

THE HEALTHY INDIAN DIET (ABRIDGED VERSION)

How Traditional Foods of South Asia Help
Prevent Heart Disease, Diabetes and Cancer

WRITTEN BY RAJ R. PATEL, M.D.

RECIPES BY
HETAL JANNU AND
ANUJA BALASUBRAMANIAN

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TO OUR FAMILIES

– Anuja, Hetal & Raj

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INTRODUCTION

Hippocrates, the ancient Greek physician known as the Father of Western Medicine, once said, “Let food be thy medicine.” Indeed, for hundreds of years before and after him, physicians had little at their disposal besides food and other elements found in nature to treat disease. Millennia of experiments and observations on animals and people revealed to pre-modern healers what actually worked, and which plants, herbs and spices helped people recover their health and stay well. Unbeknownst to them, foods are made of molecules that interact with the molecules making up the human body. These interactions help or harm the body, just like medications.

WHY I WROTE A BOOK ON THE HEALTHY INDIAN DIET

In this book, I examine how food can be good medicine, especially in the context of chronic diseases that have grown to epidemic proportions both here and the world over. I focus on Indian foods, which, according to famous American and European doctors like Mehmet Oz, M.D., David Servan-Schreiber, M.D., and Dean Ornish, M.D, are very beneficial to human health. I initially found this position to be odd because, growing up as an Indian-American kid, I developed the impression that Indian food was bad for your health. This cognitive dissonance between what I knew growing up and this new perspective on Indian food compelled me to find out who, in fact, was right.

I also examined the latest published experiments and observations speaking on the relationship between diet and human health. The past couple years of this journey have bore some fruit, as the pieces have started to come together. I now realize that the *modern* Indian diet is indeed bad for you. It was surprising to learn exactly what in the modern Indian diet was bad: whereas I once thought the rash of heart

attacks among middle-aged men in my community was explained by eating a lot of *ghee*, I could see that thanks to new knowledge, it wasn't the *ghee* but actually refined grains, starchy vegetables, and sugar.

THE HEALTHY INDIAN DIET

The *traditional* Indian diet is what these famous doctors are actually referring to, and the foods in this diet in fact do the body a lot of good. Like the Mediterranean Diet, the most famous and well-studied of traditional diets, the traditional Indian diet is low on refined grains, starchy vegetables, and sugar. This means it is full of whole grains, leafy vegetables, and spices. Whereas other traditional diets from around the world are found to be good for people, what sets the Indian diet apart from the others is the presence of spices like turmeric and black pepper in everyday meals.

Spices also tie all regional diets of the Indian subcontinent together, just like olive oil and fatty fish tie all the various Mediterranean regional diets together. In the past decade or so, spices have been under the microscope lens of modern science, and many have been found to be astonishingly beneficial. The same is true of other elements of a traditional or *healthy* Indian diet. Unlike medications, spices and foods tend to have low, if any, adverse effects in most people, and no side effects whatsoever in those who are accustomed to eating them.

I have written this book for two reasons. One, I want to highlight what modern science tells us about how various foods help us stay healthy and improve our well-being, especially in the context of diseases such as obesity, heart disease, diabetes, and cancers. Two, I want to propose an alternative to the Mediterranean Diet based on the traditional cuisines of India, which includes many nutrient-dense whole foods. To give a compelling alternative, I have had to define what a healthy Indian diet means. I hope you find the concepts easy to grasp, that the evidence persuades you to my way of thinking on this issue, and that you allow for the elements of the healthy Indian diet to “be thy medicine.”

HOW TO READ THIS BOOK

Many pages of this book are devoted to the science of foods, how diets affect the development of chronic diseases, and what constitutes a *healthy* Indian diet. These sections can get quite technical, and I have written them for readers who are intellectually curious about how the body works and how the foods we eat every day influence our overall health. These pages also give credibility to the idea that the healthy Indian diet is indeed good for you.

However, if you want to know what constitutes a healthy Indian diet and then begin preparing meals that fit the profile, skip to Part II and begin reading from there. I intended to make this book practical, and I have included recipes at the end thanks to two wonderful women, Hetal and Anuja, who teach people how to make Indian dishes – many of them healthy.

There is a section toward the end of the book more specific to people from the Indian subcontinent. I started this project with this in mind: people all over the world are suffering from chronic diseases, but people of South Asian descent suffer them in greater numbers. Additionally, I have included a Glossary to help readers with certain terms that I have elected to use the Hindi word for, such as *haldi* (turmeric powder).

DIET, NOT DIETING

Before going on, I want to make a clear distinction between “diet” and “dieting.” This book focuses on a daily diet or pattern of foods, leaving you to pick and choose which elements you want to emphasize based on your (and your family’s) tastes. I do not get specific about how much of something to eat, or indeed how often. It is useful to think of the advice here as more like guidelines than fixed rules.

If you wish to follow a prescription of certain foods in specific amounts for a more specific goal, such as losing weight or gaining muscle, then this is not the book for you. While you can emphasize elements of the healthy Indian diet to help lose weight, I focus on

describing basic elements of Indian foods that compel readers to adhere to the diet in the long-term, motivated by the knowledge that the diet is healthy, and because the diet is tasty.

My approach emphasizes that changing your diet to something healthier, whether you already eat Indian food or not, is difficult. So rather than trying to switch overnight, I hope you aim to change your diet gradually. For example, don't throw out the white rice immediately and replace it with brown rice. Instead, cook brown rice two or three nights a week, substituting meals where you have white rice. After some weeks, if you find you like the taste of brown rice, or feel it is important to switch, then keep going.

Fortunately, this kind of diet – a change in the patterns of foods you eat – is easier to stick with. After all, today's dishes have come from hundreds of years of cooking various combinations of foods, and they have made it this far because they taste good and provide the body with the nutrition it needs.

THIS IS NOT AYURVEDA

If you want to learn about *Ayurveda*, the Indian tradition of health and healing, please refer to a book based on that specific subject, not this book. For the uninitiated reader, *Ayurveda* is a millennia-old metaphysical system based on how five elements – fire, water, earth, air, and ether – combine to make the seven constituent elements of the human body. Ayurvedic practitioners aim to maintain the balance between these seven constituents to keep a person healthy. The principal way of maintaining this balance is by eating foods according to your strongest elemental energy, either *vata*, *pitta*, or *kapha*. Adhering to this means restricting certain foods.

Ayurveda is not a relic of the past, as it is taught in medical schools and practiced professionally in India to this day. Millions of Indians prefer to visit an Ayurvedic physician rather than a physician trained in the Western mold, seeking a traditional healing method over new technology. Many people in the West who are disenchanted with modern medicine also seek out Ayurvedic physicians. All of this keeps

the body of knowledge alive and well.

Despite acknowledging that there is some merit in the *Ayurveda* system, this book does not talk about a healthy Indian diet in that context. I have been unable find any evidence in medical literature to support the idea that one should eat according to one's fundamental energy to maintain good health. This is not to say that science will not one day prove that this is the optimal way to eat. However, I have to go by the evidence present today.

Furthermore, I have written this book to let you, the reader living in the modern world with access to a variety of foods unimaginable even a decade ago, pick and choose and craft your own version of the healthy Indian diet.

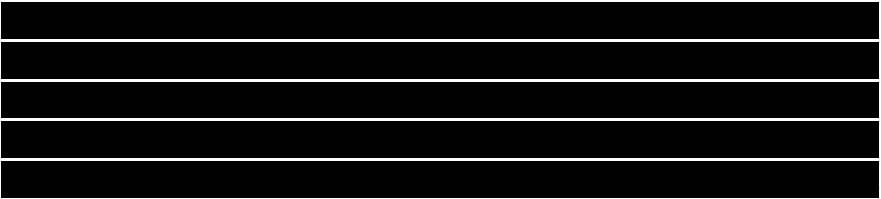
THE POWER OF THE HEALTHY INDIAN DIET

Once upon a time, when a child of South Asian descent fell sick with a cold or sore throat, his mother gave him a concoction made of turmeric powder – and it worked! This isn’t really once upon a time. Indian mothers still give their children, whether they are in a big American city or a tiny village in India, a variation turmeric-based concoction when they fall ill.

As a grown man who is a physician by training and skeptical of alternative medicine, I still take that “potion” of warmed-up milk plus a teaspoon of turmeric powder and a pinch of salt when I get a cold or sore throat. Though this isn’t a proven remedy in medical literature, it has always worked for me. I am sure because it is a potion of sorts and tastes like medicine (i.e., awful), it exerts a certain placebo effect, by which I mean it may not treat the illness at all. No matter, I definitely *feel* like it does.

Thanks to my recent reading of the scientific literature, I now know that turmeric powder has anti-bacterial and anti-inflammatory properties. In this context, my observation that a bad sore throat goes away within a day after drinking this stuff – and similar observations by others – likely provides an underlying explanation. And now, modern science has begun to show that turmeric powder – a universal ingredient in Indian cooking – can help your body fight cancers.

IS THE HOLY GRAIL IN THE INDIAN DIET?



[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

ⁱ People with this disease have hundreds of polyps, essentially pre-cancerous lesions, and will develop cancer by age 40 if they are left untreated.



MODERN LIGHT ON INDIAN FOOD

Experts in human health are starting to recognize the power of the increasingly popular healthy Indian diet. The findings on turmeric powder from M.D. Anderson Cancer Center likely inspired Dr. David Servan-Schreiber, a psychiatrist and researcher who survived brain cancer, to write that the Indian diet (along with the Mediterranean and Asian diets) is an anti-cancer diet. Dr. Dean Ornish, a preventive cardiologist who defied medical dogma by showing that the narrowing of coronary arteries could be reversed by lifestyle changes alone, believes in the power of Indian food.

He described dishes and beverages he likes in “The Healing Secrets of Food: A Practical Guide for Nourishing Body, Mind, and Soul,” but he did not define the elements of a healthy Indian diet. Even Dr. Mehmet Oz, the heart surgeon who is now the most popular physician in the U.S., has heaped praise on traditional Indian food on his television show.

Now that “Let’s go get some Indian food” is a popular suggestion on a weekend night among Americans from all walks of life, and as more experts trumpet how healthy the Indian diet seems to be, more Western researchers are investigating these claims. This is nothing new, as there are findings from decades of research conducted on Indian diets in India that support its health benefits. It may be hard to believe, but even during the colonial era, physicians found evidence of how people developed disease when they abandoned their traditional

diet for a modern one.

I believe science will ultimately show that much in the traditional Indian diet is good for you, just as science has done for the traditional Mediterranean diet. This book, I hope, will shed light on the power of the Indian diet based on what scientists are beginning to substantiate and on what we have already known in the collective consciousness for years.

Knowledge is power, and after you finish reading this book, you will know what constitutes a healthy diet, especially what constitutes a healthy Indian diet, and be better able to draw from the power found in a healthy Indian diet. But before I define the elements, I want to make a clear case for why it is important to start adopting elements of a healthy Indian diet today.

PART I

THE SCIENCE OF CHRONIC DISEASES AND FOOD BASICS

THE EPIDEMIC OF CHRONIC DISEASE

To have our first idea of things we must see those things. To have an idea about natural phenomenon we must, first of all, observe it. The mind of man cannot conceive an effect without a cause so that the sight of a phenomena always awakens an idea of causation. All human knowledge is limited from working back from observed effects to their causes.

– Claude Bernard

THE STORY OF A BRITISH PHYSICIAN WHO FOUND THE ROOTS OF CHRONIC DISEASES IN COLONIAL INDIA

Robert McCarrison, M.D. landed on the shores of India in 1901. He had finished his medical training in Belfast only months before and, like many fellow Irishmen, embarked to the British Raj to further his career. At the ripe age of 23, McCarrison was posted in the mountainous Northern Frontiers to be a medical officer for a regiment of Indian sepoys. He would spend the better part of three decades in India, pioneering research in areas where nutrition, diet, and health intersect. He then retired to Oxford, was knighted, and was elevated to the rank of the King's Honourable Physician.

However, in 1901, McCarrison was busy caring for troops guarding the Himalayan border as a junior physician. For the next dozen years, he was thus preoccupied but still found time to record his observations on the Hunza diet and their overall health. The good health enjoyed by the Hunza left an impression on the young doctor, and he compared their diet to the diets of surrounding tribes and villages. After finding a high incidence of thyroid goiter in some Himalayan villages, he began performing simple experiments on rats, other animals, and eventually people, including himself, to discover the reason.

The young doctor learned that the people who suffered goiter disease ate a diet lacking in iodine. Worse, iodine deficiencies led to cretinism, a devastating childhood disease that impairs normal development. Cretin children were found to be born to mothers who did not have enough iodine in their food.ⁱⁱ After gaining worldwide acclaim for his discoveries, McCarrison's superiors allowed him to spend most of his time conducting nutrition research after 1913.



Figure 1: British and Indian soldiers marching. (Photo used under Creative Commons from Northampton Museum.)

For the next several years, McCarrison traveled around British India and found regions where a particular disease was rampant, then sat down to figure out what deficiency was causing the disease. He found a high incidence of beriberi, a debilitating disease of the heart, muscles, nerves, and intestines among villagers near Bombay. He worked out that beriberi was caused by a deficiency of thiamine (vitamin B1). It is here that he began linking disease to the modernization of diet. In his 1924 paper on beriberi, McCarrison explained that thiamine deficiency was caused by the local rice being “decorticated.”³

In other words, rice grains were so refined that their germ and

ⁱⁱ McCarrison's discovery of the role of iodine deficiency and thyroid diseases eventually led to our table salt being fortified with iodine.

bran, where the nutrition and fiber resides, were taken out, leaving only the starch-rich endosperm – in other words, white rice. Refined rice became popular after people recognized that it doesn't rot as quickly as whole grain rice, and was thus easier to sell and store. The villagers, who for generations had eaten whole grain rice that was not milled, were now eating white rice lacking critical vitamins like thiamine and fiber and contributing to a quickly usable form of energy. McCarrison's travels, observations, and experiments led him to form an underlying explanation for chronic diseases, including diabetes, heart disease, and even tuberculosis, that sounds astonishingly contemporary: "The extensive use of vitamin-poor white flour and [the] inordinate use of vitamin-less sugar."⁴

In 1918, McCarrison began a small lab in Coonoor in the pleasant Nilgiri Hills of Tamil Nadu. Ten years later, he became the Director of Nutritional Research in India, and he spent most of his life there until he retired conducting nutrition experiments.ⁱⁱⁱ It was during this tenure that he performed one of his more famous experiments. His team divided 1,200 albino rats into eight groups and fed each group a different regional Indian diet. He found that the Punjabi Sikh diet, resembling in many ways the Hunza diet that had impressed him early in his career, kept the rats the healthiest, leanest, and best prepared against infections. McCarrison elaborated on the diet in a 1936 lecture.

In general the races of northern India are wheat-eaters, though they make use also of certain other whole cereal grains. Now the biological value of the proteins of whole wheat is relatively high; and the wheat is eaten whole, after being freshly ground into a coarse flour (atta) and made into cakes called chapattis. It thus preserves all the nutrients with which Nature has endowed it, particularly its proteins, its vitamins and its mineral salts. The second most important ingredient of their diet is milk, and the products of milk (clarified butter or ghee, curds, buttermilk); the third is dhal (pulse); the fourth, vegetables and fruit. Some eat meat sparingly, if at all; others, such as the Pathans, use it in considerable quantity. Their

ⁱⁱⁱ This lab would become India's National Institute of Nutrition, now based in Hyderabad.

food thus contains – when they can get the food they want, which they do not always do – all elements and complexes needed for normal nutrition (with the possible exception of iodine in some Himalayan regions) and abundance of those things that matter from the point of view of the structural and functional efficiency of the body.⁵

According to McCarrison's experiments on the diets of British India, the Sikhs' traditional diet was the best in terms of health. It was based on coarsely ground wheat, milk and fermented dairies, *dals*, vegetables, fruit, and even meat. In his view, the worst diet for health was that of the "rice-eaters of the south and east of India." The Madrassi diet, as he called it, was "excessively rich in carbohydrates, and [there was] deficiency of protein, mineral salts and vitamins."

His team recorded "high infant mortality, poor growth, disease of various kinds and premature death" among the rats fed the Madrassi diet, and McCarrison observed the same kinds of diseases affecting people in South India who ate this kind of diet.⁶ McCarrison blamed the effects of the Madrassi diet largely on rice, which wasn't prevalent in the Sikh diet, because it was the poorest grain in regard to nutrition.

Worse than rice were refined grains of any kind. Production and the sale of Indian foods became increasingly industrialized during the British Raj. Practices like heavy refining of grains to give them longer shelf lives became more common, and McCarrison didn't like what he was seeing. He said:

I have little patience with those who would have us believe that 'white flour' is as good an article of diet as 'whole wheat flour'. White flour, when used as the staple article of diet, [cause people] to build up their dietaries with a staple of relatively low nutritive value.⁷

When McCarrison moved to Oxford, England in 1935 after decades of research that illuminated connections between what people ate and their overall health, he was brimming with ideas. Western governments took his findings, replicated by others, and began requiring manufacturers to fortify foods with vitamins to prevent against deficiencies. While his work on diseases of single nutritional deficiencies was widely read and followed, his philosophy of using

whole foods as medicine was mostly ignored. In his later years, he began to emphasize that people should eat foods as they are found in nature. But this idea and his conclusions on nutrient-dense traditional Indian diets ideal for human health have been largely forgotten.

The era of antibiotics had arrived, and soon factories were producing insulin. These miracles made doctors and researchers worship at the altar of technologies that could treat and even cure disease. They thus became more interested in the treatment of disease rather than in their prevention, which was McCarrison's passionate response to fighting illness. In his later years, McCarrison deplored the increasing consumption of refined white flour and the substitution of canned, preserved and artificially sweetened products for fresh, natural, whole foods in the U.K. and America. The epidemics of chronic diseases that took root in the West were sadly a result of those trends.

THE GLOBAL EPIDEMIC OF OBESITY AND THE MODERNIZATION OF DIETS

No longer is it shocking to read that chronic diseases – namely obesity, diabetes, coronary heart disease, and many cancers – have become so common in modern societies that health experts refer to them using the word “epidemic.” And it may be not too shocking to learn that the rising rates of heart disease and diabetes, which have been especially concerning in the U.S. for some time, are now seen in emerging nations like China, Brazil, and India as well as the rest of the Western world.

Obesity is the ideal place to start because it is associated with coronary heart disease, diabetes, and some cancers. It isn't a disease per se, but rather a condition born of the malfunctioning metabolism of dietary fats thanks to the roles of blood glucose and the hormone insulin. The chart below shows how quickly obesity became prevalent in the U.S. based on data from the Center for Disease Control's NHANES surveys.

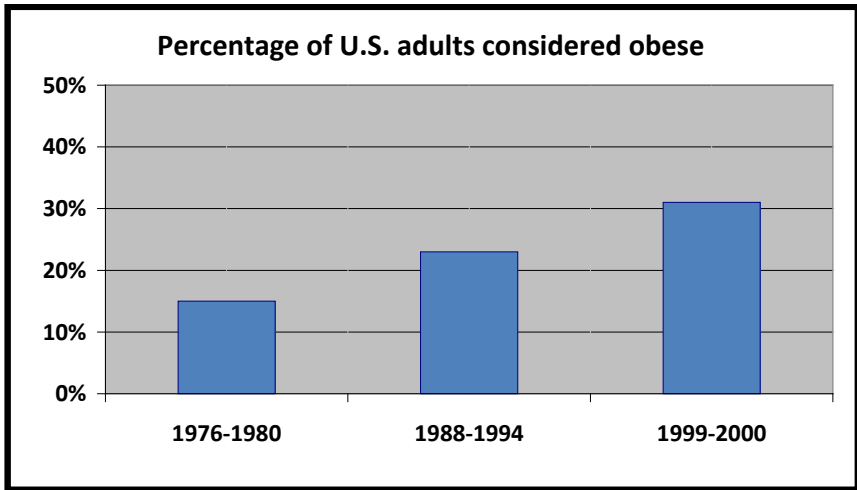


Figure 2: This bar graph shows the rise in the obesity rate of American adults between 1976 and 2000. Data is from the Center for Disease Control.

Using a BMI (Body Mass Index) cutoff of 30 kg/m^2 , between 1976 and 1980, 15% of Americans were obese. The proportion doubled to 31% in roughly two decades.⁸ Using a BMI cutoff greater than 25 kg/m^2 , 65% of U.S. adults were overweight or obese in 2000.⁹ This is 2 in every 3 American adults. Obesity may be prevalent now, but it is certainly not a new condition.

The great Indian surgeon Sushruta, considered a forefather of *Ayurveda*, observed that *medhumeda* (Sanskrit for diabetes, and literally “honey urine”) developed in people with excess body fat over three millennia ago. He found that if his obese patients exercised and lost some of their body fat, they would experience fewer symptoms. Though he recorded incidences of obesity, it was exceedingly rare in ancient India.

OBESITY WAS RARE UNTIL RECENTLY

In fact, obesity was rare throughout modern human history until very recently, and American insurance records illustrate this fact. Since the 1950s, insurance companies have factored in their clients’ body weight when determining premiums as they began to recognize the link between being obese and having heart attacks.¹⁰ But the obesity rate

did not take off in the U.S. until the 1980s, which shows exactly when Americans began eating less dietary fats and more carbohydrates.

While obesity was always historically associated with wealth, it is more associated with poverty in modern times. This may explain why societies that are poor by Western standards are experiencing obesity epidemics. In 1997, the World Health Organization (WHO) acknowledged that obesity was a global problem after examining data from nations like Mexico, and the WHO paper asserts that obesity became widespread due to urbanization, which promotes a less active lifestyle and provides easier access to processed foods, and the industrialization of food, which had led to an oversupply of low-cost energy-dense foods.

These two processes, urbanization and industrialization of food, have been witnessed throughout history. Dr. Rob Thompson, author of “The Glycemic Load Diet,” writes that 10,000 years ago, people in the Mediterranean and Indian subcontinent learned how to cultivate wheat and rice and extract their starchy seeds through the primitive process of grinding the husks between rocks. Over hundreds of generations, people in these fertile lands began making grounded wheat and rice taste better by adding fat from meat and milk products, lightening them with yeast to make breads, and eating sugar with them for sweetness.

Starvation was very common throughout man’s existence, and these lightly refined carbohydrates provided nutrition and, most importantly, energy. Cultivation and light refining of whole grains made civilization possible in Mesopotamia and South Asia, and these practices spread throughout Asia, Europe, and Africa. The idea of refining these grains to make them more edible and last longer in storage also spread.

Whereas wheat and rice were the grains of the Old World, corn was the staple of New World peoples. Another plant from the Americas, the starchy tuber we call the potato, provided an abundance of calories and carbohydrates to early man and became popular in the Old World. Similar to red chili peppers, the potato was brought to

India from outside. The Spaniards brought the potato from Peru to Europe, where it spread like wildfire, and the Portuguese brought it to India.^{iv}

If refined carbohydrates are linked directly to obesity today, why was obesity not prevalent in the past? There are several reasons for this. First, portions were small because food was scarcer and more expensive. The notable exceptions were people with great wealth who could afford to eat lots of milled wheat and potatoes. Portraits show that many royals and merchants were overweight, and during these periods obesity was a status symbol and considered attractive. Even during times of relative prosperity for the middle class, such as in Victorian England, people's portions were small compared with portion sizes of today, especially in the U.S. Second, people constantly walked from place to place or were engaged in hard labor. Third, most people ate grains that were not as refined as they are today.

INDUSTRIALIZATION OF FOOD

Throughout the 1800s, as the pace of industrialization accelerated, food became cheaper and more processed. Around this time, more people became wealthy enough to buy more food. By the early 1900s, people in the U.S. and U.K. were eating more food than they had ever had in the past. Around this time, the rates of people carrying excessive body fat rose but remained at less than 10% of adults in both countries. Compare that with today, where about 30% of American adults are obese and more than 60% are overweight.

Doctors noted that rates of people with too much body fat actually fell during the Great Depression, explained by a scarcity of food, but this drop was temporary. As the U.S. economy boomed following World War II, factories began focusing on making all kinds of products for the home, including food. Food became even cheaper because of these efforts, and Americans began eating more again.

^{iv} *Batata* is the word for potato in Portuguese, as it is in western Indian languages where the Portuguese based their colonies.

Big companies began to heavily refine grains, thereby stripping them of their nutrition and fiber. By the 1950s, white bread, made of heavily refined wheat flour, became one of the most commonly purchased food products. Americans also started eating more red meat, butter, and sugar than ever before.

Americans were eating more dietary fats than ever before. Americans were also eating more carbohydrates from refined grains, but this was lost on researchers because overall there wasn't a significant change in the average person's consumption of carbohydrates overall, as carbohydrates from refined grains replaced those from whole grains.

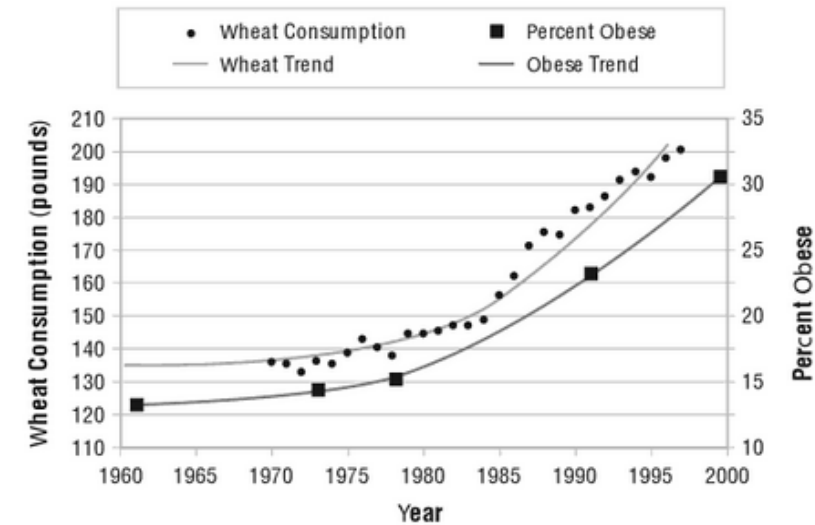
Dr. Ancel Keys, a University of Minnesota researcher who became the leading voice on nutrition and health in post-war America, linked dietary fat and dietary cholesterol to coronary heart disease. The saying "You are what you eat," expressing that people gained excess body fat because they were eating too much dietary fat, became dogma even in the medical community. Keys and another influential nutrition researcher named Dr. Jean Mayer at Harvard ignored the few researchers who connected the rise in heart disease to the rise in refined grains in the diet. And when the link between high cholesterol levels and heart attacks was described in the literature, doctors told people to eat fewer fats and more carbs.

Advocacy groups like the American Heart Association (AHA) and government agencies like the U.S. Department of Agriculture (USDA) bought into the "lipid hypothesis" and began telling the public that dietary fats caused obesity and heart disease. The campaigners demonized red meat, eggs, and milk and said people should replace them with carbohydrate-rich foods like products made of flour and rice as well as potatoes. Big companies making these kinds of foods saw an opportunity and immediately jumped on the bandwagon with their well-funded marketing departments. Americans of course listened.

[REDACTED]

[REDACTED]

Figure 2.1 Obesity Rate Versus Annual Wheat Consumption per Person (1961–2000)



Source: National Center for Health Statistics Third National Health and Nutrition Examination Survey and U.S. Department of Agriculture National Nutrient Database

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

UNDERSTANDING CHRONIC DISEASE

It is health that is real wealth and not pieces of gold and silver.

– Mahatma Gandhi

The past several generations have seen a rise in chronic disease. Some of this is explained by the fact that people are living longer. In the past, many died of infections, malnutrition, or violence before reaching middle age, where chronic diseases usually begin to emerge. But the explosive rise in heart disease, diabetes, and some cancers as well as obesity in the last two generations cannot be explained by longevity alone. As I illustrated earlier, the significant rise has in large part been due to increasing consumption of processed foods containing refined grains, sugars, and starches. This is the “carbohydrate hypothesis.”

In my opinion, it should be called the “simple, easily-digested carbohydrate hypothesis.” After all, the British Indian physician Robert McCarrison blamed white rice, flour, and sugar for certain groups in India having high rates of illness, not vegetables or legumes, which are also carbohydrate-dense. Regardless of the name, this makes sense when you understand how glucose, a sugar molecule digested into the bloodstream from carbohydrates, interacts with insulin, and the role excess body fat plays in inflammation.

The carbohydrate hypothesis is no longer controversial. Thanks to insights by the likes of Mr. Gary Taubes, who wrote “Good Calories, Bad Calories,” and advocacy by people like Dr. Walter Willett of Harvard, America’s pre-eminent nutritionist-physician, the word is getting out. What I explain in this book is *not* new, as McCarrison’s words from the 1930s reveal. But you as the reader will get much

benefit from better understanding what evidence from the forgotten past and recent scientific studies tell us.

To help affix those strands of information firmly on your own knowledge tree, or if you want to dive deeper into the science, read the upcoming section on chronic diseases and the basics of food. However, if all you want is to learn what constitutes a healthy Indian diet and recipes that fit this profile, skip this section altogether.

I will keep it as simple and concise as possible. Actually, much of what I write will be easy to follow because you will have come across certain concepts before. You may have a relative living with chronic disease, making you familiar with some of the terms I use. The new paradigms on the glucose-insulin feedback system and the role of inflammation may be more technical, but they are not difficult to follow. I have documented the claims in this section in the Endnotes of the book should you wish to read the source material.

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^v Atrial fibrillation is an exception and one of the most important risk factors for strokes.

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Figure 5: The AHA, in its endorsement of criteria for diagnosing metabolic syndrome, states a waist circumference of 40 inches (102 cm) and more for men, and 35 inches (88 cm) and more for women, represents having too much central body fat.i

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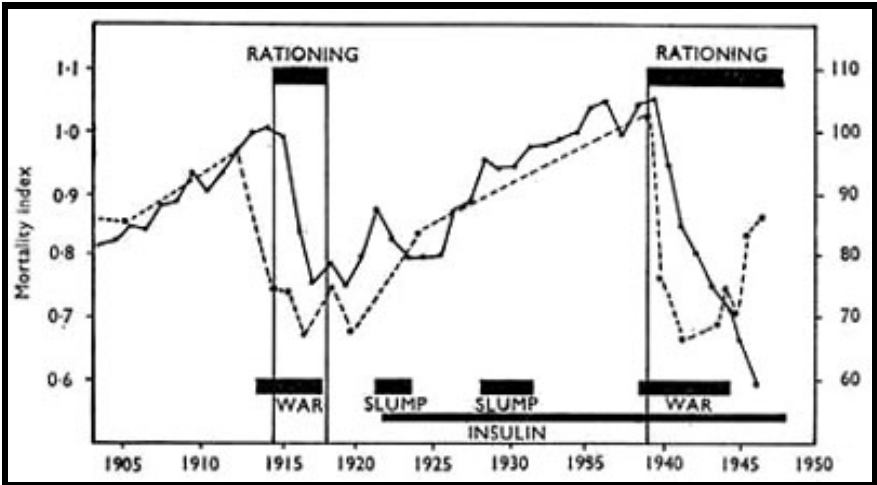
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INCREASING AWARENESS

The paradigm shift to seeing chronic disease as being connected to insulin resistance (as being connected to easily digested carbs) is already happening in the public sphere. The *L.A. Times* in December 2010 quoted Dr. Willett, the chairman of Harvard's nutrition department, as saying, "[Dietary f]at is not the problem. If Americans could eliminate sugary beverages, potatoes, white bread, pasta, white rice and sugary snacks, we would wipe out almost all the problems we have with weight and diabetes and other metabolic diseases."⁵¹ This wasn't a new insight for Dr. Willett. He wrote in his book published in 2001 that the best way to keep weight off is by eliminating simpler carbs, especially refined grains.⁵² More evidence is being uncovered to support the hypothesis that refined carbohydrates lead to chronically elevated insulin (i.e., insulin resistance), which then leads to the buildup of excess visceral body fat.

That same *L.A. Times* article detailed a 2009 study showing that a diet high in saturated fats and low in carbohydrates had greater weight loss and better improvement in blood glucose, insulin, triglycerides, and cholesterol levels in a certain group.⁵³ Forty overweight or obese people with metabolic syndrome were put on one of two 1,500-calorie diets for 12 weeks. One diet was low-fat/high-carbohydrate, while the other was high-fat/low-carbohydrates. Notably, the saturated fats in the high-fat diet were three times the other diet, or in other words, 36 grams of saturated fats compared with 12 grams. Astonishingly, triglyceride levels fell by 50% and HDL-cholesterol levels went up by

15% in people on the high-fat diet.

How could this be? After all, the dogma on this issue is that a high-fat diet worsens people's cholesterol and fat levels. The study's authors theorized that when insulin is not high (i.e., when there is no insulin resistance) because there isn't much of a glucose load in a low-carb diet, molecular fats are not stored but rather burned (or oxidized) for energy by other cells. Thus, fat levels in the blood become lower.

A high-carb diet would, on the other hand, keep insulin levels high (i.e., maintain the insulin resistance), which would tell fat cells to store more fat (i.e., triglycerides), using raw material from what was eaten, mostly glucose, and to release free fatty acids into the blood, some of which the liver would make into triglycerides for the blood. This increase in the manufacture of bodily fat (as visceral fat grows bigger) and molecular fat (as fatty acids, cholesterol, and triglycerides) in the blood are all bad in terms of heart health. The role that certain diets play in relation to insulin has certainly become part of the new paradigm.

BASIC FOOD SCIENCE

Nothing would be more tiresome than eating and drinking if God had not made them a pleasure as well as a necessity.

– Voltaire

All food is made of molecules. We will concern ourselves with three kinds that are digested into our blood after they are broken down: fats, carbohydrates, and proteins. There are molecules our bodies can't digest, such as fiber. And yet there are other molecules that are digested and not a fat, carbohydrate, protein, or fiber: these include vitamins, minerals, and other phytonutrients that benefit our bodies.

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CARBOHYDRATES

Carbohydrates are made of carbon, hydrogen, and oxygen atoms and commonly categorized as simple and complex. Mono- and disaccharides are simple carbohydrates and include sugars. Oligo- and

polysaccharides are complex carbohydrates. Nutritionists long considered complex carbohydrates good for you because they were digested slowly, but this isn't true. Starches, such as what is found in potatoes and the endosperm of all grains are oligosaccharides and quickly digested. Cellulose is a polysaccharide, which isn't digestible; polysaccharides tend to be fiber.

Sugars

Sugars are mono- and disaccharides and thus considered simple carbohydrates. Table sugar (i.e., sucrose) is made of two monosaccharides, glucose and fructose. High Fructose Corn Syrup (HFCS) is similar, but some glucose is artificially made into fructose. Table sugar and HFCS are quickly and easily digested by your body. Some experts believe the heavy use by food companies of HFCS, as opposed to table sugar, is the biggest culprit behind the obesity epidemic.

Glucose, a monosaccharide component of table sugar and HFCS, is by nature the most readily available and usable form of energy. It is the only carbohydrate the pancreas senses before releasing insulin into the blood. Fructose, in contrast, does not cause a rise in insulin. Also, unlike glucose, which is used by the vast majority of cells, only liver cells use fructose. When liver cells become saturated with carbohydrates, which happens from a high-carb diet or by insulin resistance or diabetes, they make triglycerides from fructose and send them to fat cells for storage.⁶⁸

Glucose is also made into triglycerides, especially when insulin levels are high (i.e., due to a high-carbohydrate diet, insulin resistance, or diabetes). High blood glucose levels cause high insulin levels. This tells visceral fat cells to take glucose, use some for energy, and convert some to glycerol, the backbone of triglycerides. Some glucose becomes free fatty acids in other cells, which are combined with glycerol to make triglyceride molecules.) The more insulin spikes there are, the more fat molecules are accumulated into visceral fat, causing the tissues to grow.

This is how simple carbs like table sugar and HFCS are linked to body fat and insulin resistance. A 2010 meta-analysis showed that these carbohydrates, not fats, are linked to an increased risk of heart disease. The authors thus urged people to eat less sugars, starches, and refined grains, which are foods with the highest Glycemic Index numbers.⁶⁹

Glycemic Index and Glycemic Load

Instead of looking at carbohydrates as simple or complex, it is more useful to think of them as high or low Glycemic Load carbohydrates. First, let me explain the Glycemic Index (GI). The GI concept was developed by a University of Sydney group and assigns a number to a particular food to describe how *quickly* the carbohydrates in that food become blood glucose. The lower a food's GI is, the less quickly one's blood glucose will rise. Connecting the dots, the lower a food's GI, the less insulin will be required from the pancreas. Therefore, the GI describes the quality of carbohydrates in a useful way. In general, it is easier for you to control your blood glucose and insulin levels when you eat mostly foods with low GI. This is true also for people with diabetes.

Vegetables and fruit are carbohydrate-dense, but because they are mostly water and contain fiber, which slows the digestion of carbohydrates, they tend have low GIs. In other words, eating a vegetable or most (but not all) fruits does not increase blood glucose or insulin levels quickly. For comparison, refined grains – which are the starchy endosperm without the fiber found in natural whole grains – have high GIs. Refined grains thus tend to elevate blood glucose and insulin quickly. The bottom line on GI is that lower GI foods are better for the body, especially the glucose/insulin feedback system.

Harvard researchers developed an advanced version of the GI concept called the Glycemic Load (GL). The GL is more realistic in describing how a food will affect your blood glucose and insulin levels. Whereas a food's GI tells us how quickly blood glucose rises, a food's GL better tells both how quickly and by how much our blood glucose rise, and it is based on the amount of carbohydrates found in that

food's typical serving size. Still, the same principle applies to GL: the lower it is, the better it is for the body. And accordingly, vegetables and most fruits as well as fiber-rich grain cereals have low GLs, while sugars and refined grains have high GLs.

The table below lists GLs (Glycemic Loads) for common Indian foods.⁷⁰ These GLs came from people with mild insulin resistance (i.e., mild impaired glucose tolerance), and I used it because the list was far more extensive than that from healthy people. The main purpose of this table is to give you a general idea of a food's GL relative to other foods.

Food or Dish	Glycemic Index	Serving Size	Glycemic Load
Appam (thin pancake made from fermented rice flour batter with tender coconut) eaten with Bengal gram curry†	90	250 g	58
Bajra (<i>Pennisetum typhoideum</i>), eaten as roasted bread made from bajra flour	55	75 g (dry)	28
Chapatti, wheat flour, thin, with green gram (<i>Phaseolus aureus</i>) dhal	81	200 g	41
Dhokla, leavened, fermented, steamed cake; dehusked chickpea and wheat semolina	31	150 g	9
Dosai (parboiled and raw rice, soaked, ground, fermented and fried) with chutney	77	150 g	30
Idli (parboiled and raw rice + black dhal, soaked, ground, fermented, steamed) with chutney	77	250 g	40
Jowar, roasted bread made from Jowar flour (<i>Sorghum vulgare</i>)	77	70 g (dry)	39
Millet/Ragi (<i>Eleusine coracana</i>) flour eaten as roasted bread	104	70 g (dry)	52
Pongal (rice and roasted green gram dhal, pressure cooked)	90	250 g	47
Poori (deep-fried wheat flour dough) with potato palya (mashed potato)	82	150 g	34
Puttu (rice flour, steamed with tender coconut) eaten with	79	250 g	58

Food or Dish	Glycemic Index	Serving Size	Glycemic Load
Bengal gram curry			
Semolina (<i>Triticum aestivum</i>) with fermented black gram dhal (<i>Phaseolus mungo</i>)	46	71 g (dry)	23
Upittu (roasted semolina and onions, cooked in water)	67	150 g	28
Uppuma kedgerree (millet, legumes, fenugreek seeds; roasted and cooked in water)	19	150 g	6

The table below contains GLs for other common foods eaten in the U.S. and other developed parts of the world.

Food or Dish	Glycemic Index	Serving Size	Glycemic Load
Brown (<i>Oryza Sativa</i>), boiled (South India)	50	150 g	17
Milled (white), high amylose (IR42) rice, boiled 22 min (Philippines)	59	150 g	25
Ice cream, NS (USA)	62	50 g	7
White bread with butter (Canada)	84	100 g	28
Chickpeas, curry, canned (Canasia Foods Ltd., Scarborough, Canada)	41	150 g	7
Lentils, type NS (USA)	28	150 g	5
Kidney beans (Canada)	46	150 g	11
Peas, dried, boiled (Australia)	22	150 g	2
Apple, NS (USA)	40	120 g	6
Banana, ripe (all yellow) (USA)	51	120 g	13
Mango, ripe (<i>Mangifera indica</i>) (India)	60	120 g	9
Oranges (Sunkist, Van Nuys, CA, USA)	48	120 g	5
Orange juice, reconstituted from frozen concentrate (USA)	57	250 ml	15
Taco shells, cornmeal-based, baked (Old El Paso Foods Co., Toronto, Canada)	68	20 g	8
Pizza, cheese (Pillsbury Canada Ltd., Toronto, Canada)	60	100 g	16

Food or Dish	Glycemic Index	Serving Size	Glycemic Load
Peanuts (Canada)	13	50 g	1
Spaghetti, homemade, durum wheat, no monoglyceride, boiled 6 min (Denmark)	59	180 g	28
Corn chips, Nachips™ (Old El Paso Foods Co., Canada)	74	50 g	21
Clif bar, Cookies & Cream flavor (Clif Bar Inc, Berkeley, CA, USA)	101	65 g	49
Black Bean soup (Wil-Pack Foods, San Pedro, CA, USA)	64	250 g	17
Carrots, NS (Canada)	92	80 g	6
Russet, baked without fat (USA)	94	150 g	28
Sweet potato, NS (Canada)	48	150 g	16

Some experts say a rule of thumb is that foods with a GL of 10 or less are good because they don't affect your glucose or insulin very much. Foods with GL of 20 or greater are bad in terms of how they affect your glucose and insulin levels.

In general, to keep your blood glucose/insulin feedback system in good working order, eat more foods that are low to medium (10 to 20) on the GL scale (e.g., vegetables, fruits, legumes, and whole grains), and fewer of the high GL foods (e.g., refined grains, junk food, and sugars). Note, low to medium GL foods are beneficial beyond just having a minimal impact on blood glucose and insulin levels: they tend to be full of vitamins, minerals, phytonutrients, and fiber.

Fiber

Fibers are carbohydrates in food that can't be digested. Stomach acid, bile, and enzymes can't break down fiber the way they break down most carbs, fats, and proteins (into monosaccharides, fatty acids, and amino acids, respectively). Nutritionists classify fiber, found in plants and not in meat, as soluble or insoluble.

Plants contain both kinds of fiber to varying degrees. An apple has soluble fiber in its flesh, but *insoluble* fiber in its skin. That said, plants tend to be denser in one kind of fiber. Whole grains have more

insoluble fiber, while fibers in legumes are mostly soluble. The distinction is important because they do different things in the body.

Soluble fiber

Fibers in the following foods are mostly soluble: legumes (*dals* and beans); oats and barley; fruits like plums, berries, bananas, and apples; vegetables like broccoli and carrots; root vegetables like sweet potatoes and onions; and psyllium seed husk, a common laxative. Soluble fiber becomes a sticky gelatinous substance in the intestines. This sticky stuff holds on to easily digested carbohydrates, making them slower to absorb into the body.^{vii}

Soluble fiber then reduces the speed with which carbohydrates, even the amounts of carbohydrates, get digested. This reduces the level of the insulin spikes from the pancreas in response to what carbohydrates make it into the blood. This is probably why a regular diet high in soluble fiber is associated with a lower risk of developing diabetes.⁷¹

A regular diet high in soluble fiber also helps people with diabetes, improving their control of blood glucose levels.⁷² Additionally, soluble fiber keeps cholesterol levels lower by the same principle, grabbing cholesterol-rich bile acids and holding them until they pass out of the intestines.

While your body cannot digest soluble fiber, anaerobic gut bacteria can. They turn much of the soluble fiber into short-chain fatty acids, which evidence shows benefit the colon by providing cells with energy, and they may help lower free fatty acids floating in the blood.⁷³ This is likely why legumes like *dal* have been considered good for the digestive tract since antiquity, being held in high-esteem by the Ayurvedic practitioners of ancient India.

Insoluble fiber

Fibers in the following foods are mostly *insoluble*: whole grains and pure bran; nuts and seeds like flaxseed; vegetables like green beans,

^{vii} The presence of soluble fiber is why most fruits have low GIs and GLs despite having lots of glucose.

cauliflower, zucchini, and celery; and the skin of many fruits including plums and tomatoes. Unlike soluble fiber, which dissolves and becomes a sticky substance, *insoluble* fiber does not dissolve in water and thus makes stool bulkier and softer, thus easing its transit from the digestive tract.

Insoluble fiber is also good for heart health. A study of almost 44,000 U.S. men over 6 years found that men who ate 10 grams or more fiber daily from breakfast cereal (where the fiber is mostly *insoluble*) had a 19% lower risk of suffering a heart attack compared with men who did not.⁷⁴

Lower risks of heart attack were also seen among men who ate 10 grams more fiber per day where the fiber came from fruits or vegetables, but the reduction in risk was greater when the fiber came from grain cereal, which is mostly *insoluble*. There is also evidence that *insoluble* fiber, like soluble fiber, reduces the risk of developing diabetes, particularly *insoluble* fiber from whole grain cereal.⁷⁵ This is why experts tell people to eat more whole grains.

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PHYTONUTRIENTS

Phytonutrients are not one of the three components of food, but rather they are naturally occurring compounds found only in plants that interact with cells in your body. There are hundreds to thousands of phytonutrients in the plants we eat, but modern science has illuminated the roles of only a few. Phytonutrients are widely believed to be beneficial for your health.

The first phytonutrients isolated in labs and studied were what we today call vitamins. Their role in human health is clear. Vitamin deficiency leads to debilitating disease like rickets, a bone disorder caused by vitamin D deficiency, and beriberi, a vitamin B1-deficiency disease studied by Dr. McCarrison in colonial India. Beta-carotene, found in orange-colored plants like mangoes, papayas, and carrots, as well as leafy greens like spinach and kale, is a precursor for vitamin A, the deficiency of which causes night blindness.

Another set of phytonutrients are antioxidants, some of which are vitamins that capture and neutralize free radicals and thus prevent other molecules in the body from being oxidized. Antioxidants don't seem to work in isolation (e.g., taking only vitamin E), but do seem to

work when eaten in their natural forms (e.g., in fruits and vegetables that contain vitamin E) to prevent numerous diseases including heart disease and cancers.⁷⁹

Recently described phytonutrients show they may reduce the risk of some chronic diseases. Lycopenes in tomatoes appear to reduce the risk of developing prostate cancer.⁸⁰ Edible plants are full of minerals like potassium and magnesium, which have been shown to control blood pressure and heart rhythms. People for years believed eating lots of fiber would lower their risk of developing colon cancer, but recent better-designed studies with more subjects have shown this isn't so.⁸¹

High daily amounts of fibers alone didn't reduce the risk of colon cancer, but regular consumption of foods where fiber is plentiful, namely a diet with lots of vegetables and fruits, is linked to lower incidences of cancers and other chronic diseases (as I described above). Some researchers believe this effect is likely due to phytonutrients in these foods. A healthy Indian diet, being based on plants and having plenty of phytonutrients, probably offers similar benefits.

PART II

THE HEALTHY

INDIAN DIET

WHAT ARE DIETS

Our bodies are our gardens, to which our wills are gardeners.

– William Shakespeare

PEOPLE’S DIETS ARE FUNDAMENTALLY PATTERNS OF FOODS

In the following pages, I will describe a pattern of foods constituting a regular diet that is both Indian in nature and also healthy. To get the most out of reading this book, *you* must ultimately select foods that you like and fit the profile of the healthy Indian diet. I keep the definition of the healthy Indian diet fairly general. You will not catch me saying, “Eat more red *dal*,” but you will catch me describing why *dals* and other legumes are good for you. Ultimately, I want you to pick and choose what legumes and other foods are to your liking. The only way you will adopt healthy Indian meals over the long term is if you find these meals tasty.

I keep the advice general for another reason. I don’t believe any diet completely prevents disease. No specific set of foods eaten every day is a magic bullet. After all, we haven’t ever been able to fully control our food supply, environment, or the genes we are born with. Our diets, no matter how healthy, can’t make up for all the potential problems, big and small, in our environments and genes. Yet, all things considered, our diets can influence our general state of health and improve our chances, sometimes dramatically, of having a better quality of life well into old age.

The third reason I keep the advice general is to convey the idea that the sum of the parts is better than all the parts in isolation. There are all kinds of synergies in nature, and thus in traditional diets, that science doesn’t fully understand. This synergy is best demonstrated by

pondering these two observations:

- (1) A daily multivitamin does not reduce the risk of chronic diseases, and
- (2) Plant-based diets, which contain the same vitamins but usually in smaller amounts as well as other phytonutrients, are associated with lower risks of heart disease, diabetes, and some cancers.^{82,83}

Some diets have a magic-like effect on the body. The modified Atkins diet, which is a low-carbohydrate, high-fat diet, can help many people lose an incredible amount of weight quickly. The high-natural carbohydrate Ornish diet, when coupled with intense lifestyle changes, can reverse atherosclerosis. My desire is to describe a healthy diet that is different in philosophy to the Atkins and Ornish diets in that the healthy Indian diet can be followed every day, where your body gets all the nutrients it needs, and offers health benefits without making any dramatic changes to your lifestyle (though I do encourage exercise, yoga, meditation, and socializing).



Figure 7: Whole grain pasta, vegetables and wine are parts of the traditional Mediterranean Diet. (Photo used under Creative Commons from roblisamechan.)

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Figure 8: White bread, red meat, and fried potatoes are part of the typical Modern Diet. (Photo used under Creative Commons from Like the Grand Canyon.)

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USEFUL PHILOSOPHIES FOR THE HEALTHY INDIAN DIET

Perfection is the Enemy of the Good

The philosopher Voltaire wrote this line in a poem, “*le mieux est l’ennemi du bien*.” This has come to mean that perfection is the enemy of the good, which is commonly interpreted as meaning “don’t try to be perfect when you start something new.” Trying to be perfect may get in the way of becoming good or competent. Discipline is definitely necessary to make positive changes, but focus your discipline on action and not results. Be aware that when trying to do something, like adopting a healthier diet, you will fail in some ways. No transformation is smooth, so cut yourself some slack.

When adopting elements of the healthy Indian diet, give yourself some leeway to cheat on some days. If you crave something you decided to stop eating, go and have it – but only on occasion. I for one, even years after changing to brown rice, eat white rice occasionally. But as long as you try honestly to eat well most of the time, and actually do so for most meals during the week, be satisfied with that.

Moderation in All Things

After experiencing *nirvana*, the Buddha began preaching a philosophy called *madhyamā-pratīpad* or “the Middle Way.” This approach

advocates moderation in all things. Although the Buddha preached his philosophy as a way of life, speaking on the balance between earthly, sensual pleasures and self-suffering in the search of truth, I believe it can also be applied to your way of eating.

You should not feel like you must completely restrict a certain food, unless you wish to of course. The main point is that too much of something is often bad. Clearly, eating too much of a savory snack like potato chips is bad, but eating too much leafy greens at the exclusion of other foods like fruits or *dals* can also be bad. Eating all foods in moderation provides your body with the broad nutrition it needs for an optimal state of well-being.

A theory called “hormesis” describes the phenomenon where too much of a particular thing is toxic, but a little bit does some good. Alcohol, for example, shows an increased life expectancy in people who drink two to three such beverages daily. More than that amount has been shown to lower life expectancy, but drinking no alcohol at all, interestingly, also lowers life expectancy.

The hormesis effect has been demonstrated with low-level radiation too and may be applicable to food, although nobody knows. Perhaps a couple of scoops of ice cream every couple of nights may provide an immeasurable benefit, whereas too much may do some harm. Anyway, hormesis does illuminate the benefit of things in moderation, including what you eat.

Focus on Changing your Environment, not your Behavior

Changing your environment is easier than changing your behavior. This may explain why most people can’t stick to a new fad diet for long, whether or not they see the results. It simply takes too much willpower to sustain such changes to what are ingrained, automatic habits. Also, some foods, especially sugars, are addictive and give the same dopamine rush as other addictions. Thus, focusing on changing what you *do* “cold turkey” is noble but often misguided.

You will have greater success by changing your environment and then trying to change your behavior in the new context. For example,

move whatever you want to stop eating from the kitchen countertop, where it is in full view, to the pantry and away from plain sight. Likewise, put something you want to eat more of on the countertop. This will help you change your diet because it makes it easier on your willpower to avoid what you know you shouldn't eat and makes it easier to eat or cook more of what you consciously want to.

BASIC PRINCIPLES OF THE HEALTHY INDIAN DIET

1. Base your diet on plant foods like leafy greens and fruits. They are rich in vitamins, minerals, fiber, antioxidants, and anti-inflammatory phytonutrients that help the body keep inflammation and insulin levels normal.
2. Cut out trans fats such as those found in partially or fully hydrogenated oils.
3. Cook using moderate amounts of foods rich in saturated fats like *ghee* and coconut oil.
4. Have legumes like *dal* and protein-dense tree nuts regularly. Combine them with whole grains to get complete proteins.
5. Fill your dishes with spices, especially turmeric, ginger, garlic, and peppers.
6. Remove refined grains like white rice and bread, finely ground flour, and table sugar. They offer the body easily digestible carbohydrates and nearly zero nutrition. This also means do not eat too many starchy foods like white potatoes.
7. Have whole grains like brown rice and coarsely ground grains like millet and sorghum. They offer the body abundant nutrition and fiber.
8. Include fermented foods like yogurts (*dahi* and *curds*) and pickles regularly.
9. Create a daily diet that is varied and, above all else, tasty.

Follow these basic principles, and you will have yourself a healthy Indian diet. You will provide your body with the proper nutrition it

needs, and thus you will improve your chances against becoming obese or developing heart disease, diabetes, and some cancers. You will also feel well, mentally sharper, and outwardly more beautiful, benefiting from whole foods found in nature and the wisdom found in traditional Indian cooking.

FOUNDATIONS OF THE HEALTHY INDIAN DIET

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^{viii} Caldwell B. Esselstyn, Jr.’s son, Rip Esselstyn, wrote a book titled “The Engine 2 Diet” based on similar principles.

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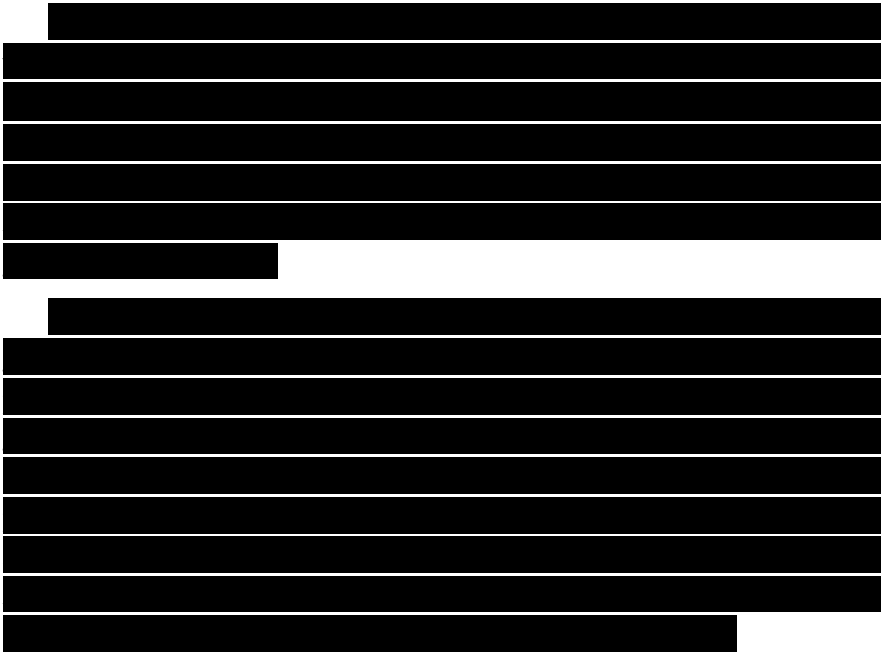
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KINDS OF VEGETABLES AND FRUITS

I briefly describe various plant foods to clarify which vegetables and fruits are the healthiest and ought to be part of a healthy Indian diet. For this section, I owe a great debt to the works of Dr. Willett and Dr. Servan-Schreiber.

Cruciform Vegetables

Cabbage, broccoli, cauliflower, Brussels sprouts, radish, and mustard greens contain an abundance of sulforaphanes and indoles, which prevent cancer cells from becoming tumors, promote the death (apoptosis) of cancer cells, and block the process of blood vessel growth to tumors. You will get more nutrition from these vegetables if you steam or quickly stir-fry them. These cruciform vegetables also

^{ix} Check the Harvard Glycemic Load list to figure out which fruits have a GL greater than 20 and thus should be avoided at the following URL:
www.health.harvard.edu/newsweek/Glycemic_index_and_glycemic_load_for_100_foods.htm.

contain thiocyanates and nitriles, phytonutrients that may protect against some cancers.

Carotenoids-Rich Plants

Carrots, yams, sweet potatoes, squash, pumpkins, tomatoes, beets, apricots, and other vegetables that have a deep orange, red, or yellow hue are dense in carotenoids like beta-carotene (vitamin A). In a study of 22,000 American male doctors, those who ate the most beta-carotene-rich vegetables over a 12-year period had the greatest reduction in the risk of having coronary heart disease.¹⁰⁰ These vegetables also have lutein, phytoene, and canthaxanthin, which stimulate the immune system to attack tumor cells by encouraging Natural Killer cells to become aggressive.

Tomatoes contain lycopene, which appears to inhibit cancer cell growth. To get the most lycopene, tomatoes should be moderately cooked at low heat or by steaming, or mashed into a tomato base or salsa. The consumption of tomatoes reduced the progression of prostate cancer in a study of about 400 men, apparently due to lycopene; the consumption of fish was also shown to reduce progression, but not to the same degree as eating tomatoes.¹⁰¹

Berries, Plums, and Pomegranates

Berries like raspberries, blueberries, blackberries, cranberries, and strawberries (not actually a berry) contain an abundance of polyphenols like ellagic acid, which stimulate the liver to rid the blood of carcinogenic substances and promote self-death (apoptosis) of cancer cells. Berries also contain abundant antioxidants (e.g., vitamin C) which reduce free radicals in the blood, and other phytonutrients shown to reduce TNF alpha and other pro-inflammatory molecules.¹⁰² Plums, peaches, nectarines, apricots and other “stone fruits” have many of the same anti-inflammatory phytochemicals. Phytonutrients in several varieties of peaches and plums decreased the growth of human breast cancer cells in the lab setting.¹⁰³

Pomegranate, a fruit native to India and Iran, has been used in

Ayurvedic medicine for millennia. Abundant in anti-inflammatory and antioxidant phytonutrients, pomegranate juice has shown the ability to slow the progression of prostate cancer. After a phase II clinical trial sponsored by a pomegranate marketer demonstrated this in men drinking 8 ounces of pomegranate juice every day for 2 years, the National Cancer Institute decided to fund a phase III clinical trial to determine whether pomegranate is in fact an anti-cancer food.¹⁰⁴

Citrus Fruits

Oranges, tangerines, lemons, and grapefruit are rich in vitamin C, an antioxidant that appears to reduce the severity and duration of the common cold, and flavinoids, which help detoxify the body of carcinogens. Phytonutrients in the skin of citrus fruits like limonene, coumarin, and tangeritin are also believed to have anti-cancer abilities. Oranges, cultivated in India (*narangah* is Sanskrit for orange and is the root word for orange in Indo-European languages including English), contain yet other phytonutrients like pectin that seem to boost the immune system.

Garlic and other Lily Vegetables

Asparagus, chives, onions, and garlic contain a number of healthy sulfur-containing compounds. Garlic has been a medicinal herb since 3,000 B.C. Garlic paste was put into bandages used by soldiers during the world wars to prevent infections, and it has recently been shown to have anti-cancer properties.

Epidemiological studies show reduced incidences of kidney and prostate cancer among people who eat the most garlic. The sulfur compounds in these vegetables reduce the carcinogenic influence of nitrosamines, found in grilled meat and cigarette smoke, and other cancer-causing toxins. They also promote self-death (apoptosis) of several cancers.



Figure 10: Mango fruit hanging on tree. (Photo used under Creative Commons from Brian Richardson.)

Mango

Mangifera indica has been cultivated in India since antiquity. Indeed, the Tamil word “maangai” became the root word for the fruit all over the world via the Portuguese. The mango is well-loved on the Subcontinent, being the national fruit of India and Pakistan. Seen in the hand of the Hindu god Lord Ganesha, its leaves are used for occasions from housewarmings to weddings, and its tangy yet sweet taste accompanies many a meal.

The pulp is one of the most phytonutrient-dense foods on the planet. It contains antioxidants in the forms of vitamin A, C, and E, several vitamin B’s, carotenoids, and polyphenols. A recently discovered phytochemical named lupeol in mangoes was shown to encourage cancer cells to die, reducing the chance that they would become tumors, in mice grafted with skin cancer.¹⁰⁵ The mango peel contains lutein and beta-carotene, which gives them their beautiful yellow-orange color.

The Potato is Not a Part of a Healthy Diet

Native to the Americas, the potato made it to Europe via the Spaniards in the 1600s. Potatoes came to India via the Portuguese, who settled along the western coast. The potato has been popular in these regions ever since. Historians believe the potato helped ignite the population boom in Europe during the 16th and 17th centuries, and likely so in India. This is because they are calorie-dense, easy-to-digest starches, and easy to grow. During famines, the potato was a health food; it kept people alive.

But in times of plenty, where there is access to other natural foods, potatoes are *not* healthy. While they have fiber and some vitamins, they are rich in starch and thus not good on the whole, behaving like refined grains and sugars inside your body. Potatoes lead to large blood glucose and insulin surges, as their relatively high Glycemic Load tell us, which in turn encourages visceral fat growth, making people fatter. Insulin levels remain conceivably high on a diet based on potatoes, which then leads to insulin resistance, which in turn is connected to chronic diseases. Thus, potatoes are *not* a part of the healthy Indian diet.

FINAL WORD

The healthy Indian diet is mostly made up of plants for two reasons. First, plants are the basis of traditional Indian cooking, which has been abandoned thanks to the modernization of our foods. Second, there is more evidence by the day showing that plant-based diets, whether it be Indian, Mediterranean, or from another part of the world, are the healthiest.

The *National Geographic Magazine* published an essay in 2005 entitled “The Secrets of Long Life.” Journalist Dan Buettner profiled people in Sardinia, Italy, Okinawa, Japan, and Loma Linda, California, claiming they were the healthiest people in the world based on how long they lived and how often without disease well into old age.¹⁰⁶ Buettner then wrote a book called “Blue Zones” and identified a fourth such people in Costa Rica.

I was surprised that an American group, the Loma Lindans, was considered among the healthiest in the world. From everything I had read, Americans seemed to be among the unhealthiest people in the industrialized world from the standpoint of chronic diseases. But what I discovered is that the Loma Lindans, a mostly white community connected by their Seventh-day Adventist faith, have an almost exclusively vegetarian diet.

The Seventh-day Adventists' diet has been thoroughly studied. Findings from that research are summarized by the group's dietetic association.

Since 1954 more than 250 articles have been published in scientific journals on the Seventh-day Adventist lifestyle and health. In the 1960s, Loma Linda University, in cooperation with the National Cancer Institute, began to study the health of SDAs. Later, in the 1970s and 1980s, data on the Seventh-day Adventist lifestyle was collected and analyzed under contract with the National Institutes of Health.

SDAs in general, have 50% less risk of heart disease, certain types of cancers, strokes, and diabetes. More specifically, recent data suggests that vegetarian men under 40 can expect to live more than eight years longer and women more than seven years longer than the general population. SDA vegetarian men live more than three years longer than SDA men who eat meat.

Researchers believe this added length of life and quality of health is due in particular to the consumption of whole grains, fruits and vegetables as well as the avoidance of meat, alcohol, coffee and tobacco.

Current evidence demonstrates that the more closely a person follows the lacto-ovo-vegetarian diet [that is, a diet composed of fruits, vegetables, milk, and eggs] the lower the risks of major diseases.¹⁰⁷

Many months after coming across the *National Geographic* essay, I learned that parts of India may have among the lowest rate of neurodegenerative disease like Alzheimer's dementia in the world.¹⁰⁸ Scientists believe that if this is in fact true, it is likely due to the

presence of turmeric and other spices in what people eat every day.

I often wonder: Had people eating their traditional Indian diets been able to live well into old age, historically speaking, would experts have found a Blue Zone in India? After all, the traditional Indian diet has all the elements of good health, being mostly plant-based.

Bottom Line: The healthy Indian diet is mostly plants. Plants give your body vitamins, minerals, and antioxidants, molecules that are anti-inflammatory, and other phytonutrients. Studies show that people who eat a diet rich in vegetables and fruits live longer, healthier lives.

DALS AND OTHER LEGUMES

The versatile *dal* (lentil) is a staple food in all parts of India. The dry seeds of the *Lens culinaris* plant have fed people in India, Persia, Ethiopia, and even Europe for hundreds of years, and still today, people in these regions eat lentils regularly because they taste good and are, when combined with whole grain foods, among the best sources of protein in the plant kingdom.

Soupy dishes made from *dals* are the perfect comfort food for cold days. They also make the ideal thing to go with wild rice. Try Gujarati *Daar* (page 149), which has a medley of flavors – tangy, sweet, and sour. Then there is *sambar* (page 147), which is commonly eaten in South India with *idli* and *dosa* and packs a lot of heat. You will find more legume-based recipes in Part III.



Figure 11: Lentil soup (dal). (Photo used under Creative Commons from little blue hen.)

Benefits of Legumes

Dals (lentils) are but one member of the legume family. Other legumes include various beans, peas, soybeans, chickpeas, and peanuts. What's good about legumes? First, they are protein-rich, which is important for basic sustenance and to help satisfy hunger (and thus prevent eating too much food, especially bad carbohydrates). Legumes not only provide protein, they provide fiber and nutrients.

In fact, legumes are rich in fiber. Fiber, as you recall, prevents large glucose and insulin spikes in the blood. This is why they are said to help people control their blood sugar.

Also thanks to fiber, legumes help people better control their cholesterol levels. On a related note, a diet high in soluble fiber (like a diet with lentils) is associated with a lower risk of heart disease. In a study of about 10,000 American adults, those eating at least 21 grams of fiber per day had a 10% lower risk of coronary and other cardiovascular disease compared with those who ate 5 or less grams of fiber.¹⁰⁹ As a reference, a half-cup (or 4 ounces) of lentils have about 6 grams of fiber.¹¹⁰

Other plentiful nutrients in legumes may explain their beneficial effects on the heart. According to the non-profit George Mateljan Foundation, there are significant amounts of folate and magnesium in legumes. Folate reduces homocysteine in the blood, a molecule believed to damages arteries and promote coronary disease. Magnesium is called “Nature’s calcium channel blocker,” being able to treat high blood pressure and prevent deaths from heart attacks. This is because magnesium opens up arteries, inhibits clot formation, and prevents arrhythmias.¹¹¹

Indians have been eating a variety of lentils for generations. They include *toor dal*, the foundation of the hot South Indian *sambar*; yellow split peas; *chana dal*, *kala chana*, which is named “*desi* chickpeas” in some parts of North America; red lentils, known as *masoor dal*, *rajma* or kidney beans; and the versatile *urad dal*, used to make *dal makhani* in Punjab, *pitha* in East India, and *idli* and *dosa* in the south.¹¹²

Lentils aren’t the only legumes in the healthy Indian diet. There are *chana* (chickpeas or garbanzo beans), for example, which are used to make a popular dish in North India called *chana masala* (as well as Mediterranean fare like falafel and hummus). Chickpeas contain molybdenum, a compound that detoxifies sulfites and are used as preservatives in many foods.

Like other legumes such as green peas, lima beans, pinto beans, and soybeans, chickpeas reduce LDL-cholesterol levels.¹¹³ They also have a significant amount of iron and manganese, which is believed to help cells fight free radicals.¹¹⁴ Clearly, *dals* and legumes are the healthiest source of proteins in the healthy Indian diet.

Bottom Line: Legumes are the main source of proteins in the healthy Indian diet. They have fiber and other nutrients that protect the heart and help control blood sugar.

SPICES

Spices – specific kinds and the extent to which they are used – make Indian culinary traditions stand apart from the other great culinary

traditions of the word. India was known throughout antiquity as the land of spices, and it still is. Merchants from the Middle East and Africa sailed to the Malabar Coast for spices with the monsoon winds, and Marco Polo sought a quicker, safer route to India's spices as the demand increased in Europe.



Figure 12: Masala dabi (spice collection). (Photo used under Creative Commons from madpai.)

Indians use spices in cooking for more than just taste. They are also seen as being medicinal. Ayurvedic practices coalescing around 1500 B.C. influenced the use of spices in everyday food. In the following pages, I will describe the Indian spices that have the most scientific support for playing a role in preventing inflammation and fighting chronic disease.

Spices are what give Indian dishes their distinctive flavors. Some

you may be familiar with, like cinnamon with its spicy and sweet aroma. Ginger and garlic aren't technically spices but are used to spice up dishes. Turmeric is uniquely Indian, and though it is bitter, people add a dash of this for its deep yellow-orange color and medicinal qualities. It is useful to think of spices as mixes and not as individual ingredients because that is how they are used in Indian cooking. Plus, there is synergy among the individual spices found in curry powder (page 182) and *garam masala* (page 180) that give them their remarkable influence on health.

Turmeric

Turmeric (*haldi* in Hindi), historically called “Indian saffron” outside the Subcontinent because of its deep yellow-orange color, is an essential part of healthy Indian diets. This is because of its bioactive compound, one that gives turmeric its characteristic color and powerful anti-inflammatory power: curcumin.

The turmeric plant (*Curcuma longa*) is in the ginger or *Zingiberaceae* family and native to tropical South India. The rhizomes (i.e., roots) are cultivated, boiled, dried, and finally ground to make the powder, which has a slightly peppery, bitter taste and mustard-like scent. It is also used for medicinal purposes based on Ayurvedic tradition.

Dr. Bharat Aggarwal, an M. D. Anderson Cancer Center researcher, has elucidated much of what is known about curcumin's ability to fight cancer. According to his website, curcumin is only ½ of a gram for every 25 grams of turmeric powder.¹¹⁵ Outside of food, Dr. Aggarwal believes purified curcumin may be helpful if given concurrently with chemotherapy and radiotherapy in certain cancer patients because of its anti-inflammatory abilities and lack of side effects.

Several studies show that curcumin seems to shrink tumors in animals. A 2010 study from UCLA demonstrated that the growth of head-and-neck tumors grafted on mice was better suppressed in mice treated with both curcumin and conventional chemotherapy compared with mice treated with chemotherapy alone.¹¹⁶ Dr. Aggarwal's team

showed that 500 mg/kg of curcumin suppressed the actions of NF-kappa B, which promotes cancer cells to live forever and grow, to such extent that tumors from various cancers grafted onto mice actually shrunk.¹¹⁷ That curcumin seems to suppress the actions of NF-kappa B may explain why it seems to prevent and treat cancer in mice.

A 1997 New England Journal of Medicine review recognized that NF-kappa B was the central transcription factor for the development of diseases caused by inflammation.¹¹⁸ In 2007, a review in Clinical Oncology recognized the central role that NF-kappa B plays in the formation of cancer in humans.¹¹⁹

This evidence suggests that by inhibiting NF-kappa B, turmeric powder may prevent the formation of cancer when it is simply a few isolated cancer cells and before they coalesce into a tumor. Some health experts also believe that turmeric powder helps prevent Alzheimer's disease, although this association is based on the observation that people in rural India have low rates of neurodegenerative disease, which has not been more extensively studied.¹²⁰

That said, Alzheimer's disease is beginning to be seen as an inflammatory disease. One body of evidence has shown that the regular use of NSAIDs like aspirin, which reduce general inflammation, are associated with lower rates of Alzheimer's disease.¹²¹ Like NSAIDs, curcumin is believed to lower inflammation by reducing leukotrienes, prostaglandins, and thromboxanes levels. A 2005 review cited studies that showed curcumin was associated with lower levels of molecular oxidation by free radicals (i.e., it behaved as an antioxidant) and beta-amyloid, the protein most intimately linked to Alzheimer's disease.¹²²

Moving on, curcumin seems to improve cholesterol in the blood. In one study, 500 mg of curcumin was given to 10 healthy people daily for 7 days. HDL-cholesterol increased by about 30%, while total cholesterol decreased by about 10% – a good outcome.¹²³ Furthermore, the amount of oxidized fat molecules in the blood fell

after the 7 days on curcumin by about 30% – also a good thing. I don't want to draw strong conclusions from this one small study, but considering the central role that inflammation plays in atherosclerosis, turmeric powder can likely protect the heart from coronary disease.

Black Peppercorn

Most people have black pepper after the dried peppercorn fruit of the *Piper nigrum* plant is crushed. Black pepper is known in Ayurvedic tradition to improve digestion. As evidence, peppercorn's bioactive compound piperine improved the absorption of curcumin in people's blood by 2,000% (though this was purified piperine in a high-dose pill, not peppercorn).¹²⁴ Piperine has seems to reduce pain at a molecular level.¹²⁵

Bottom Line: The critical spice in the healthy Indian diet is turmeric powder, which contains curcumin, an anti-inflammatory antioxidant. To improve the absorption of curcumin, add ground black peppercorn.

Garlic

People have been eating garlic cloves and using them for medicinal purposes for hundreds of years. Most studies on garlic have been carried out on extract or powder from the cloves. A 2006 *Journal of Nutrition* review shows that garlic extract and powder seem to reduce total cholesterol in people with high levels, lower blood pressure, and decrease platelet aggregation, which could help prevent the kind of clot that causes both heart attacks and strokes.¹²⁶ In the lab setting, garlic has been shown to reduce inflammation.

Ginger

The rhizome (i.e., root) of the *Zingiber officinale* plant seems to reduce inflammation in some studies, which may explain why it is used traditionally for joint pain. In about 250 people with osteoarthritis of the knee, the subjects taking ginger extract had better pain relief compared with those who took a placebo.¹²⁷ Ginger extract reduces the production of prostaglandins and TNF-alpha, both pro-

inflammation molecules, and thus behaves like ibuprofen and similar NSAIDs.¹²⁸ Ginger also demonstrated the ability to reduce the formation of new cancer cells in mice grafted with skin cancer.

Red Chili Pepper

The most popular red chili pepper is the cayenne pepper, which is especially high in the antioxidant vitamin A. (The *Capsicum* plants are not related to the plants that produce peppercorn, from which black pepper is made.) The bioactive molecule capsaicin seems to reduce pain at a molecular level. In fact, a relatively new medication for osteoarthritic joints and painful inflammatory skin disease like psoriasis is a topical cream of capsaicin. In addition to having anti-inflammatory qualities, eating red chili pepper may reduce your risk of heart disease.

Oxidation of lipoproteins (i.e., LDL) in 27 patients eating a cayenne pepper blend daily for 4 weeks was lower compared with a matched group on a similar diet but without the pepper.¹²⁹ Many heart experts claim that oxidized lipoproteins are the trigger for clinically significant coronary disease. Capsaicin seems to also inhibit the activation of NF-kappa B, the cancer promoting inflammatory molecule, in mice grafted with prostate cancer. The authors postulated that capsaicin may also slow the progression of prostate cancer disease in men.¹³⁰

Cinnamon

Cinnamon powder, acquired from the bark of the *Cinnamomum* tree, appears helpful in diabetics. Ground cinnamon, once digested, seems to help cells get the insulin signal, which they were otherwise ignoring. A 2003 study showed that people with diabetes who had 1 gram of ground cinnamon (in a capsule) for 40 straight days had substantially lower fasting blood sugar, LDL-cholesterol, and triglyceride levels 20 days afterwards when compared with a matched group of diabetics who had a placebo capsule.¹³¹

However, not all studies showed this effect. Two studies using the same amount of ground cinnamon, one of type 1 diabetic teenagers

(type 1 is not associated with obesity) and the other of postmenopausal type 2 diabetic women, did not show better or worse effects on blood glucose or lipids.^{132,133} Nonetheless, there is evidence that in some diabetics, ground cinnamon improves their blood glucose, cholesterol, and triglycerides, and without side effects.

Other Spices and Synergy

The spices I have described above are ones where the scientific evidence is somewhat compelling. But they aren't the only spices in the healthy Indian diet. Coriander seeds (*dhania*), like the leaves, contain antioxidants, but their effects have not been studied in people. They do lower blood glucose, cholesterol, and triglyceride levels in animals, and have historically been used for diabetes treatment in India.^{134,135} Cumin (*jeera*) promotes proper digestion according to the Ayurvedic tradition, and eating cumin did increase digestive enzymes levels in a limited study.¹³⁶ It was also shown to lower the ability of platelets to form clots.¹³⁷

There isn't as much evidence to support the health claims of other spices in Indian diets, like cardamom (*elaichi*), mustard seeds (*rai*) and asafetida (*heeng*), but that doesn't mean you should avoid them. In general, spices contain antioxidant and anti-inflammatory abilities as well as minerals and vitamins, much of which modern science has yet to study. More important is that a particular spice is likely able to provide you more benefit when other spices are present.

This potential synergy is little studied by scientists today. After all, there isn't much money to be made by studying spices, as they are food commodities that most people will use for taste regardless of what the science says. But recall the evidence showing how more curcumin (in turmeric) is absorbed in people's blood when piperine (in black peppercorn) was also present in the digestive tract. Hopefully, these studies will be done more often, allowing us to see the bigger picture. Until then, what we have to go by mostly in terms of using a variety of spices together for the maximal benefit is the recognition by Ayurvedic traditions, honed by experiments over millennia, that there were synergies between spices.

Curry Powder and Garam Masala

Here I describe two general combinations of Indian spices influenced by the Ayurvedic tradition of mixing individual components that had synergistic relationships so that the whole is greater than the sum of the parts.

Curry powder, a Western concoction, is a common combination for South Indian dishes today. (The word curry comes from the Tamil word *kari*.) Most commercial curry powders contain coriander, turmeric, cumin, fenugreek, and dried ginger. The manufacturer, or you if you make your own curry powder, may add dried garlic, asafoetida, fennel seed, caraway, cinnamon, clove, mustard seed, green cardamom, black cardamom, mace, nutmeg, long pepper, black pepper, and red chili pepper.

Garam masala is more commonly used in North Indian dishes. In general, *garam masala* (meaning hot spices in Hindi) contain ground cinnamon, cloves, cardamom, nutmeg, and black peppercorn. Similar to curry powder, the spices I listed above or others can be added to suit your taste.

Bottom Line: Spices of all kinds are an essential component of the healthy Indian diet. There is synergy between spices that makes the whole greater than the sum of its parts, so use them in traditional mixes.

DAHI AND OTHER FERMENTED DAIRIES

Dahi (yogurts), *raita*, *lassi*, curds, butter and *ghee* have always been commonly eaten in India. This may be why Hindus have held cows in high esteem, having relied on them for basic sustenance since ancient times. And their beneficial effects on the body are likely why these fermented dairies are an essential component of the healthy Indian diet.

Dahi is a versatile accompaniment to many dishes in all corners of India because it is easy to make (you only need milk and a little bit of “starter *dahi*,” check out page 168) and cools off the intense heat generated when you ingest spices. It is also the foundation for the

refreshingly cool, creamy Punjabi drink popular at Indian restaurants, *lassi* (page 172). You can discover more recipes for fermented dairies in Part III.



Figure 13: Lassi made from *dahi* (yogurt). (Photo used under Creative Commons from Joey)

Lower Colon Cancer Risk

Your intestines contain hundreds of bacteria, some good and some bad. Diarrhea and bleeding are often the result of bad bacteria taking over the colon, but good bacteria like *Lactobacillus acidophilus*, when they become dominant, ease bowel movements and thereby reduce the time your body is exposed to carcinogenic substances. These bacteria, along with *Lactococcus* species, are common in Indian dairies like *dahi*.¹³⁸

Some dairies seem to prevent colon cancer. A 2001 *American Journal of Clinical Nutrition* review stated that bacteria found in probiotics like *dahi* limited the development of cancerous cells in the colon.¹³⁹ In a study of almost 61,000 Swedish women, those who ate high-fat dairy products, which included whole milk, cultured milk, cheese, cream, sour cream, and butter, at least 4 times daily had a 41% lower risk of developing colon cancer than those who did not.¹⁴⁰

The authors believed that conjugated linoleic acid (CLA), a fatty acid in dairy products, was responsible for this reduced risk. Dairies'

impact on the immune system may also inhibit colon cancer. In women at least, eating a lot of fermented dairies made certain immune cells, T and Natural Killer cells, more aggressive against abnormal (e.g., cancer) cells.^{141,142}

Reduction of Visceral Body Fat and Insulin Resistance

Fermented dairies are high in proteins and calcium. Calcium is important for keeping bones strong and for keeping muscles, including the heart, functioning normally. Proper calcium levels in the blood may also help with weight loss.

Dr. Michael Zimmel, a University of Tennessee researcher, has found that eating foods rich in calcium like *dahi* helps the body lose excess body fat. In one of his studies, weight loss in 16 patients on 400-500 mg of daily calcium was compared with 18 patients on 1,100 mg of daily calcium from being on a yogurt diet. Both groups adhered to the same exercise and calorie regimen.

After 12 weeks, the higher-calcium group lost more abdominal fat (i.e., visceral fat).¹⁴³ The authors said that “isocaloric substitution of yogurt for other foods significantly augments fat loss and reduces central adiposity during energy restriction.” Observational studies found an association between high consumption of dairies and lower visceral body fat in different people.^{144,145}

This may explain why higher-calcium diets prevent overweight people from developing insulin resistance (which often leads to diabetes and heart disease). In one such demonstration among 3,100 young American adults, those who were overweight and said they ate at least 35 servings of dairies each week (foods made of some milk, like sour cream dip, counted as a dairy in this study) had a 72% lower risk of developing signs of insulin resistance compared with those who were overweight and ate less than 10 servings of dairies per week.¹⁴⁶

Experts believe that as calcium enters fat cells, it induces the release of free fatty acids and triglycerides into the blood. The body's other cells use these fat molecules for fuel. Meanwhile, visceral fat tissue stops growing or even shrinks.¹⁴⁷ This is the likely explanation

why eating fermented dairies like *dahi* seems to help with weight loss.

Bottom Line: Fermented dairies like *dahi*, *raita*, and *lassi* are a part of the healthy Indian diet. They help the colon stay healthy, introduce good bacteria into the body, and seem to help people lose excess body fat.

PICKLES AND CHUTNEYS

Indians love *achar* (a variety of pickled plant foods in Hindi) and other pickled foods. The tradition of pickling plant foods has been around since ancient times, when it was the only reliable way to preserve foods. Like fermented dairies and *kimchi*, a fermented cabbage dish from Korea, Indian pickles are made by anaerobic bacteria.

They are mostly made by letting fruit or vegetables ferment in a bottle of vinegar. Sometimes, oils, spices, and salt are added. Indian pickles are typically made from mango, lime, Indian gooseberry, bitter melon, chili pepper, turmeric root, ginger, and garlic. Chutneys are a popular form of pickled products (although some chutneys are pastes rather than pickles) that add a tangy flavor to dishes.

Lactobacillus is the dominant bacteria in pickles. They make lactic acid during fermentation, giving pickles a sour taste to balance the natural sweetness of the fruit. In the colon, *Lactobacillus* helps keep bacteria that promote inflammation at bay. The more fermented foods you eat, the more likely it is that the good anaerobic bacteria will become the dominant bacteria in your colon. They benefit the body by reducing the effects of bad bacteria and by producing vitamins and short-chain fatty acids.

You will find Indian pickles and chutneys taste nothing like what you might consider to be a pickle (e.g., pickled cucumber). They range from a fresh and light dipping sauce (see coriander *chutney* on page 174) to a thick, sweet-and-sour dressing with some crunch (see mango pickle on page 178).

Bottom Line: Pickles and chutneys made by fermenting are a regular condiment in the healthy Indian diet.

BROWN RICE AND WHOLE GRAINS

Rice and leavened grains like *naans* are commonly eaten all over India. Traditionally, mostly whole grain foods were eaten, but since the food supply was modernized beginning in the early 1900s, refined grain products have become more abundant in India like white rice, a refined product of brown rice, and finely-ground grains like *maida* (all-purpose flour or plain flour).

However, if you go back to eating grains the way they were traditionally eaten, you will find they taste more like the earth from which they came. Brown rice, for example, is nuttier and chewier than white rice, which has a simpler starchy flavor. No matter what is mixed into a *paratha*, the soft heartiness of the *atta* (whole wheat flour) dominates its taste. (Find recipes for spinach and *methi paratha* on page 164.) Heart-healthy oats add a nuttiness to *dosa*, a crepe-like food popular in the south (see the recipe on page 156).



Figure 14: Wild rice grains.
(Photo used under Creative Commons from International Rice Research Institute Images.)

White and Brown Rice

Rice is a staple in India. The grains of the *Oryza sativa* plant is what we call rice. In nature, rice grains are brown in color and made of two parts, the kernel and the endosperm. The kernel is itself made of two parts, the germ and the bran. Most vitamins, minerals and fatty acids are in the germ. Meanwhile, the bran, which is the outer part of the kernel, contains

most of the fiber, therefore, most of the nutrition is in the kernel.

Brown rice is *lightly* milled rice that contains most of the kernels. White rice on the other hand is the end product after *heavy* milling, leaving barely any kernels (germ and bran). What's left is the endosperm, which is mostly starch. And white rice has become very common, along with other refined grains, in modern diets.

The George Mateljan Foundation claims that “complete milling and polishing that converts brown rice into white rice destroys [at least 67% of the B vitamins, including thiamine, found in brown rice], half of the manganese, half of the phosphorus, 60% of the iron, and all of the dietary fiber and essential fatty acids.” Therefore, white rice is nutritiously poor.

White rice is also dense in bad carbohydrates that create problems for the glucose/insulin feedback system. The starchy endosperm has a longer shelf life without the kernel, and thus manufacturers and grocery stores prefer to market white rice because of this extended shelf life. People everywhere also prefer white rice as it takes less time to cook and tastes better to modern palettes.

However, brown rice, being a whole grain food, has much more nutritional value and fiber, which helps keep glucose and insulin levels stable, than white rice. The science increasingly shows that brown rice is good for you and that white rice is bad. The best evidence comes from a 2010 study looking at more than 197,000 people.

Two important associations emerged. First, people who ate 5 or more servings of white rice each week increased their risk of developing type 2 diabetes by 17% compared with people who ate no rice.¹⁴⁸ Second, people who ate a serving of brown rice at least 2 times each week *reduced* their risk of developing type 2 diabetes by 11% compared with people who ate no rice. This is worth repeating: the regular consumption of white rice increased people's risk of developing diabetes, while the regular consumption of brown rice actually decreased that risk.

Whole Grains

Brown rice is just one part of the whole grains story, all of which contain the nutrient-rich germ, fiber-rich bran, and starch-rich endosperm. In contrast, refined grains are made of mostly one of those things, the starch-rich endosperm. This is why I wrote earlier that refined grains are not only nutrition poor, but they are harmful. The science is clear that eating whole grains in general (e.g., wild rice, oats, corn, barley, whole wheat and grain breads, whole wheat pasta, millet, and quinoa) is good for you.

A 2007 review found that eating 2 servings of whole grains every day substantially reduced the risk of developing type 2 diabetes (similar to what was seen in another review where people ate brown rice).¹⁴⁹ This finding coincides with our understanding that whole grains, largely because of their fiber, don't cause large surges in blood glucose and insulin levels compared with refined grains. Furthermore, the regular consumption of whole grains is heart healthy. Below is a quote from the American Heart Association's premier journal.

Dietary patterns that are high in whole-grain products and fiber have been associated with increased diet quality and decreased risk of [heart disease]. Soluble or viscous fibers (notably β -glucan and pectin) modestly reduce LDL cholesterol levels beyond those achieved by a diet low in saturated and trans fatty acids and cholesterol alone. Insoluble fiber has been associated with decreased [heart disease] risk and slower progression of [heart disease] in high-risk individuals. Dietary fiber may promote satiety by slowing gastric emptying, leading to an overall decrease in calorie intake. Soluble fiber may increase short-chain fatty acid synthesis, thereby reducing endogenous cholesterol production. The AHA recommends that at least half of grain intake come from whole grains.¹⁵⁰

In addition to helping people prevent heart disease and diabetes, whole grains help people control their weight. A study following about 27,000 middle-aged and elderly men showed that the men in general gained weight over an eight-year period, but those consuming lots of whole grains saw a smaller gain in weight.¹⁵¹ The men who added bran (the fiber-rich component of grains) to their diets saw an even smaller

gain in weight. (Incidentally, men eating fiber-rich cereal and fruit also had lower weight gain.)

A study of about 292,000 men and 198,000 middle-aged and elderly women followed over 10 years showed that regular consumption of whole grains was associated with a modest reduction in the risk of colon cancer.¹⁵² As I explained earlier, fiber doesn't seem to reduce the risk of colon cancer, so perhaps vitamins, minerals or other phytonutrients in the germ and bran explain this finding. These studies show that whole grains help people lower the risk of diabetes, coronary heart disease, and colon cancer, as well as insulin resistance and bad cholesterol levels.

Traditionally speaking, Indians ate coarsely ground grains like *atta* (stone-ground wheat), brown rice, barley, rye, maize, millet, and sorghum.¹⁵³ But Indians in modern times eat more *maida* (finely ground refined wheat), white rice, and other finely ground grains. The healthy Indian diet harks back to an era before food was heavily refined.

If you want to use whole grain flours, look for flours with the word “meal,” as in oatmeal or cornmeal.^x If you like how the refined stuff tastes when you bake something but want to eat healthier, mix some coarser-grain meal into the flour.

Bottom Line: Whole grains help reduce the risk of diabetes, heart disease, and colon cancer, and are thus a part of the healthy Indian diet. White rice increases your risk of diabetes, and switching to brown rice would greatly benefit your health. When looking for whole grain flours for baking, find coarsely ground or stone-milled grains that are called “wholemeal.”

^x In the U.S., the FDA doesn't allow terms like “whole wheat,” “whole grain” or “wholemeal” unless the product is truly whole grain or stone-ground, thus containing lots of germ and bran. However, a product can be labeled as such if greater than 50% of its contents are whole grain by weight.

COOKING OILS AND GHEE

People use cooking oils from plant sources and other fatty foods like *ghee* or butter for cooking and dressing foods. These foods are the main source of dietary fats in your diet. In this section, I write about how to use them properly, as in which ones to cook with and which ones to dress foods with, in the healthy Indian diet.

Ghee

Ghee (clarified butter) is popular in India for cooking and even religious ceremonies. It is made by melting butter over low heat until most of the water has evaporated, leaving a protein-rich layer at the bottom and a fat-rich layer, the *ghee*, on top. While *ghee* is full of saturated fats, eating it in moderation will not significantly increase your risk of coronary heart disease according to the latest science.

For example, a 2005 study in young, healthy people was done to see how *ghee* affected cholesterol levels. Thirty subjects got 10% of their daily calories from *ghee*, while 33 subjects on a similar diet ate no *ghee* at all. After 8 weeks, the cholesterol levels between the groups were not significantly different, suggesting that *ghee* in moderation doesn't worsen cholesterol.¹⁵⁴

Some fats in *ghee* are good. A quarter are medium and short-chain saturated fats, which benefit the body. But *ghee* is also rich in long-chain saturated fats, many of which are bad. Thus, *ghee* should be used moderately. According to the George Mateljan Foundation, which cited the 2005 study, eating 20 grams (i.e., 2 tablespoons) of *ghee* a day should not affect your cholesterol levels.¹⁵⁵

That amount is ideal for use in cooking. Because *ghee* has a relatively high smoke-point temperature (about 485°F, whereas most cooking occurs around 400°F), it is unlikely to get unstable and release free radicals into your food like many vegetable oils might. *Ghee* can also be used to dress food, as people like to do on their *roti* and *biryani*, but again, do so in moderation.

Coconut Oil

Coconut oil is historically used in South Indian cooking. Being largely medium-chain saturated fats (i.e., MCT or MCFA in the literature), coconut oil tends not to break down and make free radicals in typical cooking heat (around 400°F), unlike many vegetable oils. The saturated fats in coconut oil are used to make hospital baby formulas and sports drinks today because they are used quickly for fuel and not stored; coconut oil has been used in these products in the past.^{156,157}

Nutrition experts like Dr. Andrew Weil may not endorse recent claims about coconut products (e.g., coconut milk is the healthiest beverage), but he admits to cooking with coconut oil as it tastes good and is unlikely to promote disease.¹⁵⁸ A 1981 study of Tokelau Islanders near New Zealand showed that coconut oil may actually protect the health of your heart. In islanders who moved to New Zealand and adopted a Modern diet, about 40% of their daily calories came from fats. In contrast, islanders who stayed on the islands and ate their traditional diet got about 60% of their daily calories from fats, and most of that from coconut oil. The study found that the islanders who ate more dietary fats and much more coconut oil had *better* cholesterol levels.¹⁵⁹ Dr. Ian Prior led the Tokelau Island study and wrote, “Vascular disease is uncommon in both populations and there is no evidence of the high saturated fat intake [from coconut oil has] a harmful effect...”¹⁶⁰

Supporting his claim, evidence shows that lauric acid, the most common fat in coconut oil, increases HDL-C levels more than it increases LDL-C levels – a good outcome.¹⁶¹ Dr. George Blackburn, a Harvard physician, was quoted at a 1988 U.S. Congressional hearing as saying, “Coconut oil has a neutral effect on blood cholesterol, even in situations where coconut oil is the sole source of fat.”¹⁶² Based on newer science, using coconut oil every day in moderate amounts is not likely to increase your risk of developing coronary heart disease.

Canola Oil

Canola oil is used in the developed world for cooking. It comes from a strain of the rape plant that contains little erucic acid, a potentially harmful fat. But there is no compelling evidence that canola oil is in fact harmful. With a smoking point temperature above 450°F, it tends not to break down and produce free radicals from cooking heat. Furthermore, canola oil is high in monounsaturated fats, including omega-3 fatty acids.

Said University of Pittsburgh professor Dr. Robert L. Wolke, “[Canola oil] is valued for its fatty acid profile, which is 59 percent monounsaturated, 30 percent polyunsaturated and 7 percent saturated. This compares favorably with Health Champ olive oil’s profile: 74 percent monounsaturated, 8 percent polyunsaturated and 14 percent saturated.”¹⁶³ Because of its good fat profile and high smoke-point temperature, canola oil is ideal for cooking.



Figure 15: Bottle of olive oil.
(Photo used under Creative Commons from Smabs Sputzer.)

Olive Oil

The Mediterranean diet is based on extra-virgin olive oil. Olive oil is good because it is low in saturated fat and high in monounsaturated fat, which makes up 75% of the fats in the oil. A study of about 850 Greeks with and about 1,000 Greeks without heart disease found that the exclusive use of olive oil decreased the risk of suffering a heart

attack by about 50%.¹⁶⁴

Eating olive oil likely reduces the risk of hypertension. A 2004 Greek study of 20,000 people without high blood pressure found that olive oil alone was responsible for keeping their blood pressures normal.¹⁶⁵

However, olive oil should be had in food as a dressing for you to get its health benefits. People mistakenly use olive oil for cooking. At 350°F to 400°F, most commercially available olive oils have relatively low smoke-point temperatures. This means that many olive oils will break down under cooking heat (which is around 400°F), thus releasing free radicals. Furthermore, the excessive heat will destroy most phytonutrients like phenols and antioxidants that are believed to give extra-virgin olive oil its power.

Other Vegetable Oils

Many vegetable oils are used for cooking. Mustard oil, which has a sinus-irritating aroma, is popular in Bengal and other parts of East India. Some commercially available mustard oil has other vegetable oils like safflower oil blended in. Mustard oil was once considered bad based on rat studies without accounting for the fact that rats lack enzymes to break down mustard oil, unlike people. Mustard oil has been proven safe in people.¹⁶⁶

Researchers at Harvard, All India Institute of Medical Science (AIIMS) in New Delhi, and St. John's Medical College in Bangalore looked at 350 people with and 700 people without coronary heart disease and found that people using mustard oil for cooking had a lower risk of coronary heart disease than those using sunflower oil.¹⁶⁷ A reasonable conclusion is that mustard oil was better for heart health than sunflower oil because of its higher monounsaturated fat level.

Corn oil is a popular cooking oil among Indian people living in the U.S. Commercially available refined corn oil has a smoke-point temperature of 450°F, which makes it suitable for cooking. Lately, corn oil has been deemed bad because of its high omega-6 fatty acid levels relative to omega-3 fatty acid, which some researchers believe

promotes inflammation. But the AHA’s science advisory panel found that a *small* amount of omega-6 fatty acid-rich oils like corn oil can actually lower the risk of coronary heart disease.¹⁶⁸ This finding underscores the importance in terms of health of eating small amounts (i.e., a few tablespoons at most) of oils.

(Partially) Hydrogenated Oils – The Worst Food

Partially hydrogenated oils are made after hydrogen atoms are added in the factory setting to the carbon backbone of an oil molecule. This refining process creates *trans* double bonds, which make oils solid at room temperature and give them longer shelf lives. Trans fats have thus become the favored kind of fat by the food and restaurant industries. But as you likely know, trans fats are probably the worst food for you. They lead to a greater risk of coronary heart disease than any other food.¹⁶⁹ The science here is not controversial, unlike with saturated fats. Whereas some experts tell us a moderate amount of saturated fats will do no harm, and others advocate no saturated fats, no expert I have come across says we should ever put trans fats into our bodies.

Harvard researchers looking at the diets of 240 patients who had suffered a heart attack wrote, “[Our] data support the hypothesis that intake of partially hydrogenated vegetable oils may contribute to the risk of myocardial infarction.”¹⁷⁰ So if you have a bottle of oil at home labeled with the word “hydrogenated” or “partially hydrogenated,” you shouldn’t use it anymore if you can help it.

Bottom Line: Coconut oil and *ghee* are part of the healthy Indian diet in moderation (about 2 tablespoons per day). They are also ideal for cooking, as is canola oil. Olive oil should be used to dress food, not for cooking, to get its full benefits.

TREE NUTS

Disclaimer: If you are or believe you may be allergic to nuts, avoid nuts altogether. Speak with your physician if you have concerns about a nut allergy.

Nuts are heart healthy. While nuts are eaten uncooked as a dry

snack, there is one dish I want to highlight where a nut is broken into small pieces and actually cooked with other ingredients: *Shahi paneer*, a curried dish made of a rich and creamy cashew-based sauce (see page 126).



Figure 16: Pistachios. (Photo used under Creative Commons from Casey Fleaser.)

Nuts are Heart-Healthy

What food increases HDL-cholesterol (i.e., the good one) while lowering LDL-cholesterol? The answer is tree nuts. In a review of almost 600 people, some with high cholesterol not taking anti-cholesterol medication, eating almost 80 grams of nuts led to a significant drop in LDL and total cholesterol levels along with an increase in HDL-cholesterol – all of which is good.¹⁷¹ The reduction in LDL-cholesterol was more pronounced in those who had bad cholesterol levels to begin with.

Eating tree nuts not only improves cholesterol levels, it actually reduces the risk of coronary heart disease. Recall the Seventh-day Adventists I mentioned when discussing a plant-based diet. A study of 31,200 Adventists who ate nuts at least 4 times a week showed an

almost 50% decrease in the risk of fatal heart attacks compared with those who ate nuts less than once per week.¹⁷² This conclusion has also been reached in larger studies.

A study of 86,000 women showed that frequent consumption of nuts (5 ounces per week) decreased the risk of both fatal and non-fatal heart attacks by 35%.¹⁷³ The authors of a 2008 *Journal of Nutrition* review on nuts and heart health concluded that there must be more to the story than just good fats.

Thus, in addition to a favorable fatty acid profile, nuts and peanuts contain other bioactive compounds that explain their multiple cardiovascular benefits. Other macronutrients include plant protein and fiber; micronutrients including potassium, calcium, magnesium, and tocopherols; and phytochemicals such as phytosterols, phenolic compounds, resveratrol, and arginine. Nuts and peanuts are food sources that are a composite of numerous cardioprotective nutrients and if routinely incorporated in a healthy diet, population risk of CHD would therefore be expected to decrease markedly.¹⁷⁴

Phytonutrients in nuts probably act as antioxidants that reduce inflammation, just as they do in other plant foods. And reducing inflammation translates to a lower risk of a plaque formation in the coronary arteries.

Omega-3 fatty acid is a particularly good fat in nuts which reduces inflammation, and it is believed to relieve some autoimmune diseases and improve heart health.^{175,176,177} The best nuts for omega-3 fatty acids are walnuts.¹⁷⁸ Nonetheless, plenty of nuts have omega-3 fatty acids and other helpful nutrients, not to mention proteins that the body needs.

Bottom Line: Tree nuts are a perfect snack in a healthy Indian diet. They help lower your risk of developing heart disease.

MODERN ELEMENTS THAT DON'T BELONG

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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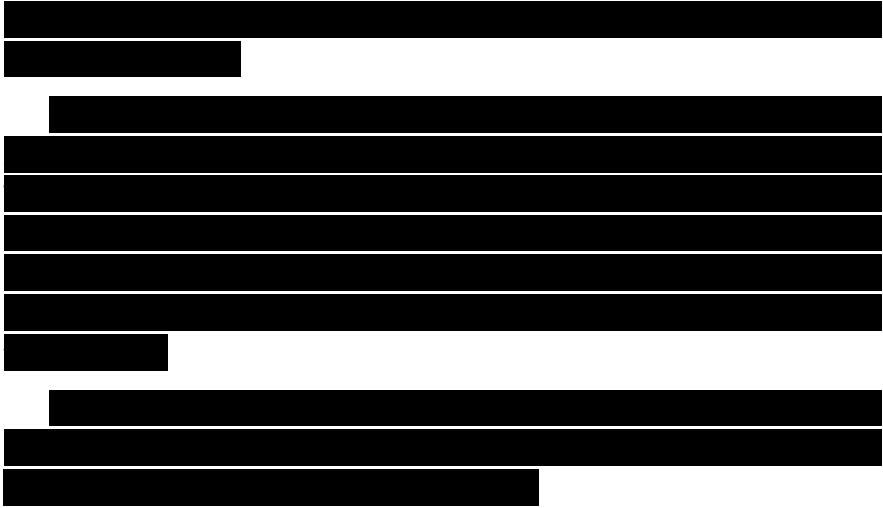
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3 MYTHS ABOUT THE INDIAN DIET

I hear Indian uncles and aunties say these things all the time. If I don't dispel them now, people will continue holding on to these misconceptions.

1. “*Ghee* and coconut oil are bad for you.”

Many Indians stopped using *ghee* and coconut oil for cooking because they heard that too much dietary fats led to heart disease. But two large meta-analyses since 2009 concluded there was not enough evidence to support this hypothesis. Thus, it is *not* likely that eating a *moderate* amount (roughly 2 tablespoons) of *ghee* or coconut oil each day will increase your risk of heart disease. Furthermore, *ghee* and coconut oil are ideal for cooking because they tend not to break down as easily as other common oils.

2. “There is not enough protein in a typical Indian diet.”

Legumes (i.e., pulses) like *dal* and *channa* (chickpeas) are plentiful in Indian diets. When combined with whole grain foods like *chappatis*, you get all your essential amino acids. Snacking on nuts most days will ensure you get enough protein. If you like meat, preparing meat with Indian foods will also ensure you get enough protein, plus the other benefits of a healthy Indian diet.

3. “I get so many vegetables in my *subzi* every night, so I must be eating healthy.”

Many Indian dishes are made by deep-frying vegetables or cooking them in excess heat. This destroys most of the vitamins and other phytonutrients, so your body won't get the benefits of these plant foods. To prevent this from happening, sauté or flash boil them. Or, if you must have your deep-fried dishes, eat raw plants by having fresh salads with your meals.

NOTE TO INDIAN AND SOUTH ASIAN READERS

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[REDACTED]

[REDACTED]

[REDACTED]

INDIANS SUFFER MORE CHRONIC DISEASES

[REDACTED]

[REDACTED]

[REDACTED]

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THE MODERN INDIAN DIET IS TO BLAME

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

IT IS EASY TO MAKE THE INDIAN DIET HEALTHIER

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

PART III

HEALTHY

INDIAN RECIPES

VEGETARIAN DISHES

VEGETABLE JALFREZI – VEGETABLE STIR FRY

Vegetable *Jalfrezi* originated in India during the British Raj. Once a creative way to use up leftovers, the Vegetable *Jalfrezi* recipe has since evolved into a flavorful and texture-rich dish that is popular in Indian restaurants. Try this recipe with a mixture of vegetables or highlight just one or two. Either way, Vegetable *Jalfrezi* will add a colorful splash to your plate.

Prep Time: 15 minutes

Cook Time: 20 minutes

Serves: 4-5

Ingredients:

Cauliflower – 3 cups, cut into bite-sized florets

Carrots – ½ cup, chopped

Bell pepper – ½, cut into bite-sized pieces

Frozen green peas – ½ cup, thawed

Medium pot of water

Salt – 1 tsp

Turmeric powder – ¼ tsp

Canola Oil – 1 tbsp

Onion – ½ medium, chopped

Ginger – 1 tsp, minced

Garlic – 2 tsp, minced

Tomato Sauce – ½ cup (4 oz)

Salt – to taste

Whole coriander seeds – 2 tbsp, dry roasted and powdered

Garam masala – 1 tsp

Red chili powder – optional and to taste

Tomato – 1 small, deseeded and chopped
Lemon/lime juice – to taste

Method:

1. Bring pot of water to a boil and add salt and turmeric powder.
2. Add cauliflower and carrots. Boil for 3 minutes.
3. Strain vegetables and drop them in a bowl of ice water to stop further cooking.
4. Drain vegetables and keep aside for 1-2 minutes.
5. Heat oil in a medium non-stick skillet on medium heat.
6. Cook onions for 2-3 minutes until light golden.
7. Add ginger and garlic and sauté for 1 minute.
8. Add tomato sauce and cook until oil separates from the mixture.
9. Add bell pepper and green peas. Cook for 2-3 minutes.
10. Add cauliflower, carrots, salt, coriander powder, *garam masala* and red chili powder.
11. Mix and cook just until veggies are tender but not mushy.
12. Sprinkle a little water over the veggies occasionally to provide moisture and avoid burning.
13. Add tomato, mix and cook 1-2 minutes.
14. Sprinkle lemon/lime juice, mix and serve with paratha.



SHAHI PANEER – CHEESE CHUNKS IN CASHEW SAUCE

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[REDACTED]

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Age Group	Should Take Action (%)	Should Not Take Action (%)
18-29	95	5
30-49	95	5
50-69	95	5
70+	95	5

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 [REDACTED]

11/11/2016



ASPARAGUS SUBZI – ASPARAGUS SIDE DISH

Asparagus is not usually associated with Indian cooking. The long bright-green spears have tender tips while the tough ends are discarded. Asparagus is a nutrient-rich food that is high in folic acid and a good source of potassium, fiber, vitamin B6, vitamins A and C and thiamin. Many people tend to overlook this delicious vegetable due to lack of know-how in the preparation stage. Now, you can try fresh and tender Asparagus – the Indian way!

Prep time: 10 minutes

Cook Time: 10 minutes

Serves: 4

Ingredients:

Asparagus – 1 lb, chopped into bite-sized pieces

Canola oil – 1 tbsp

Cumin seeds – ½ tsp

Fennel seeds (powdered) – ½ tsp

Ginger – 1 tsp, grated or crushed

Garlic – 5 large cloves, roughly chopped

Tomatoes – 2 medium, chopped

Salt – to taste

Red chili powder – to taste

Method:

1. Wash asparagus and snap the white/hard ends and discard.
2. Chop into bite-sized pieces.
3. In a skillet, heat oil on medium heat.
4. Add cumin seeds and allow them to splutter.
5. Add powdered fennel seeds, ginger and garlic and cook for a minute.
6. Add tomatoes and cook until soft.
7. Add asparagus, salt and red chili powder. Mix well.

8. Cook uncovered for 5-6 minutes until moisture has evaporated.
9. Serve hot with paratha.



KUMRO CHOKKA – BUTTERNUT SQUASH WITH BLACK CHICKPEAS

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© 2006 The Authors

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BAINGAN KI SUBZI – ROASTED EGGPLANT SIDE DISH

“Simple” is the perfect way to describe this no-frills eggplant dish made by roasting eggplant and adding a few ingredients that are always on hand. It’s a perfect way to “hide” vegetables for picky eaters.

Prep Time: 1 hour

Cook Time: 10 minutes

Serves: 3-4

Ingredients:

Eggplant – 1 lb

Canola oil – 1 tbsp

Asafoetida – $\frac{1}{8}$ tsp (optional)

Onion – $\frac{1}{2}$ large

Garlic – 1 tbsp, minced

Green chilies – to taste, finely chopped

Turmeric powder – $\frac{1}{4}$ tsp

Salt – to taste

Lime/lemon juice – to taste

Cilantro – 10 sprigs, finely chopped

Method:

1. Pre-heat oven to 400 degrees Fahrenheit (approximately 200 degrees Celsius).
2. Line a baking pan with foil.
3. Coat entire eggplant with a little oil and bake it for 1 hour.
4. Remove pan from oven and allow eggplant to cool down to touch.
5. Cut off stem and peel the skin off of eggplant. Discard both.
6. Transfer flesh to another bowl and roughly chop it.
7. Heat oil in a medium pan on medium heat.
8. Add asafoetida (optional), onions, garlic, green chilies and turmeric powder.

9. Add salt, mix well and allow onions to cook until translucent (approximately 3-5 minutes).
10. Add eggplant and allow it to heat all the way through.
11. Add lemon/lime juice and cilantro. Mix well.
12. Serve hot with *paratha*.



Device Type	Percentage of Respondents
Smartphone	95%
Tablet	65%
Smart TV	25%

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[REDACTED]

[REDACTED]

[REDACTED]

114

114



LAUKI KOFTAS – BOTTLE GOURD & CHICKPEA FLOUR DUMPLINGS

Bottle gourd (also known as *lauki* or *dudhi*) is a vegetable renowned for its simplistic and mild flavor. Due to its high water content, bottle gourd offers a nutrient-filled but low-caloric option for those watching their weight. This recipe dresses up the low-key flavors of bottle gourd and provides a flavorful curry that's sure to please.

Prep time: 30 minutes

Cook time: 30 minutes

Serves: 6

Ingredients:

For the Koftas:

Bottle gourd – 4 cups (peeled & shredded)
Chickpea flour (*Besan*) – 3/4 cup
Onion – 1/4 medium, finely chopped
Roasted peanuts – 1/4 cup, roughly powdered
Cilantro – 10 sprigs, finely chopped
Coriander powder – 1 tsp
Cumin powder – 1/2 tsp
Dry Mango powder (*Amchur*) – 1/2 tsp
Garam masala – 1/2 tsp
Red Chili powder – to taste
Salt – to taste

For the Gravy:

Canola oil – 2 tbsp
Onions – 2 medium, minced
Salt – to taste
Garlic – 4 cloves, minced
Ginger – 1 tsp, minced
Green chilies – to taste, finely chopped

Tomatoes – 3 large, pureed
Coriander powder – 1 tsp
Cumin powder – ½ tsp
Garam masala – ¼ tsp
Yogurt (or *Dahi*) – ½ cup
Water – 3 ½ cups
Cilantro – for garnishing

Method:

1. For the gravy, heat oil in a medium pan on medium heat.
2. Add onions and sprinkle a little salt to speed up cooking process.
3. Once moisture has evaporated from onions, add ginger, garlic and green chilies.
4. Allow onions to turn golden brown before adding tomatoes.
5. Cook until mixture clumps together and oil separates from the mixture.
6. Add turmeric powder, cumin powder, coriander powder and *garam masala*.
7. Mix well and add yogurt.
8. Mix and add water to achieve desired consistency. Add Salt to taste.
9. Cover and allow gravy to come to a boil.
10. For the koftas, squeeze out excess liquid from shredded bottle gourd and add liquid to gravy.
11. Place bottle gourd in a mixing bowl and add chickpea flour as needed (enough to form balls (koftas)).
12. Add peanuts, onions, cilantro, red chili powder, dry mango powder, cumin & coriander powders, *garam masala* and salt. Mix well to incorporate all ingredients.
13. Form balls (koftas) and drop them into boiling gravy. Pour gravy over the koftas if they are not fully submerged.
14. Increase heat to maintain the boil as koftas are added.
15. Cover and cook for 5 minutes, turning koftas over once in between if they are not fully submerged in the gravy.
16. Garnish with cilantro and serve hot with *paratha* (Indian flat bread).

SEM PHALI – LIMA BEAN CURRY

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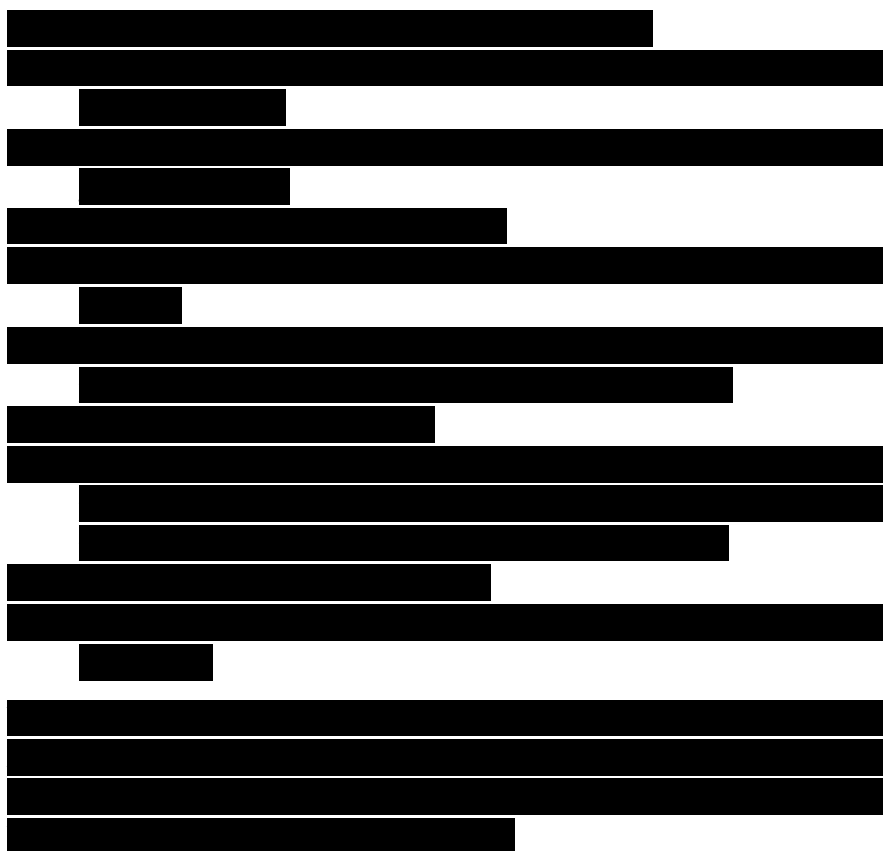
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Response	Percentage
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U.S. should take action, but not as strong as France	

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DAL-BASED (LENTIL) SOUPS

TADKA DAL FRY

Tadka Dal Fry is a wonderful combination of 3 different lentils (*dals*). The amazing flavors will have everyone guessing which *dal* they are enjoying. Blend it well for a smooth texture or leave it as is for a rustic treat.

Prep Time: 10 minutes + 20 minutes for soaking

Cook time: 30 minutes

Serves: 4

Ingredients:

Split pigeon peas (*Toor Dal*) – $\frac{1}{3}$ cup

Split mung without skin (*Mung Dal*) – $\frac{1}{3}$ cup

Split chickpeas (*Chana Dal*) – $\frac{1}{3}$ cup

Water – 3 cups

Canola oil – 1 tbsp

Onion – 1 medium, finely chopped

Turmeric powder – $\frac{1}{4}$ tsp

Cumin powder – $\frac{1}{2}$ tsp

Coriander powder – 1 tsp

Garam masala – $\frac{1}{2}$ tsp

Red chili powder – to taste

Salt – to taste

For Tadka (Seasoning):

Clarified butter (ghee) – 2 tsp

Mustard seeds – $\frac{1}{2}$ tsp

Cumin seeds – $\frac{1}{2}$ tsp

Asafoetida – $\frac{1}{8}$ tsp

Curry leaves – few

Garlic – 2 cloves, finely chopped
Ginger – 1 tsp, grated
Green chili – to taste, slit
Lime juice – to taste, for garnishing
Cilantro – finely chopped, for garnishing

Method:

1. Combine all *dals*, wash them well and soak for 20-30 minutes.
2. Drain off water and add soaked *dals* to a pressure cooker.
3. Add water and salt.
4. Pressure cook on medium heat for 3 whistles or 3 minutes after full pressure is attained. Remove from heat and do not open pressure cooker until all internal pressure is released.
5. Meanwhile, heat oil in a medium pan on medium heat.
6. Add turmeric powder and asafoetida.
7. Add onions and a little salt and cook until onions are translucent.
8. Add cumin powder, red chili powder, coriander powder and *garam masala*. Cook for 10-15 seconds.
9. Stir in cooked *dal* and adjust salt and water to desired consistency.
10. Bring to a boil and cook for 4-5 minutes.
11. Pour *dal* in a serving dish and set aside.
12. For the *tadka* (seasoning), heat clarified butter in a small skillet on medium heat.
13. Add mustard seeds and allow them to pop.
14. Add cumin seeds, curry leaves, green chilies, garlic, ginger and cook for 1 minute.
15. Pour seasoning over *dal* and garnish with cilantro leaves and lime juice.



WHOLE GREEN MUNG DAL – MUNG BEAN SOUP

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11/11/2016

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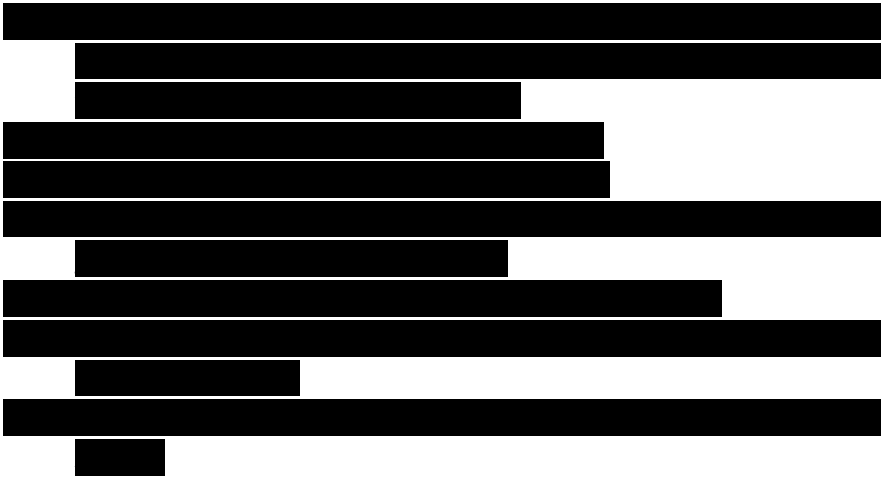
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DAL MAKHANI – BLACK GRAM LEGUME SOUP

Dal Makhani, made with whole *Urad Dal* (black gram), is an Indian restaurant staple dish. It is known by many different names, including *Kaali* (Black) *Dal* and *Maa ki Dal*. *Dal Makhani* gained popularity in India as typical *dhaba* (roadside stand) fare but has made its way into homes with its fantastic flavor and rustic charm.

Soaking Time: Overnight or minimum 8 hours

Prep Time: 10 minutes

Cook Time: 45 minutes

Serves: 4-6

Ingredients:

Whole black gram (whole *urad* with skin, dry) – 1 cup

Kidney beans (dry) – ¼ cup

Water – 3 cups

Onion – ½ medium, chopped

Garlic – 1 tsp, minced

Ginger – 1 tsp, minced

Green chili – to taste, chopped or slit

Salt – to taste

Coriander powder – 1 tsp

Cumin powder – ½ tsp

Turmeric powder – ¼ tsp

Garam masala – 1 tsp

Red chili powder – to taste

Yogurt – 2 tbsp (well beaten)

Heavy whipping cream – 3 tbsp

Canola oil – 1 tbsp

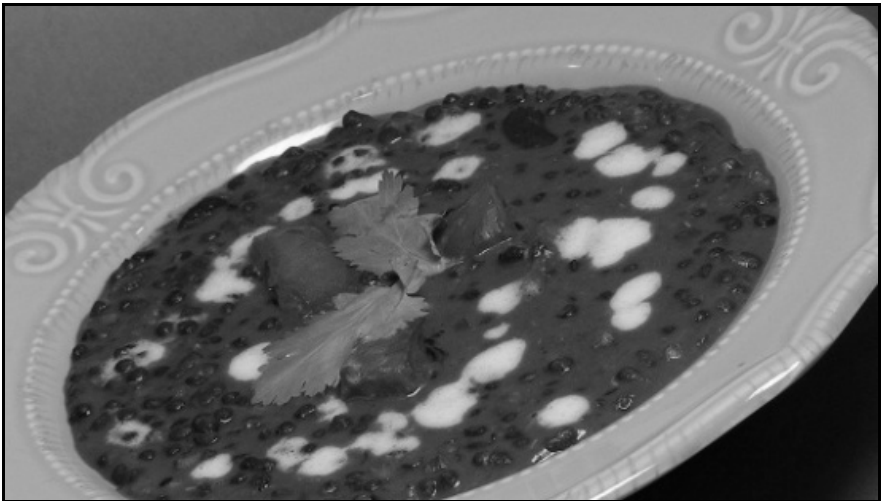
Cumin seeds – ½ tsp

Tomato – 1 medium, chopped

Additional cream or butter for garnishing

Method:

1. Wash whole black gram and kidney beans well and soak overnight in the 3 cups of water.
2. Add soaked beans into a pressure cooker along with the water.
3. Add *garam masala*, coriander powder, cumin powder, turmeric powder, red chili powder, onions, green chili, salt, ginger and garlic.
4. Mix well and pressure cook for 3 whistles (or 3-4 minutes after full pressure is attained).
5. Lower flame and simmer for 20 minutes.
6. Remove from heat and do not open until all internal pressure is released.
7. Carefully open pressure cooker and stir. Dal should be soft and cooked well.
8. Turn on stove to low heat and allow *dal* to come to a boil.
9. Add yogurt and cream and keep cooking on low flame.
10. For the seasoning, heat oil in a small skillet on medium heat.
11. Add cumin seeds and allow them to sizzle.
12. Add tomatoes and cook until soft (do not overcook).
13. Add seasoning to *dal* and gently mix.
14. Garnish with a additional cream or a knob of butter.



SAMBAR – SOUTH INDIAN LEGUME SOUP

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Age Group	Percentage of Respondents
18-29	95%
30-49	91%
50-64	87%
65+	61%

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DAAR – GUJARATI LENTIL SOUP

Gujarati *Daar* (dal) has a perfect balance of flavors – A hint of sweetness from the jaggery, tartness from the *kokum* and the heat from the spices and green chilies! Combined with brown rice, Gujarati *Daar* is the ultimate end to a traditional Gujarati *thali* (meal).

Prep Time: 25 minutes (including soaking time)

Cook Time: 30 minutes (plus time for boiling)

Serves: 6-8

Ingredients:

Split pigeon peas (*Toor Dal*) – 1½ cups (washed, soaked for 20 minutes)

Water – 4 ½ cups for pressure cooking

Raw peanuts – ½ cup

Fenugreek seeds – ⅛ tsp

Salt – to taste

Turmeric powder – ¼ tsp

Water – 4 cups to thin *dal*

Red chili powder – ½ tsp or to taste

Coriander powder – 2 tsp

Cumin powder – 1 tsp

Garam masala – 1 tsp

Kokum – 3 to 4

Green chilies – 2 or to taste, finely chopped

Tomato – 1 medium, diced

Jaggery – 3 tbsp or to taste

Dry mango powder (*Amchur*) – 1 tsp

Ginger – 2 tsp, grated

Lemon/lime juice – 1 tbsp or to taste

Cilantro – 5 sprigs, chopped for garnishing

For the seasoning:

Canola oil – 2 tsp

Clarified butter (ghee) – 2 tsp
Mustard seeds – ½ tsp
Cumin seeds – ½ tsp
Fenugreek seeds – ⅛ tsp
Asafoetida – ⅛ tsp
Whole dried red chili – 1
Whole cloves – 4
Cinnamon stick – 1-inch piece
Curry leaves – 1 sprig

Method:

1. Drain soaked *Toor Dal*.
2. Cook in pressure cooker with water, fenugreek seeds, salt, peanuts and turmeric powder.
3. Pressure cook for 4-5 whistles (or 4-5 minutes after full pressure is attained).
4. Remove from heat and do not open pressure cooker until all internal pressure is released.
5. Open pressure cooker and return to stove on medium heat.
6. Add red chili powder, cumin powder, coriander powder, *garam masala*, *kokum*, green chilies, tomato, ginger and jaggery.
7. Mix well and add up to 4 cups of additional water, a little at a time, to get desired consistency.
8. Allow *dal* to boil for at least 10 minutes (boiling longer improves flavor).
9. For seasoning, heat oil and ghee in a small skillet.
10. Add mustard seeds and allow them to pop.
11. Add cumin seeds and allow them to sizzle.
12. Add fenugreek seeds, cloves, cinnamon stick, asafoetida, whole dried red chili and curry leaves. Mix and add seasoning to boiling *dal*.
13. Add lemon/lime juice and/or dry mango powder to desired tartness.
14. Adjust sweetness (jaggery), salt or any other spices to taste.
15. Garnish with cilantro and serve hot with plain rice, brown rice or paratha.

MEAT DISHES

DOI MAACH – BENGALI FISH CURRY

Service	Used (%)	Not used (%)
Online banking	95	5
Mobile banking	90	10
Online bill payment	85	15
Online account opening	80	20
Online loan application	75	25
Online investment services	70	30
Online insurance services	65	35
Online credit card application	60	40
Online mortgage services	55	45
Online car loan services	50	50
Online personal loan services	45	55
Online business loan services	40	60
Online equipment financing services	35	65
Online commercial real estate services	30	70
Online commercial insurance services	25	75
Online commercial credit services	20	80
Online commercial leasing services	15	85
Online commercial financing services	10	90
Online commercial services	5	95

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SAAGWALA MURGH – CHICKEN CURRY WITH SPINACH

This recipe is a great way to incorporate vegetables and protein into one dish. The flavor is mild yet satisfying. For those with taste buds that scream for hot and spicy dishes, just double the *garam masala*, red chili powder, and curry powder – an easy fix!

Prep Time: 10 minutes

Cook Time: 40 minutes

Serves: 6 to 8

Ingredients:

Chicken – 2 lbs, boneless, skinless thighs cut to bite-size pieces

Spinach – 16 oz, frozen chopped

Tomatoes – 6 medium, finely chopped

Canola oil – 4 tsp

Black cardamom – 1

Cinnamon – 1-inch piece

Green cardamom – 2

Bay leaves – 2

Cloves – 4

Onions – 1 large, finely chopped

Ginger – 2 tsp, minced

Garlic – 5 cloves, minced

Green chilies – to taste, finely chopped

Salt – to taste

Red chili powder – ½ tsp

Garam masala – 1 tsp

Cumin powder – 1 tsp

Coriander powder – 1 tsp

Curry powder – 1 tsp

Method:

1. Heat oil in a medium pan on medium heat.

2. Add bay leaves, cloves, cinnamon and cardamom.
3. Add onions and a little salt and mix well. Cover and cook about 5 minutes (until onions turn translucent).
4. Add ginger, garlic, green chilies and tomatoes. Mix, cover and continue to cook until oil separates from the mixture. Stir in between.
5. Add chicken, cumin powder, coriander powder, salt, red chili powder, *garam masala* and curry powder. Mix well, cover and continue to cook for 5-7 minutes.
6. Add spinach, mix, cover and cook for approximately 10 minutes (until chicken is no longer pink from the inside).
7. Serve hot with paratha or brown rice.

GRAIN-BASED DISHES AND BREADS

OATS AND BROWN RICE DOSA – SAVORY SOUTH INDIAN CREPE

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BASIC BROWN RICE

Brown rice has a wonderful nutty flavor and texture that is an enjoyable change from regular white rice, not to mention that it is also nutritionally superior compared to other varieties of rice. Try this delicious brown rice with any Indian curry – a break from the mundane.

Cook Time: 45-50 minutes

Serves: 4

Ingredients:

Brown Rice – 1 cup

Water – 2 cups

Salt – ½ tsp (optional)

Pressure Cooker Method:

1. Wash and drain brown rice.
2. Combine brown rice, salt and water in pressure cooker.
3. Pressure cook for 2 whistles on medium (or 2 minutes after full pressure is attained), reduce flame to low and cook for 30 minutes.
4. Remove from flame and do not open pressure cooker until all internal pressure is released.
5. Fluff brown rice gently with a fork.
6. Cover and allow it to rest 5 minutes. Serve hot.

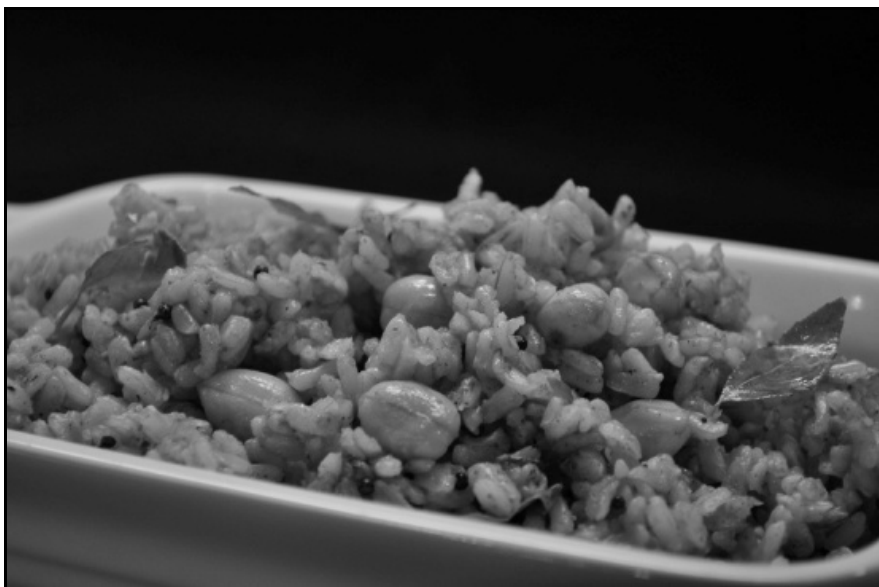
Stove-top Method:

1. Wash and drain brown rice.
2. In a pan, combine brown rice, salt and water.
3. On medium flame, bring to a boil.
4. Reduce heat to a low, cover with tight lid and cook for 45 minutes.

5. Remove from heat and fluff gently with a fork.
6. Cover and allow it to rest 5 minutes. Serve hot.



Response	Percentage
U.S. should take action	85%
U.S. should not take action	15%



QUINOA PULAO – QUINOA PILAF

Quinoa is a grain-like crop often referred to as a complete protein. (Grains, on the other hand, do not contain complete proteins and thus must be combined with lentils or *dals*.) Quinoa has cooking properties similar to white rice and can easily be used as a healthy substitute, as seen in this recipe for Quinoa Pulao.

Prep Time: 10 minutes (plus 30 minutes for soaking)

Cook Time: 50 minutes

Serves: 4 to 6

Ingredients:

Quinoa – 2 cups

Canola oil – 2 tbsp

Bay leaf – 1

Cinnamon – 1-inch piece

Black cardamom -1

Green cardamom – 2

Black pepper – 4 or to taste, roughly crushed

Cloves – 4, roughly crushed

Turmeric powder – ¼ tsp

Onion – ½ medium, finely chopped

Ginger – 1 tbsp, minced

Garlic – 1 tbsp, minced

Green chilies – to taste, finely chopped

Corn – 1 cup

Green peas – 1 cup

Carrots – 1 cup, chopped

Garam masala – 1 tsp

Coriander powder – 1 tsp

Cumin powder – ½ tsp

Salt – to taste

Water – 3 cups

Lemon/lime juice – to taste

Cilantro – chopped for garnishing

Method:

1. Wash quinoa and soak in ample water for 30 minutes.
2. Drain water and set quinoa aside.
3. Heat oil in a medium pan on medium heat.
4. Add bay leaf, cinnamon stick, black cardamom and green cardamom. Cook for 30 seconds.
5. Add black pepper, cloves and cumin seeds. Allow them to sizzle.
6. Add turmeric powder and onions. Cook for 1 minute.
7. Add ginger, garlic and green chilies. Mix well and cook until onions are translucent.
8. Add quinoa and roast for 5 minutes.
9. Add corn, green peas, carrots, *garam masala*, coriander powder, cumin powder and salt. Mix.
10. Add water and lemon juice.
11. Mix and bring water to a boil.
12. Reduce heat to low, cover with a tight lid and cook for 30 minutes.
13. Uncover, fluff quinoa gently with a fork, cover and let it rest for 5 minutes.
14. Garnish with cilantro and serve.



PARATHA – WHOLE WHEAT NORTH INDIAN BREAD

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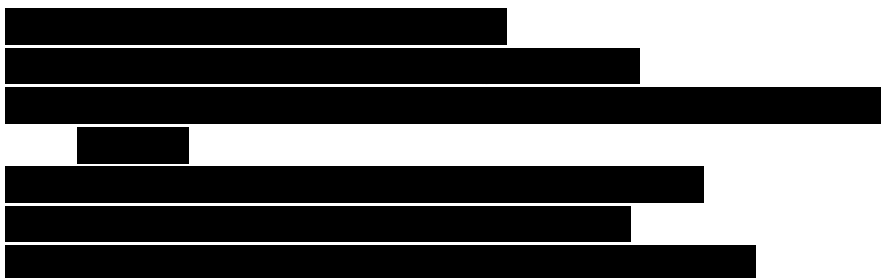
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DHEBRA – MILLET AND FENUGREEK FLATBREAD

Dhebra is a unleavened flatbread made with wholemeal millet flour. Fenugreek leaves add an amazing flavor and aroma to this delicious flatbread. With a great shelf life, *dhebra* makes a perfect road trip or on-the-go snack. Make some great *dhebra* memories.

Prep Time: 10 minutes plus 15 minutes dough resting time

Cook Time: 20 minutes

Makes: 7-8

Ingredients:

Whole-wheat flour (Atta) – 1 cup

Millet flour (*bajra*) – 1/3 cup

Yogurt – 1/2 cup

Citric acid – 1/4 tsp (optional if yogurt is not sour)

Jaggery or brown sugar – 1 tbsp

Minced ginger – 2 tsp

Minced garlic – 2 tsp

Sesame seeds – 1 tbsp

Cumin powder – 1/2 tsp

Turmeric powder – 1/4 tsp

Red chili powder – 1/4 tsp or to taste

Green chilies – to taste, minced

Salt – 1 tsp or to taste

Dried fenugreek leaves (*kasoori methi*) – 2 tbsp

Cilantro – 1/4 cup

Canola oil – 2 tbsp + additional for pan frying

Method:

1. Combine the following – yogurt, citric acid (if being used) and jaggery or brown sugar. Mix well and break any lumps.
2. Add ginger, garlic, sesame seeds, cumin powder, turmeric powder, red chili powder, green chilies, salt, fenugreek leaves

- and cilantro. Mix and set aside.
3. To make dough, combine flours and incorporate oil (2 tbsp) into flour.
 4. Add yogurt/spice mixture and make dough without using additional water.
 5. Knead dough for 3-4 minutes.
 6. Drizzle a few drops of oil on dough to coat it, cover and allow it to rest for 15-20 minutes.
 7. Heat *tawa* or flat skillet on medium heat.
 8. Divide dough into golf-sized balls (approximately 7-8).
 9. Form each into a smooth ball and flatten with palms.
 10. Dip dough into whole-wheat flour and roll it out using a rolling pin (8-inch). Keep dusting additional flour as needed to prevent sticking.
 11. Dust off excess flour and place disc on a hot skillet.
 12. Move *dhebra* around so it does not stick. Allow it to cook on one side until a few bubbles appear.
 13. Flip the *dhebra* and allow it to cook on the other side.
 14. Drizzle a little oil, smear it and flip the *dhebra*.
 15. Press down gently but firmly with flat spatula – pressing and rotating.
 16. Apply oil on this side, smear, flip and press down again.
 17. Remove *dhebra* from skillet and transfer to an insulated container until ready to serve.



FERMENTED DAIRIES

DAHI – HOMEMADE YOGURT

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PALAK RAITA – SPINACH IN SPICED YOGURT

Spinach *Raita* is a tasty way to combine two healthy ingredients: spinach and yogurt (*dahi*). Green spinach leaves, loaded with vitamins, are an appetizing contrast to the coolness of the yogurt. *Raita* is an important part of many Indian meals and plays a vital role in helping digestion. Eat this with brown rice or *paratha* or something spicy to help cool down the fire.

Prep Time: 5 minutes

Cook Time: 5 minutes

Serves: 4

Ingredients:

Spinach – 4 cups, chopped

Canola oil – 1 tbsp

Mustard seeds – ½ tsp

Cumin seeds – ½ tsp

Garlic – 3 cloves, finely chopped

Green chili – 1 or to taste, finely chopped

Mint leaves – handful, chopped (cilantro can be substituted)

Yogurt – 2 cups, well beaten

Salt – to taste

Method:

1. Heat oil in a skillet on medium heat.
2. Add mustard seeds and allow them to pop.
3. Add cumin seeds and allow them to sizzle.
4. Add garlic and green chilies. Cook for 1 minute.
5. Add mint leaves and stir.
6. Mix in spinach. Cook for 3-4 minutes.
7. Once spinach wilts, increase heat and allow liquid to evaporate.
8. Remove skillet from heat and cool.
9. Add spinach and salt to yogurt, mix well.

10. Chill before serving.



PUDINA LASSI – MINT-FLAVORED YOGURT DRINK

[REDACTED]

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CHUTNEYS AND PICKLES

DHANIYA KI CHUTNEY – CORIANDER (CILANTRO) CHUTNEY

Coriander, also known as *Cilantro*, is a very common and popular garnish in South Asian cooking. Coriander chutney takes this mild, yet flavorful herb and transforms it to a versatile condiment or dipping sauce that can be used with many different appetizers.

Prep Time: 10 minutes

Ingredients:

Cilantro/coriander – 1 big bunch

Jalapenos – 5-6 or to taste

Bell pepper – 1

Chaat masla – ½ tsp

Roasted cumin powder – 1 tsp

Lime/lemon juice – 1 ½ tsp or to taste

Ginger – 1-inch piece

Salt – to taste

Canola oil – 1 tsp

Method:

1. Add all ingredients (except oil) into a blender and grind to a smooth paste.
2. Push down the mixture to help with the grinding process.
3. Add oil right before final whirl to preserve the green color.
4. Store in refrigerator until ready to consume or freeze for longer periods.

COCONUT CHUTNEY

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MAANGA AAVAKAI – MANGO PICKLE

Prep Time: 10 minutes

Pickling Time: 20 days

Ingredients:

Raw green mangoes – 2 large (1 lb)
Garbanzo beans, dry (*Kabuli Chana*) – 1 cup
Salt – 1½ tbsp or to taste
Turmeric powder – ¼ tsp
Asafoetida – ¼ tsp
Mustard seed powder – 1 tbsp
Coriander powder – ¼ cup
Red chili powder – 6 tbsp or to taste
Kashmiri chili powder – 1 tbsp
Fenugreek seeds – ¼ tsp, powdered
Sesame seed oil – 1½ cups

Method:

1. Wash and dry mangoes.
2. Remove seed and cube mangoes with a shape knife.
3. Wash and completely dry garbanzo beans.
4. Spread mangoes and garbanzo beans on a tray, cover with thin cloth and allow them to dry overnight.
5. Next day, mix dry spices in a bowl – salt, turmeric, asafoetida, mustard seed powder, coriander powder, red chili powder, *kashmiri* chili powder and fenugreek seed powder.
6. Add mangoes and garbanzo beans. Mix well.
7. Add sesame oil, mix, cover and set bowl out in the sun for about 20 days. Mix daily.
8. Transfer to clean, dry jar and store at room temperature or refrigerator.
9. Enjoy over the next few months.

Tips:

1. Use *kashmiri* chili powder to make a mild pickle.
2. Skip the garbanzo beans and the pickle will be ready in 12 days.
3. Oil should be floating on top to prevent spoilage.



SPICE MIXES

HOMEMADE GARAM MASALA (SPICE POWDER)





HOMEMADE CURRY POWDER

The Western world has come to rely on curry powder as a convenient one-stop shop in the spice cabinet. With some of the most prominent Indian spices present, curry powder delivers flavor without the fuss.

Ingredients:

Coriander seeds – 2 tbsp
Cumin seeds – 1 tbsp
Fennel seeds – 1 tsp
Mustard seeds – 1 tsp
Black peppercorns – ½ tsp
Turmeric powder – 1 tsp
Red chili powder – ½ tsp
Ginger powder – 1 tsp

Method:

1. Dry roast whole seeds in a heavy-bottomed pan on low heat until lightly golden and fragrant (approximately 10 minutes). Stir continuously.
2. Transfer seeds to a plate and allow them to cool completely.
3. Grind seeds to a fine powder using a spice/coffee grinder.
4. Add remaining powdered spices and mix well.
5. Store in an airtight container in a cool, dry place for up to 3 months.



CHAAT (SNACKS) AND SALADS

SHAKARKANDI CHAAT – SWEET POTATO SALAD

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CHUKUNDAR KACHUMBER – BEETROOT SALAD

Beetroot (aka red beets) is a nutrient-rich vegetable that is known for its effects on cardiovascular health and hypertension. Try this simply delicious and colorful beetroot salad recipe that can be a wonderful accompaniment to any meal.

Prep Time: 10 minutes plus 1 hour chilling time (optional)

Serves: 4-6

Ingredients:

Beetroot – 1 lb, peeled and shredded
Roasted peanuts – ½ cup, roughly crushed
Cilantro (coriander) – 5 sprigs, chopped
Green chilies – to taste, finely chopped
Onion – ½ cup, finely chopped
Lemon/lime juice – to taste
Salt – to taste

Method:

Mix all of the ingredients together in a bowl and chill for 1 hour before serving.



SAMBHARO – COOKED CABBAGE SALAD

A horizontal bar chart titled 'Percentage of respondents by age group who believe the U.S. should take more action to reduce greenhouse gas emissions'. The x-axis represents the percentage, ranging from 0 to 100 in increments of 20. The y-axis lists age groups. The bars show that younger age groups (18-29 and 30-49) have the highest percentages of respondents who believe the U.S. should take more action, while older age groups (60+) have the lowest percentages.

Age Group	Percentage of respondents
18-29	82
30-49	78
50-59	68
60+	58

BASIC GLOSSARY

[illegible]

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This book has been percolating for several years, largely due to the interest and support of my parents, Ramesh and Rajeshree, who used to consistently get on the treadmill and cook healthier Gujarati dishes since I was a kid. My brother Milan's approach to good health was based on whipping up meals from ingredients close to how they're found in nature, and he showed me that fresh plant-based foods, which I knew were healthy, can also taste amazing.

I am grateful to my local papers Indo-American News and India Herald for letting me write on chronic disease. I began studying the scientific literature on the connections between diet and health in earnest after graduating from medical school, thanks mostly to conversations with my college friends Vikrant, Kalyan, and Rajesh. The information and interpretations we sent back and forth since 2008 sparked my search for the truth and ultimately led to this book.

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The warm reception my booklet on the Gujarati diet, which I had written for my local temple's health fair, got from friends, family, even strangers, including Mohit & Meeta S., Pravin & Mina P., R.G. Patel, and Jatin P., pushed me to take these ideas from the ether and put them into the word processor. My boss J. Wendt created an environment that encouraged me to push further.

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– Niraj “Raj” R. Patel, M.D.

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– Hetal Jannu and Anuja Balasubramanian

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