliminating caffeine.

This step-by-step Off the Bean program will enable you to free yourself from dependence on caffeine without the headaches, irritability, fatigue, and depression normally associated with caffeine withdrawal. This program is not theory or conjecture. Thousands of people have already taken this important step, and are right now experiencing greater vitality, greater energy, and better health than they ever felt when they were addicted to caffeine. You can also enjoy these blessings if you really want them. The choice is up to you!

### **A Word about Notes**

In compiling this manuscript, I initially handed my editor over 700 footnotes. “Take out these footnotes,” he said. “They make it look like a textbook”. I protested. “I’m asking readers to consider a very controversial subject,” I argued, “one that purports to show beyond the shadow of a doubt that most everything they’ve heard about caffeine is wrong. How can I expect them to believe me if I don’t provide legitimate scientific support?” I also wanted the health-care community to pay attention to this material, and they would of course require careful documentation.

So we compromised. The key controversial statements are referenced, and notes are listed at the end of the book. This level of scientific integrity means that you can share the book with your doctor without the fear of being labeled a “health nut.” The research cited here can be found in any medical library. You can skip the notes or use them for further study.

## CHAPTER 1

### Coffee and Caffeine: A Dose of Reality

We have seen several well-marked cases of coffee excess. ... The sufferer is tremulous, and loses his self-command; he is subject to fits of agitation and depression; he loses color and has a haggard appearance. The appetite falls off, and symptoms of gastric catarrh may be manifested. The heart also suffers; it palpitates, or it intermits. As with other such agents, a renewed dose of the poison gives temporary relief, but at the cost of future misery. ... By miseries such as these, the best years of life may be spoilt.

—Sir T. Clifford Allbutt and Dr. Walter Ernest Dixon in *A System of Medicine*, vol. II, London, 1909

### Goatherds, Monks, and the Rest of Us

The origins of coffee are lost in legend, although the most popular tale traces its discovery to a goatherd dwelling in Ethiopia. According to the story, the goatherd watched his flock eat the bright red berries from a wild evergreen bush—and was subsequently amazed to see the animals leap about with wild abandon. He tried some of the berries himself, and soon he was leaping too. By around the sixth century A.D., the plant had reached Arabia, where it was used as a food and medicine. Coffee berries were either fermented to make wine, or dried, crushed, mixed with fat, and eaten. It was not until the thirteenth century that Arab monks made a revolutionary discovery: Roasted coffee beans could be made into a drink. No more falling asleep at prayers! The news spread from monastery to monastery, then hit the streets with the world's first coffeehouses. Everyone who tried coffee wanted more—and if they were travelers, they wanted to take it home with them.

With lightning speed, coffee became a valuable trading commodity and spread to the world at large: first to Turkey, then to Italy and France, and finally to the rest of Europe by the mid-seventeenth century. The Arabs maintained strict control of the coffee trade until smugglers from other countries got hold of the seeds. The Dutch brought coffee to Java and Ceylon, the French transported it to the West Indies, and a Brazilian obtained coffee for his homeland. Today coffee is cultivated widely in regions between the Tropics of Cancer and Capricorn: Central and South America, Java, Sumatra, India, Arabia, equatorial Africa, Hawaii, Mexico, and the West Indies.

Most American colonists drank tea, a caffeine-containing leaf from the *Camellia sinensis* bush, until the boycott against King George's tea tax climaxed with the Boston Tea Party in 1773. From that point forward, coffee

grew in popularity as America's national drink. Americans are now the largest consumers of coffee in the world, drinking over 420 million cups per day, or about one-fifth of the world's total annual supply. In America, coffee wins hands down as the most popular substance containing caffeine, with soft drinks, tea, and chocolate as runners-up.

### **From Plant to Percolator**

The word coffee comes from the Arab word qahwah. The botanical name of the original species discovered in Africa whose beans are grown around the world today is *Coffea arabica*. There are three general groupings of coffee: Brazils (all *Coffea arabica* grown in Brazil), Milds (all *Coffea arabica* grown outside of Brazil), and *Coffea robusta*, a variety of coffee grown at lower elevations and generally considered to be inferior in quality to *Coffea arabica*.

Robusta beans contain nearly twice the caffeine of arabica and are also more acidic. Mass-marketed brands of coffee contain primarily robusta, whereas specialty coffees tend to be made primarily from arabica beans. One reason coffee spread so quickly around the globe is because it's an exceptionally hardy, self-pollinating plant. Though it's usually referred to as a tree, coffee is actually an evergreen shrub that, when cultivated, is pruned to a height of twelve feet or less. An arabica tree produces only about one to two pounds of coffee beans per year, so supplying worldwide demand requires an incredible amount of space.

We'll discuss the problems associated with coffee cultivation in Chapter 7. Coffee berries—the fruit of the plant, which contains the beans—are usually harvested by hand and undergo a lengthy processing procedure. Once removed from the berries, the beans are fermented, washed, dried, hulled, and peeled before they are roasted. After roasting, the beans are ground and then they are ready to perk, brew, or drip into your favorite cup of Java.

### **A Cupa Cupa Cupa Cupa Chemicals**

Caffeine has received a great deal of attention ever since it was identified as the principle stimulant in coffee (1820). But it seems that every year, even more noxious ingredients are isolated in coffee. In 1992, researchers found another stimulant compound distinctly different from caffeine that may be responsible for coffee's gastrointestinal effects.<sup>1</sup> To date, over 700 volatile substances in coffee have been identified, including more than 200 acids and an incredible array of alcohols, aromatic compounds, carbonyl compounds, esters, hydrocarbons, heterocyclic compounds, and terpenoids.

Nonvolatile substances in coffee include caffeine and other purines, glycosides, lipids, melanoidins, caffeic acid, and chlorogenic acid. And that's

just the stuff that's supposed to be there. Coffee often contains a raft of pesticide residues and other contaminants such as nitrosamines, solvents, and my co-toxins. These carry well-defined health risks, and some are carcinogenic.<sup>2</sup> Survival of the Bitterest Caffeine is produced by more than eighty species of plants, and the reason may well be survival. As it turns out, caffeine is a biological poison used by plants as a pesticide.

The caffeine gives seeds and leaves a bitter taste, which discourages their consumption by insects and animals. If predators persist in eating a caffeine-containing plant, the caffeine can cause central nervous system disruptions and even lethal side effects. Most pests soon learn to leave the plant alone. Which is not to say that coffee is impervious to insects. On the contrary, the modern agricultural practice of growing coffee plants in dense plantations fosters the development of insect infestations. Enormous amounts of chemical pesticides and herbicides are then applied to control those infestations. In fact, coffee is the most heavily sprayed food or beverage commodity on the face of the earth. Caffeine: Romancing the Drug When coffee was first brought to European cities in the seventeenth century, people were repelled by its color and taste. They complained that it smelled and looked like roofing tar. But after they experienced its stimulating effect, the beverage was quickly proclaimed to be one of nature's miracles. Historians record this phenomenon without noticing the irony of what they are writing.

Caffeine is, after all, a psychoactive drug, and human beings tend to crave substances that alter their state of mind—among them caffeine, morphine, nicotine, and cocaine. Indeed, all of these alkaloids are chemically related and, while they produce widely different effects, all are poisonous. Caffeine is considered harmless simply because it is so widely used. Obviously, from a scientific perspective, that is not valid reasoning. What's more, if caffeine were proposed today as a new food additive, the FDA would never approve it.

Any substance that causes such extreme reactions—heart palpitations, anxiety, panic, insomnia, and even birth defects—would be treated by the FDA as a new drug and denied status as a food additive. Yet amazingly, even healthconscious people, many of whom try to minimize their use of additives, preservatives, and drugs, consume high amounts of caffeine with no thought to the consequences. My goal in is to provide you with the facts you need to make informed choices about your own caffeine consumption. Until now, reliable information about caffeine has been unavailable, and there are some intriguing reasons for that.

First of all, most people are generally unaware of the amount of caffeine they are ingesting. Manufacturers can add caffeine to any food or beverage they want without disclosing the amount. (More about that in Chapter 7.) Few people know how much caffeine is in a cup of coffee or a can of soda, so they

have no way of evaluating the danger. Instead, they rely on what they hear and read in the media, and that information is rarely accurate. In his landmark review of caffeine and human health, R. M. Gilbert concludes: "If more were known about caffeine's effects, and if what is known were known more widely, the damage done by caffeine might very well appear to be intolerable".

### **Industry Feathers in the Academic Nest**

The caffeine industry has generated a tremendous amount of propaganda and disseminated it successfully throughout the scientific, medical, and public arenas. But you won't see SPONSORED BY THE CAFFEINE INDUSTRY stamped across the top. This material is invariably published by foundations and institutes with very academic-sounding names. But the fact is that many of these august bodies are heavily influenced by the caffeine industry, and so are the reports you read and hear.

The International Life Sciences Institute, for example, has been churning out studies and information to government, academic, and public institutions for decades. Few know that it is supported by the caffeine industry. In 1985, the ILSI merged with the prestigious Nutrition Foundation, an organization whose mission statement includes the acknowledgment that it is "created and supported by leading companies in the food and allied industries." Prominent among the trustees of the combined ILSI/Nutrition Foundation are executives from the Coca-Cola Company, PepsiCo, Hershey Foods, NutraSweet, and Procter & Gamble.

### **A Case in Point**

If you were curious about the dangers of caffeine, you would undoubtedly come across a brochure entitled What You Should Know about Caffeine. You would find this ubiquitous brochure on information racks in hospitals, pharmacies, public health offices, or in your doctor's office. It's available through the mail and on the Internet. What You Should Know about Caffeine is published by the very official-sounding International Food Information Council in Washington, D.C. The brochure does not list sponsors or disclose an industry affiliation.

When I requested specific details of industry sponsorship, I received another glossy color brochure that mentioned nothing about which organizations supply the funds to disseminate all this information. After pressing the issue through several phone calls, I finally received a list of IFIC "supporters," including Pepsi-Cola, Coca-Cola, M&M/Mars Candy, NutraSweet, Nestle, Hershey Foods, Frito-Lay, Procter & Gamble, and the Arco Chemical Company. Oddly enough, the IFIC "partners" also included the Association of Women's Health, Obstetric and Neonatal Nurses; the National Association of

Pediatric Nurses Associates and Practitioners; and the Children's Advertising Review Unit of the Council of Better Business Bureaus, Inc.

This strategy perfectly illustrates the approach of the caffeine industry: aligning itself with professional health organizations and scientific foundations. What better way to head off criticism that its products are harming the American public?

### **Is the Information Accurate?**

What You Should Know about Caffeine states: "Caffeine does not accumulate in the bloodstream or body and is normally excreted within several hours following consumption." In fact, only about 1 percent of caffeine is excreted. The remaining 99 percent must be detoxified by the liver, and the removal of the resulting metabolites is a slow and difficult process. In Chapter 3, you will learn that it can take up to twelve hours to detoxify a single cup of coffee. In fact, the matter of accumulation has never been resolved. Evidence suggests that it may take up to seven days to decaffeinate the blood of habitual coffee drinkers.<sup>4</sup> Plus, it can take three weeks or more for the body's levels of stress hormones to return to normal. If that's not accumulation, what is?

### **All the News That Fits, We Print**

Prominent on the first page of What You Should Know about Caffeine is a colored box that states: "Research in relation to cardiovascular disease, reproduction, behavior, birth defects, breast disease and cancer has identified no significant health hazard from normal caffeine consumption." When I inquired as to exactly what "normal" consumption was, I was told 200 to 300 milligrams per day. As you will soon find out, most American adults ingest that amount before noon.

What about ingestion of more than 300 milligrams of caffeine? The IFIC doesn't say a word about that, but in the following chapters you will learn exactly how that much caffeine can damage and even destroy your health. This information has been withheld from you because until now, the loudest voices in the caffeine debate have been connected directly or indirectly to the caffeine industry.

### **Digging Deeper**

When I asked the IFIC for scientific support for their assertion that 300 milligrams of caffeine was perfectly safe, they sent me a report published in Food and Chemical Toxicology. The authors of this report are both employees of the Coca-Cola Company and members of the National Soft Drink Association.<sup>5</sup> As you might expect, the report downplays the effects of

caffeine in the American diet, using some interesting techniques.

### **When Is a Cup Not a Cup?**

Answer: When it's a "standard" five-ounce serving. For some reason, the above authors state that a standard serving of coffee equals five fluid ounces. That way they can list the caffeine content as eighty-five milligrams per cup. (Most studies claim that a standard cup of coffee equals six fluid ounces, the amount held by a teacup—which is still far less than almost anyone actually drinks at one time).

Likewise the "standard" soft drink serving is listed as six ounces, when all sodas come in twelve-ounce cans—and soft drink manufacturers are now heavily pushing the twenty-ounce bottle. The caffeine content of soft drinks is listed as eighteen milligrams per six-ounce serving. In reality, soft drinks contain anywhere from forty-five to seventy-two milligrams per twelve-ounce can.

### **"What Caffeine Problem"?**

Caffeine consumption is also downplayed in the study cited above by using per capita figures, which is simply the gross amount of caffeine consumed divided by the total population. The problem, of course, is that not everyone consumes caffeine in equal amounts. Per capita figures may be useful for a discussion of economics, but not of health. If you are supposedly reviewing the safety of a substance, it is absolutely critical to consider the individuals most vulnerable to possible adverse effects.

You'll find, however, that none of the caffeine industry reports take that approach. Instead, they constantly refer to "mean" values, "average" people, and "normal" consumption. Remember the statistician who drowned trying to wade across a lake with an average depth of three feet? You have to look at reality, which is what you're going to do in Chapter 2 when you calculate the amount of caffeine you consume. For a scientist, the word average raises a red flag because average figures are often useless.

Even worse, the use of averages is the easiest way to manipulate data. In the coffee research reported in newspapers and magazines, you will invariably see "average consumption figures." But in a group of people with an average consumption of three cups per day, you'll find some people who drink no coffee at all, some who drink one to three cups, and some who drink six to ten cups a day. Now this might average out to three cups per person, but what good is this information?.

The effects of caffeine are very much dose related, and, as you have

probably already guessed, the effects of one cup of coffee are quite different from the effects of four or six. It is important to understand that the caffeine industry's "average" consumer does not exist. This mythical person, upon whom all their conclusions are based, is neither male nor female, weighs approximately 150 pounds, never experiences excessive stress, has perfectly functioning adrenals and liver, does not use birth control pills or any other caffeine-interacting drugs, consumes less than 300 milligrams of caffeine per day, and eats a well-balanced diet including a variety of foods high in B vitamins, calcium, magnesium, and zinc. Anyone who has a disorder that would be aggravated by caffeine is either dropped from caffeine industry studies or buried under the mountain of "mean" values.

### **The Search for Truth**

For the past eight years, I have conducted a systematic review of the world scientific literature on caffeine. This research has taken some real detective work. It's difficult to tell what's really going on at first. After all, I drank coffee for over twenty years, simply because I believed like everyone else that coffee, and caffeine, had no adverse health effects. I was in for the surprise of my life. The first thing I noticed was that much of the research on coffee was imprecise.

The majority of researchers refer to the standard coffee cup as a six-ounce serving, but most people drink from mugs, which contain twelve to fourteen ounces or more. That's not to mention convenience-store coffee cups, which contain anywhere from twenty to thirty-two ounces. If you're like most people, you probably probably consume far more caffeine than you think you do.

Likewise, many reports on coffee failed to specify the brewing method. Six ounces of drip-filtered coffee contain about 100 milligrams of caffeine, but the same amount of percolated coffee gives you 120 milligrams, and European-style boiled coffee packs in 160 milligrams of caffeine per cup. I began to see that the caffeine issue is rarely taken seriously. Nearly every researcher starts from the assumption that caffeine is okay. Why? Because, consciously or subconsciously, they are influenced by the fact that they themselves depend on coffee. I have visited the offices of hundreds of scientists, professors, and clinicians. The coffee machine is as much a part of their environment as test tubes and computers.

Likewise, the journalists who report health news to the public are usually heavy coffee drinkers. I'm not saying that these people are dishonest, only that information can be biased by the habits of those who make and break the news.

## **The Great Chain of Caffeine**

It is also important to look at the chain of biochemical and behavioral events that caffeine creates, not just the immediate effects. Scientists rigorously adhere to this rule when looking at other drugs, but ignore it when studying caffeine. This error is illustrated graphically by one study on the effects of caffeine on schizophrenic patients, where regular coffee was replaced with decaf.<sup>6</sup> The researchers postulated that if caffeine produces detrimental psychoactive effects, the patients should improve when decaf is used instead of regular coffee.

They made the switch, the patients did not improve, and so the researchers concluded that caffeine has no effect on psychiatric patients. What's wrong with this conclusion? The study ignored the chain of events that result from caffeine withdrawal. Here a group of hospitalized schizophrenic patients, who are used to drinking three to eight cups of coffee a day, are switched to decaf without their knowledge. These people are going to have serious withdrawal reactions, including disorientation, irritability, anxiety, and depression. Obviously, they will not show signs of improvement. How could they? Most of them probably had splitting headaches from caffeine withdrawal!

Yet the research was published and is frequently used to support the erroneous view that caffeine produces no negative psychoactive effects. It gets worse. These same researchers introduced decaf a second time and did see behavioral improvements. Did they recognize the likelihood of a decreased withdrawal reaction? No way—instead, they stated that these improvements were probably a result of coincidence.

### **A Matter of Interpretation**

I must say right away that I also found investigators who did an excellent job at analyzing the behavioral effects of caffeine ingestion by schizophrenics. One extremely well-designed study documented significant increases in thought disorder and psychosis after caffeine administration. The investigators also found that caffeine increased blood pressure and stress hormone levels in the patient group.<sup>7</sup> This is important information for anyone involved in psychiatric care, but how the issue of caffeine and mental health is resolved depends upon which study is read and how the reader wishes to interpret the information.

When I brought the latter study to the attention of a leading psychologist, he acknowledged that caffeine can cause significant increases in stress hormone levels but concluded, "A cup of coffee is no more stressful than watching a suspense thriller on TV". Can you see the profound error of this response? It looks blindly at the short-term consequences of caffeine use and

ignores the real issue, which is the effects of long-term use. After all, what psychologist would condone the viewing of five suspense thrillers every day, year after year? Yet that analogy accurately describes the body's hormonal response to regular caffeine consumption.

### **More Flawed Research: Caffeine and Hypertension**

Another common mistake in caffeine research has to do with the relationship of caffeine to hypertension (high blood pressure). I found numerous studies in which hypertensive patients were taken off coffee. After a week or two, when blood pressure did not drop, investigators concluded that caffeine has no significant effect on blood pressure. This is absurd because it may take three weeks or more after withdrawal from caffeine before stress hormones return to normal. Evaluating blood pressure over the first one or two weeks is meaningless.

What's Real for You? If you look at the way real people consume coffee and soft drinks, you find, first of all, that most consume a great deal more than 300 milligrams of caffeine per day. There have been studies that measure the caffeine content of beverages as people actually consume them. One such study, published in *Food and Chemical Toxicology*, found that the caffeine content of a six-ounce cup of drip, filtered coffee (the type most people drink) ranged from 37 to 148 milligrams.<sup>8</sup> A survey conducted by the Addiction Research Foundation found that a "cup" of coffee, as defined by the individual drinker, could contain as much as 333 milligrams of caffeine.

This conflicting data once again demonstrates that the idea of "normal" caffeine consumption is meaningless. Some scientific studies suggest that a 170-pound man could successfully detoxify 300 milligrams of caffeine over the course of a day without serious damage to his body. Theoretically, this may be possible—but not if he is under any significant degree of stress. Moreover, a 110-pound woman is almost certain to experience significant adverse effects from that amount of caffeine. And for anyone under a great deal of stress, even one cup may be enough to trigger the negative effects of caffeine.

Obviously, caffeine intake needs to be evaluated on an individual basis. In the chapters that follow, you will see that the effects and dangers of caffeine depend upon a host of variables, including gender, weight, age, stress level, general health, and medications. What's more, caffeine may affect the same person differently at different times. The only way to safeguard your health and the well-being of your family is to inform yourself. A great place to start is by taking the "tests" in the next chapter.

## CHAPTER 2

### Are You Addicted? How Much Is Too Much?

In the old days, coffee was served in teacups that sit on saucers. That size cup holds six ounces of beverage, which is considered the standard-size cup by researchers and the coffee industry. However, when I ask patients how much coffee they drink and they say, “Oh, no more than three cups a day,” I invariably find that means three mugs a day at fourteen ounces apiece, or the equivalent of seven cups of coffee. In most coffee shops, a “normal” cup of coffee is fourteen ounces and a large cup is twenty ounces. Thus, one large cup equals 3.3 cups of coffee. One of my clients told me that he only drank one cup of coffee a day. It turned out to be one of those giant thirty-two-ounce convenience-store mugs with the vented cover for drinking while you drive.

This man (and millions like him) consumed nearly 500 milligrams of caffeine on his way to work on an empty stomach. No wonder there’s so much conflict and tension at the office. By the time they get to work, these coffee-inhaling employees are wired and ready to fly off the handle. There’s no doubt that the damage done by caffeine is very much dose related. But it’s impossible to make general, blanket statements about how much caffeine is okay and how much is dangerous, since caffeine’s effects are different for each person.

Understanding the effects of your own caffeine ingestion requires self-knowledge and experimentation. As you reflect on the material presented here, most likely you will see yourself in one of the examples or case histories. As you read, keep an open mind and consider the possibility that how well you live, and even how long you live, depend to a significant degree on the amount of caffeine you consume. This book provides the information you need, but the rest is up to you.

Obviously, there are many factors affecting longevity and health, but none is easier to modify than caffeine intake. In my clinical practice, I have counseled more than 9,000 patients and kept careful records regarding their compliance and level of success. Of all my recommendations—including weight loss, dietary change, exercise, and stress management—no single factor matched the impact of caffeine reduction. Again, it’s not that all those other things are unimportant. On the contrary, I believe that exercise and a balanced diet are critical to optimum health, and I’ve devoted my career to making those goals obtainable. But the truth is, getting people to make significant changes in diet or exercise is extremely difficult. Research shows that even with careful supervision, compliance is well below 30 percent.

On the other hand, getting off caffeine (at least with my Off the Bean program) is relatively easy, and the rewards are often immediate and

dramatic. Over 80 percent of the people who've tried the Off the Bean program have stuck with it—and have experienced tremendous health benefits as a result!

### **What Your Doctor Doesn't Know Can Hurt You**

Until now, people had no way of evaluating their caffeine intake and the harm it can do. Remember that the initial stages of caffeine damage are often silent—just like lung damage from smoking or cardiovascular disease from a high-fat diet. Also be aware that the information you need about caffeine is not likely to come from your doctor. Consider the guidelines given to physicians in the medical literature. A typical example appeared in *Postgraduate Medicine*, in which doctors were advised that caffeine can cause abnormal heart rhythm.

The article, citing a report entitled “Caffeine and Arrhythmias: What Are the Risks?” stated that “about 80% of American adults drink three to four cups of coffee each day.” It then went on to explain that each cup contains between 60 and 150 milligrams of caffeine. The logical conclusion from this information is that many American adults are consuming 500 to 600 milligrams of caffeine from coffee per day. The bullet points of the article inform doctors that:

Point 1: “Consuming less than 300 mg of caffeine per day does not seem likely to produce significant arrhythmias”.

Comment: We've already learned that most Americans consume more than 300 milligrams of caffeine per day from coffee alone (remember the six-ounce cup?), not to mention additional caffeine from soft drinks, medications, and other sources. And what exactly is significant arrhythmia? If your heart fails to maintain normal beats, you are in mortal danger, period.

Point 2: “People with underlying heart disease probably should avoid consuming more than 300 mg of caffeine per day since significant increases in arrhythmias have been reported after consumption of higher amounts”.

Comment: Good advice, but (A) people with underlying heart disease often do not know that they have heart disease; (B) people have no way of following this advice since manufacturers are not required to list the amount of caffeine in their products.

Do you see the folly of this approach? First of all, most people already consume over 300 milligrams of caffeine per day. What's more, the 300-milligram level does not take into consideration the myriad factors that influence how caffeine affects individual people. One person who consumes 300 milligrams of caffeine might only experience disturbed sleep, while

another person might experience severe anxiety, depression, or dramatically increased risk for heart disease. Women are affected by caffeine far more than men. Age, overall health, weight, and a host of other lifestyle factors also enter the picture. How can you determine your own personal risk level? You can start by figuring out your caffeine quotient—quotient—exactly how much caffeine you presently consume, and how it is affecting your life.

### Is Caffeine Hurting You?

If you are a regular caffeine user, chances are high that the drug is affecting the quality of your life right now. You probably depend on the stimulating “lift” to energize your body and clear your mind. Your total daily intake of caffeine comes from a variety of sources—not just coffee, but also tea, cocoa, soft drinks, medications, and chocolate. In fact, if you’re like most Americans, you find it hard to get through the day without multiple hits of caffeine. You are probably addicted. If you object to that statement, take a few minutes to complete the following self-tests. You have nothing to lose. If caffeine’s not a problem for you, great. But if it is, confronting the addiction is the only way to do something about it. This book will help you evaluate the effects caffeine has on your life and, most importantly, show you how to achieve far greater levels of energy and vitality without the drug.

### Test I: Your Caffeine Intake

In the first column, enter the number of servings, then multiply to get your total caffeine intake from each source. Figures given for coffee and tea are based on a six-ounce serving. Remember that most coffee mugs or cups hold twelve to fourteen ounces. A “large” coffee cup holds twenty ounces or more, so be sure to calculate accordingly. Amounts of caffeine listed for each type of beverage are averages; variations may occur from product to product. The amount of caffeine in common medications may surprise you. However, according to the FDA, nearly 1,000 prescription drugs and 2,000 over-the-counter medications contain caffeine—anywhere from 30 to 200 milligrams per tablet or capsule.

servings per day	Item	Mgs. Caffeine	Total
Coffee	Drip brewed	100 mg. per 6 oz.	_____
	(6-Oz. cup) Percolated	120 mg. per 6 oz.	_____
(A mug holds 12-14 oz; a large cup holds 20 oz. or more.)	Instant	90 mg. per 6 oz.	_____

	Brewed decaf	5 mg. per 6 oz.	_____
	Instant decaf	3 mg. per 6 oz.	_____
<b>Tea (6-oz. cup)</b>	Green (5-minute sleep)	35 mg. per 6 oz.	_____
	Black	70 mg. per 6 oz.	_____
	Canned ice tea	35 mg./12-oz. can	_____
Cocoa	Cocoa beverages	13 mg. per 6 oz.	_____
<b>Soft Drinks (12-oz. can)</b>	Leading colas (diet and reg.)	45 mg.	_____
	Mountain Dew	54 mg.	_____
	Josta (PepsiCo)	58 mg.	_____
	Surege (Coca-Cola)	51 mg.	_____
	Jolt cola	72 mg.	_____
<b>Medications (per tablet)</b>	Anacin	32 mg.	_____
	Dristan	16 mg.	_____
	Dexatrim	16 mg.	_____
	Excedrin	200 mg.	_____
	Midol	32 mg.	_____
	No-Dox (reg.)	100 mg.	_____
	Vivarin	200 mg.	_____
	Vanquish	33 mg.	_____
<b>Chocolate*</b>	Milk chocolate	6 mg. per ounce	_____
	Bking chocolate	35 mg. per ounce	_____
	small candy bar	25 mg. per bar	_____
	Total Daily Caffeine Intake		_____

## YOUR CAFFEINE QUOTIENT

“Caffeinism” is a state of chronic toxicity resulting from excess caffeine consumption. Caffeinism usually combines physical addiction with a wide

range of debilitating effects, most notably anxiety, irritability, mood swings, sleep disturbance, depression, and fatigue. Use your “Total Daily Caffeine Intake” from the previous page to determine if you are a victim of caffeinism.

- If your caffeine quotient is less than 100 milligrams per day, it is highly unlikely that you are a caffeine addict.
- If your total is between 100 and 300 milligrams per day, you’re in the “danger zone.” Disruption of sleep patterns begins at this level, and certain heart disease risk factors may be increased.
- If your total is 300 to 600 milligrams per day, you are undoubtedly experiencing some degree of mental and physical addiction to caffeine. Research shows an almost 200 percent increase of risk for ulcers and fibrocystic disease at this level.
- Intake of 600 to 900 milligrams per day indicates almost certain addiction. At this level, your mood and energy levels are severely affected. Research suggests that your risk of heart attack may be twice that of non-caffeine users. If you are a pre-menopausal woman, your chance of maintaining optimal iron levels is slim.
- At 900 milligrams or more per day, you’re a caffeine addict—hook, line, and sinker. At this level of dependency, all heart disease risk factors are significantly increased, as are the risks for stroke, psychological disorders, and gastrointestinal disease. You may need medical help to kick the habit.

“Although infrequently diagnosed, caffeinism is thought to afflict as many as one person in ten of the population”.

Source: Jack E. James and Keryn P. Stirling, “Caffeine: A Summary of Some of the Known and Suspected Deleterious Effects of Habitual Use,” *British Journal of Addiction*, 1983;78:251-58.

### **Test II: Caffeine’s Effects on Your Body**

Do you experience any of the following on a recurrent or frequent basis?

	<b>YES</b>	<b>NO</b>
1. Energy swings or periods of fatigue during the day	_____	_____
2. Mood swings or periods of depression during the	_____	_____

day

- |   |       |       |
|---|-------|-------|
| 3. Headaches  | _____ | _____ |
| 4. Gastrointestinal distress; cramping, diarrhea                              | _____ | _____ |
| 5. Constipation and/or dependence on caffeine for bowel movement              | _____ | _____ |
| 6. Tension or stiffness in your neck, shoulders, jaw, hands, legs, or stomach | _____ | _____ |
| 7. Premenstrual syndrome; menstrual irregularity, cramps, sore breasts        | _____ | _____ |
| 8. Painful/sensitive lumps in the breast                                      | _____ | _____ |
| 9. Insomnia   | _____ | _____ |
| 10. Clenching the jaw or grinding teeth during sleep                          | _____ | _____ |
| 11. Anxiety   | _____ | _____ |
| 12. Irritability, including inappropriate fits" of anger                      | _____ | _____ |
| 13. Involuntary movement in the leg (restless leg syndrome)                   | _____ | _____ |
| 14. Irregular or rapid heartbeat  | _____ | _____ |
| 15. Light-headedness/dizziness  | _____ | _____ |
| 16. Wake up feeling tired   | _____ | _____ |
| 17. Generalized pain  | _____ | _____ |

(back pain, stomach pain,  
muscle aches)

- |  |       |       |
|--|-------|-------|
| 18. High blood pressure                                      | _____ | _____ |
| 19. Ulcers   | _____ | _____ |
| 20. Anemia   | _____ | _____ |
| 21. Shortness of breath                                      | _____ | _____ |
| 22. Difficulty concentrat-<br>ing and/or memory loss         | _____ | _____ |
| 23. Ringing in the ears                                      | _____ | _____ |
| 24. Coldness in the<br>extremities, especially<br>fingertips | _____ | _____ |
| 25. Hand tremor  | _____ | _____ |

If you have 6 to 7 “yes” answers, caffeine is a problem for you. Decreasing or eliminating caffeine intake will significantly improve your health. If you have 8 to 10 “yes” answers, caffeine is a serious problem. Decreasing or eliminating caffeine is an urgent need. If you have 12 or more “yes” answers, your caffeine intake represents a critical health risk that may actually decrease your life expectancy. Act now to take control of your life and health.

Dr. Fred Sheftell, director of the New England Center for Headache, states: “It’s not unusual for us to find people who are taking 1,000 mg of caffeine or more per day.” He notes that adverse side effects have been reported from as little as 250 milligrams per day.

### **Test III: Caffeine’s Effects on Your Nervous System**

Caffeine has been found to impair motor steadiness in neuropsychological tests. Here is a simple way to evaluate this effect without expensive laboratory procedures: Sitting up in a chair, extend your arm straight out in front of you, locking the elbow, palm down. Look at the tips of your fingers. If there is any noticeable trembling, chances are that caffeine has already damaged your nervous system.

In Chapters 3 and 4, we will discuss how caffeine disrupts biochemical message centers in the brain known as receptors. Human and animal data suggest that dopamine and benzodiazepine receptors are involved in hand tremor, and the condition is common in both habitual and casual coffee drinkers. The good news is that this damage can be repaired, but not until you get your caffeine intake under control. In Chapter 10, you’ll see that it’s

not as difficult as you might think.

### **Test IV: Caffeine's Effects on Your Muscles**

Muscle tension is hard to evaluate. Many times, we don't even know we're tense until we get a headache, or someone places their hands on our shoulders and we wince. Tension in the jaw muscles, however, is fairly easy to measure.

1- Open your mouth as wide as you can, then close slowly. Do you hear any popping or cracking? This is often a sign of problems with jaw alignment known as temporomandibular joint dysfunction (TMJD). TMJD affects millions of Americans, contributes to headache and a raft of other disorders, and is positively associated with stress and caffeine intake. That's because caffeine and stress cause a tightening of the jaw muscles that contributes to misalignment of the jaw on the skull. Teeth clenching and grinding (bruxism) at night are also related to stress and caffeine.

2- Now open your mouth wide again, and this time try to insert your first three fingers held vertically. (Or use a wine cork.) This is another simple test to see if you are holding significant tension in your jaw muscles. Reduced jaw mobility is a classic sign of chronic tension exacerbated by caffeine.

### **The Four Warning Signs of Caffeine Dependence**

The most common response I hear from people who have eliminated caffeine from their lives is their surprise at how much better they feel. I know what you're thinking: "How could they feel better? Every time I try to quit coffee I feel like I've been hit by a truck." That's because caffeine is an addictive drug with a very well-defined withdrawal syndrome. I'm not going to split hairs about whether people are truly addicted or just dependent on the drug.

Studies have found conclusively that caffeine produces classic signs of addiction. And you don't have to consume huge amounts of coffee to become addicted. In one recent study, the median daily intake of the caffeine-dependent group was 357 milligrams, and 19 percent of them consumed less than the U.S. daily average. Here is how the scientists conducting that study made the diagnosis of caffeine dependence. See if it describes how you feel.

#### **1. WITHDRAWAL**

Reducing the dose or stopping the drug altogether produces well-defined symptoms, which may include:

- Headache

- Depression
- Profound fatigue
- Irritability
- Disorientation
- Increased muscle tension
- Nausea
- Vomiting

Ninety-four percent of the caffeine-dependent subjects experienced some of these withdrawal symptoms.

## **2. DEPENDENCE**

Researchers defined dependence as consuming the beverage “despite knowledge of a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by caffeine”. Ninety-four percent of the caffeine-dependent subjects experienced this behavior.

## **3. INABILITY TO QUIT**

This was defined as a “persistent desire or unsuccessful efforts to cut down or control use”. Eighty-one percent of the caffeine-dependent group found that they were unable to reduce or discontinue drinking caffeine-containing beverages.

## **4. TOLERANCE**

The body develops a tolerance for caffeine so that greater amounts are required to produce the same level of stimulation. Seventy-five percent of the caffeine-dependent group reported tolerance.

Source: E. C. Strain et al., “Caffeine Dependence Syndrome: Evidence from Case Histories and Experimental Evaluations,” *Journal of the American Medical Association*, 1994;272:1043-48.

## **Caffeinism: It Could Happen to You!**

In over a decade of practice as a clinical nutritionist, I have seen firsthand, with thousands of clients, that caffeine is a health hazard. Anxiety, muscle aches, PMS, headaches, heartburn, insomnia, and irritability are the most common symptoms, and they can usually be lessened or eliminated simply by avoiding caffeine. That’s good news for most people. However, if that’s all caffeine has done to you, you’re lucky. Others are not so fortunate. Like the woman whose baby was born with a heart defect because no one told her to avoid caffeine during pregnancy.

Or the man who underwent three surgical operations and nearly had his stomach removed because his ulcers would not heal. No one told him to avoid coffee. And what about people misdiagnosed as neurotic or even psychotic, who spend years and small fortunes in psychotherapy—all because no one asked them about their caffeine intake? To those who claim that caffeine is harmless, I say look at the facts—and, more important, look at your life. Your health is your most valuable possession, and life is short. I am convinced that to enjoy life to its fullest we must maintain health on three levels: physical, mental, and emotional. At each one of these three levels, caffeine is an adversary.

### **Caffeine versus Physical Vitality**

On the physical level, we need a steady source of energy to accomplish our goals. Nothing is more frustrating than to be motivated, to have a great plan, but no energy to carry it out. When I ask patients about their reasons for drinking coffee, the most common response is: “I need the energy.” The irony, as you will see in Chapter 3, is that caffeine is a major cause of fatigue. Depending on caffeine to get you through the day might work for a while, but in the long run it will make your dreams harder and harder to achieve. To see what I mean, try this experiment. Clench your fist tightly. Hold it closed and very tight for thirty seconds. What happens to your arm and hand? They get tired. This exercise illustrates what happens to your body when you ingest caffeine.

First you feel strong, but soon afterwards you feel weak. That’s because caffeine doesn’t give you energy—it creates tension, and the ultimate result of tension is always fatigue. You felt the result of squeezing your fist, which only involves a few muscles. Imagine the energy drain created by muscle tension throughout your body after ingesting caffeine.

### **Caffeine versus Mental Vitality**

On the mental level, we need to be consistently alert and aware to function effectively in our daily lives. As you will see in Chapter 4, caffeine puts you on a roller-coaster ride where mental clarity alternates with periods of confusion, depression, and lethargy. You’ll also learn that caffeine does nothing to enhance learning, but actually impairs memory and cognition. When patients relate their coffee stories to me, a common pattern usually emerges. They started drinking coffee occasionally, either as a morning “wake-up” or to stay up late.

Gradually, they found themselves reaching for coffee or cola beverages throughout the day just to stay alert. In time, the habit became an addiction,

with their only dependable mental energy coming from the coffeepot. This is sad, because the coffee habit has a steep downside. We pay dearly for those “borrowed” periods of clarity by sacrificing our true mental vitality.

“There is no doubt that the excitation of the central nervous system produced by large amounts of caffeine is followed by depression”.

Source: J. Murdoch Ritchie in *The Pharmacological Basis of Therapeutics*, Goodman and Gilman eds.

### **Vitality Is Our Birthright**

What we must remember is that vitality is not something that disappears in adulthood. We throw it away by becoming sedentary and damaging our bodies and minds with caffeine. We set ourselves up for a life of ups and downs, when each of us is capable of maintaining a high level of physical and mental vitality well into our advanced years. A healthy child doesn't require caffeine to get out of bed in the morning, and there is no reason why you can't experience the same boundless energy of your youth!

But first you must stop punishing your body and mind with caffeine. Is it worth it? The answer is an unqualified yes. Patients who have followed the Off the Bean program outlined in Chapter 10 have found their bodies healthier and minds sharper at fifty-five than they were at twenty-five. Of course, total health also requires emotional stability, peace of mind, and an optimistic attitude. The effects of caffeine diminish these qualities. Relationships with friends, partners, and co-workers depend on harmony, which is destroyed by anxiety, irritability, and tension.

Caffeine not only intensifies the stress in our lives, but makes us less able to cope. If I had a magic wand, I would instantly remove the stress from my clients' lives. Until that magic wand appears, I will do everything I can to help them control their caffeine intake. For some, regaining mental vitality after caffeine means learning a relaxation technique such as those described in Chapter 10. For others, psychological counseling is recommended. But everyone needs to start by taking a close look at their caffeine intake.

### **Caffeine and Anxiety**

For five years, I worked in a team practice with physicians and psychotherapists. Often, the psychological evaluation would include one or more anxiety syndromes and the recommendation was for counseling. I would point out that the person was consuming excessive amounts of caffeine and request a trial month off caffeine prior to therapy sessions. In about 50 percent of cases, the anxiety syndrome would resolve with caffeine

withdrawal alone. Of course, I recognize that counseling can play a vital role in restoring wholeness and peace of mind. It's just that counseling a patient for anxiety who is drinking coffee is like trying to fill a leaky bucket.

## **Caffeine and Alcohol: Psychoactive Cousins**

The undeniable fact is that caffeine is a psychoactive drug, affecting mind, mood, and behavior. While the effects of caffeine are obvious but not always recognized, the effects of alcohol, another psychoactive substance, are easy to spot. We all know how intoxicated individuals behave. When they are involved in automobile accidents, their blood alcohol is measured and they may face criminal charges. No one would think of measuring blood caffeine levels after an accident because there is no data to suggest that caffeine impairs performance.

I would like to suggest, however, that the biochemical and behavioral changes brought about by caffeine may very well contribute to auto accidents. In the following chapters, I will present clear evidence that caffeine disturbs normal decision-making processes. Is it far-fetched to assert that ill-advised lane changes, tailgating, speeding, rage, and stress contribute to auto accidents?. Watch your driving the next time you're "wired" on caffeine and tell me I'm wrong.

## **There Is Life after Caffeine**

Life after caffeine does not have to be dull. In fact, there are delicious and very satisfying alternatives, and I'm not talking about pallid teas, decaf, and instant coffee "substitutes." You'll learn about rich, robust, and healthful beverages that brew like coffee but contain no caffeine. Likewise, life after coffee does not have to be lethargic. Breakthrough research in human metabolism and brain biochemistry has made it possible for you to enjoy greater energy and alertness without coffee than you ever experienced when you were "on the drug".

You'll read about natural alternatives to caffeine that actually enhance metabolic energy production while decreasing the tension in your body. The difference, once you make the switch, is astounding. You'll also learn how to repair your nervous system, manage stress, and improve your energy production naturally. Finally, you'll learn how to obtain the quantity and quality of energy you need for the rest of your long, healthy life. You'll discover that life without caffeine has the potential to be better than you ever dreamed possible!

## CHAPTER 3

### Caffeine and Your Body

“If five million people do a foolish thing, it is still a foolish thing” —Ancient Chinese proverb

#### Ageless Wisdom Is Sometimes Unwise

Today nearly 90 percent of American adults drink caffeinated beverages. This includes the scientists who explore caffeine’s effects and the journalists who report the scientists’ findings. The result is that Americans are misinformed because no one is willing to say, “This is a foolish thing.” In this chapter, we are going to look at the science of caffeine. Before we begin, I’d like to remind you that no scientific study has ever shown that coffee is good for you. The discussion only concerns the degree to which it will harm you. The scientific method is an extraordinary systematic process for discovering what is real. In other areas of human endeavor, exactly the opposite is true.

Take advertising, for example. Here is an entire system of communication designed not to reveal the truth, but to manipulate behavior. Sometimes it’s absurd. A cigarette brand, for example, is advertised as being “alive with pleasure” even though everyone knows that cigarettes are the leading cause of preventable death. Isn’t it interesting, then, to learn that most people are influenced far more by advertising than they are by science? In other words, we tend to make decisions that affect our lives and the lives of our children based not upon what is real, but upon habit, or upon what other people want us to think.

When it comes to coffee, the most common reaction I hear is, “How can it be bad for you? People have been drinking coffee for centuries.” To a scientist, this observation is meaningless. History is filled with cases where millions of people made serious mistakes. There are herbs in China, for example, that have been used medicinally for thousands of years, and are still being used to treat sinus congestion. But repeated use of these herbs over time can cause cancer of the nose and throat.

Epidemiologists (scientists studying the distribution of disease in populations) have estimated that this habit has caused premature and painful death for millions of Chinese people. Clearly, great numbers of people can be wrong, especially when they don’t know the facts.

#### Facing Reality

Today, nearly 100 million American adults drink three or more cups of coffee

each day.<sup>1</sup> So what is reality? Is coffee “good to the last drop,” or is it a powerful drug with dangerous side effects that needs to be used with caution and moderation? To discover the truth you need science, and you need to be willing to dismiss the advertising and hype surrounding the beverage. Forget the schmaltzy pictures of two female friends sharing a special moment over coffee.

Those two women are increasing their risk for heart disease, osteoporosis, anemia, PMS, panic attacks, and fibro-cystic breast disease. You should also question the sanity of common statements that we hear from friends, celebrities, and co-workers. In the movie *Shadow of a Doubt*, Joseph Cotten’s famous line was, “I can’t face the world in the morning. I must have coffee before I can speak.” Now, substitute for the word coffee any other drug, say amphetamines. If a person said he or she can’t face the world without amphetamines, we’d call him or her an addict.

We’d whisk the person off to rehab and maybe even throw him in jail. But because coffee is a drug we consume ourselves, we wink and nod and say, “Yeah, ain’t it the truth!”

### **Biochemical Individuality**

When it comes to nailing down the precise effects of a drug, scientists always run up against the fact that people are different. Because of what is termed “biochemical individuality,” the appropriate dose of a drug for one person may be an overdose for someone else. Physicians need to make educated guesses when prescribing many of their medications, taking into account the patient’s size and age in order to arrive at the optimal dose. Often, further adjustments are made during treatment. This is especially true with caffeine. We know that a single 100-milligram dose (about six ounces of regular coffee) can cause palpitations and ringing in the ears in one person, while another may experience only a pleasant boost in alertness. This is because caffeine, like all drugs, has to be detoxified by the body, and the organs responsible for that feat perform their jobs at varying rates of speed and efficiency. We know that caffeine is rapidly and completely absorbed by everyone. Getting rid of the toxin, however, is another story.

### **Caffeine’s Cumulative Effect**

Scientists measure the rate of which a drug is eliminated or broken down by its “half-life”: the time it takes the body to remove one-half of the dose. With caffeine, this varies widely from person to person, depending on age, sex, general health, weight, metabolic rate, and current medications. Genetic factors also affect the rate at which the body eliminates caffeine. Thus, the half-life of a single dose of caffeine can range from three to twelve hours.

Obviously, then, in real life, there is a very important cumulative effect, since most coffee drinkers have additional cups before the first dose wears off.

This cumulative phenomenon is overlooked by most researchers. They take a group of people, give them a quantity of caffeine, and administer various tests. When the people don't have heart attacks, they make the absurd statement that coffee is safe. Or they report various side effects, but conclude that coffee in "moderation" is safe. In reality, no one—not a scientist, your doctor, or your psychic aunt—can tell you how much coffee is safe for you. Nor can you rely on symptoms like sweaty palms and rapid heartbeat. These symptoms tend to go away as the body adjusts to the drug.

What does not go away, however, is the damage being done to your adrenals, blood vessels, breasts, brain, gastrointestinal tract, DNA, immune system, and bones. And all of that is silent. In the remainder of this chapter we take a close look at twelve critical points—organs, glands, and processes in the body where the cumulative effects of caffeine become most evident over time.

### **Critical Point #1: Your Liver**

The liver performs an enormous range of tasks. On physiology exams, it was a common joke among my colleagues that for any question, you could simply write "the liver" and be correct most of the time. The liver is in charge of collecting and distributing nearly every nutrient from every bite of food you will ever eat. It's also primarily responsible for removing anything from the bloodstream that you don't want. Sometimes that takes real ingenuity.

Faced with a substance it cannot chemically reduce or eliminate (like DDT), the liver breaks up the dangerous material into tiny fragments and distributes it to remote areas of the body in order to decrease the concentration of the poison in any one site. Fortunately, the caffeine we consume is also distributed throughout the body and, unlike DDT, the liver does have the machinery to break it down. When we drink a cup of coffee, however, an enormous amount of the toxin is dumped in the bloodstream all at once.

Caffeine is rapidly absorbed by every organ and tissue in the body and diffuses into body fluids, including saliva, semen, breast milk, and amniotic fluid. Caffeine goes everywhere and easily crosses the blood-brain barrier. Only then does the liver begin the task of reducing this troublesome toxin, and it's not easy. Usually, drug detoxification is a job shared by the liver and kidneys. The kidneys remove what they can and excrete it in the urine. Not so with caffeine. The kidneys try to get rid of the molecule, but it is reabsorbed into the bloodstream before it reaches the urinary tract. Thus, the burden falls entirely on the liver. Remember that coffee contains a host of chemicals, not

just caffeine, among them a group of extremely toxic compounds known as polycyclic aromatic hydrocarbons (PAHs). You might remember them as the cancer-causing agents isolated from barbecued meat. The liver also has to deal with all the aldehydes, alcohols, and sulfides found in coffee.

Caffeine alone is broken down into more than twenty-five by-products or metabolites, the primary ones being paraxanthine, theobromine, and theophylline. Interestingly, each of these metabolites has its own biochemistry and effect on the body.

## **A DEADLY DUO: CAFFEINE AND YOUR MEDICINE CABINET**

At any one time, more than 36 percent of American adults are using some prescription or OTC (over-the-counter) medication. Among the elderly, that percentage is much higher. Hundreds of these drugs contain caffeine but, more important, many of them, like birth control pills and cimetidine (brand name Tagamet), interfere with the liver's ability to detoxify the chemicals found in coffee. Common antibiotics such as ciprofloxacin (brand name Cipro) also inhibit the detoxification of caffeine, and researchers warn that ingestion of caffeine while taking such drugs can increase risk for liver disease, cardiac arrhythmias, and even epilepsy.

Other pharmaceutical drugs have been shown to increase blood levels of caffeine by more than 600 percent. Later in this chapter you will learn just how dangerous and damaging this can be to the body. In turn, coffee can drastically affect the metabolism, blood level, and detoxification of pharmaceutical drugs, including a laundry list of commonly consumed medications. When your doctor prescribes a drug for any condition, it is important to ask about possible interactions with caffeine.

What's more, even moderate liver disease can remarkably reduce caffeine clearance. Individuals with disorders involving the liver (e.g., alcoholic cirrhosis, hepatitis) can have elevated blood levels of caffeine for two to six days from a single cup of coffee. For cigarette smokers, on the other hand, caffeine clearance is accelerated. Apparently, in a heroic effort to rid the body of the potent carcinogens delivered by tobacco smoke, the liver produces more enzymes capable of detoxifying caffeine. This interaction of powerful toxins has two important results.

First, smokers will tend to drink more coffee than nonsmokers in an effort to achieve the same level of stimulation. And second, smokers who drink coffee have the deck stacked against them when they try to quit. That's because without the cigarette stimulation, their caffeine detox system slows down, resulting in enormous increases in blood caffeine levels (up to 200 percent). As you can imagine, this produces severe anxiety, nervousness, irritability,

and insomnia. Added to the symptoms of nicotine withdrawal, it's enough to send even a highly motivated person running back to Marlboro country.

The take-home message here is: If you're going to quit smoking (the most positive step you can take to improve your health), it is highly advisable that you decrease your caffeine intake at the same time. In fact, I recommend that you quit coffee altogether (see Chapter 10, "Off the Bean") because studies show that removing caffeine will greatly increase your chance of quitting cigarettes for good.

### **Caffeine Does Not Help Weight Loss**

There is a popular belief, most likely derived from the inclusion of caffeine in diet pills, that caffeine is an aid to weight loss. This notion is debunked in Chapter 8, but I mention it here in order to clear up yet another popular myth: drinking coffee when you quit cigarettes does not help prevent weight gain, either. This concept was carefully tested in a controlled scientific experiment, and caffeine (even when combined with another stimulant known as ephedrine) provided no benefit. There was no difference in success rate, weight gain, cravings, or withdrawal symptoms between the caffeine and placebo groups.

Source: J. Norregard, S. Jorgensen, K. L. Mikkelsen et al., "The Effect of Ephedrine Plus Caffeine on Smoking Cessation and Postcessation Weight Gain," *Clinical Pharmacology and Therapeutics*, December 1996;60(6):679–86.

### **Critical Point #2: Your Adenosine Receptors**

Caffeine and its breakdown products (collectively called methylxanthines) have a number of effects on the body. First, they disrupt the normal function of adenosine receptors, biochemical control switches found throughout the brain, kidneys, gastrointestinal tract, cardiovascular system, and respiratory system. Now stay with me here; this sounds complicated, but it's important, and by the time you finish this page, you'll know more about the biochemistry of coffee than most MDs.

Have you ever inserted the wrong key in a door and found that the key fit just fine but it wouldn't unlock the door? That's what caffeine does in an adenosine receptor. It fits, but does not perform the adenosine function. Now imagine that you're standing there and you can't get the wrong key out of the lock. You are thus prevented from entering the room. Likewise, when caffeine plugs an adenosine receptor, an important biochemical message that was supposed to be sent to the cell is not delivered. In the brain, adenosine dampens or slows down neuron firing. It acts like a fuse box to prevent your

circuits from getting overloaded.

When caffeine inactivates this control mechanism, your neuron circuits keep firing, and you feel alert. The problem is, your circuits keep firing, and firing, and firing....

### **Critical Point #3: The Stress Response**

It doesn't take a genius to see that there might be a downside to all of this neuron activity. In fact, uncontrolled neuron firing creates an emergency situation, which triggers the pituitary gland in the brain to secrete ACTH (adrenocorticotrophic hormone). ACTH tells the adrenal glands to pump out stress hormones—the next major side effect of caffeine. A single 250-milligram dose of caffeine (the equivalent of about 2 1/2 six-ounce cups of coffee) has been shown to increase levels of the stress hormone epi-nephrine (commonly known as adrenaline) by more than 200 percent.

Caffeine also stimulates the production of norepinephrine, another stress hormone that acts directly on the brain and nervous system. Epinephrine and norepinephrine are responsible for increased heart rate, increased blood pressure, and that “emergency” feeling. In fact, the emergency is quite real. Caffeine can trigger a classic fight-or-flight stress reaction with all of the results listed in Illustration 1.

### **ANATOMY OF THE FIGHT-OR-FLIGHT RESPONSE**

Caffeine can produce a cascade of physical and emotional changes as a result of increased stress hormones. This fight-or-flight response is hardwired into all animals as a survival mechanism.

### **NOWHERE TO RUN**

Take a moment to consider a “then and now” scenario. Remember that the fight-or-flight reaction was in great part responsible for our survival as a species. For 1.6 million years, this neuroendocrine response gave us increased strength, stamina, and speed when we needed it. But today, the same trigger mechanism is killing us. That's because even though our bodies haven't changed at all in the last 25,000 years, everything else has.

**THEY SAY Caffeine gives you energy...**  
**THEY SAY Caffeine gives you a lift...**  
**THEY SAY Caffeine sharpens your mind...**  
***DON'T BELIEVE THE JAVA JIVE!***

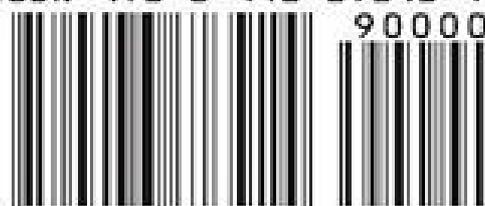
Nearly 80 percent of all Americans—even doctors and journalists—are hooked on caffeine, this country's #1 addiction. A natural component of coffee, tea, and chocolate—and added to drugs, soft drinks, candy, and many other products, this powerful drug can affect brain function, hormone balance, and sleep patterns, while increasing your risk of osteoporosis, diabetes, ulcers, PMS, stroke, heart disease, and certain types of cancer.

Now for the first time, one of the most accomplished nutritional biochemists and medical writers in his field reveals the truth about caffeine and helps you kick the habit forever.

### **DISCOVER:**

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