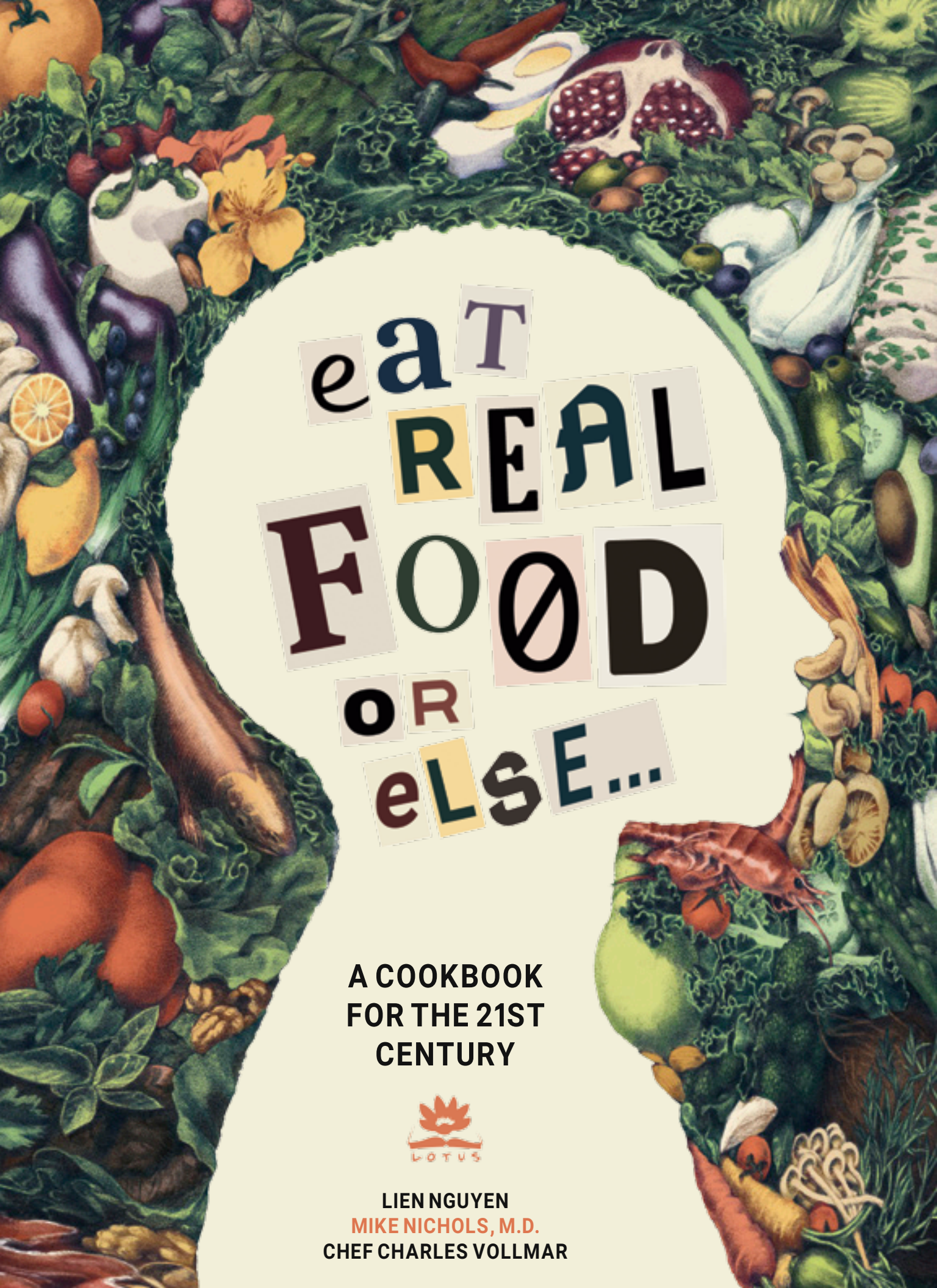

A COOKBOOK FOR THE 21ST CENTURY

LIEN NGUYEN
MIKE NICHOLS, M.D.
CHEF CHARLES VOLLMAR

Eat Real Food

or else...

Liên Nguyên
Mike Nichols, M.D.
Chef Charles Vollmar

Many thanks to our friends and families whose reviews and criticism helped make this book a better one.

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This book is not intended as a substitute for the medical advice of physicians. The readers should regularly consult a physician in matters relating to their health and particularly with respect to any symptoms that may require diagnosis or medical attention.

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www.EatRealFoodOrElse.com

CONTENTS

Not Another Diet Book!

This book presents a way of eating that is both enjoyable and healthful. It is not a diet book: its focus is on whole body health. It strongly advises to eat (almost) everything. The rules are simple: enjoy the widest possible variety of fresh foods, avoid only one type of ingredients, those high in sugar and low in nutrients.

Eat Real Food proposes:

- A comprehensive system that promotes lifelong health, with nutritional advice based on the broad view of the entire body.
- Very tasty recipes, demonstrating that healthy everyday food can be delicious.
- Explanations about the effects of food on our body, with simple yet scientifically accurate justifications that take into account the findings of the latest research.
- Tools to make informed food choices.
- Perspectives from which to examine the existing diets and the nutritional literature.

Every dietary recommendation makes assumptions about the population's eating behavior. This book is no exception. It assumes that its readers have been bombarded with the established nutritional dogma; that, although they don't follow the rules as much as they think they should, they feel guilty when eating bacon, virtuous when buying low-fat dairy; that they strive to consume record quantities of whole grains and fiber; that they count calories and maybe cook egg-white-only omelets. Even for those who know better, deep down in their subconscious mind lurks the thought that fats cannot possibly be good for you. Such is the power of the media.

The goal of this book is to shatter this current dogma of a low-fat, low-calorie, mostly vegetable-based diet. This is why it so brutally bashes sugar. When it insists on the virtues of fat, it doesn't mean "Live on fat!": it is merely trying to restore some balance in a nutritional world where fats have been wrongly demonized. Given the strength of the beliefs, certain points must be emphasized (with the risk that some people might go overboard in the other direction, there is no way around that).

A reasonable recommendation heard today is to "eat less." And indeed, as a nation we might consume too many calories, but how does this fact apply to you as an individual? It is hard to figure out; most people don't have a way to know when they have eaten enough. By restoring its sensitivity to various hormonal signals, the nutrition system proposed in these pages will empower your own body to tell when it's had enough food.

This is not a textbook either. Although all the views expressed here are solidly backed by scientific fact, we will not engage in a technical paper "shoot-out" against the dogma. Several authors have done so in superb ways (see *Further Reading* in the appendix).

However, throughout these pages, the readers will find pointers that will help them to further explore nutritional science with a critical mind and a different perspective. One can find everything about anything on the internet. What is hype and what is fact? What poses a real health threat and what is merely an inconvenience? Plenty of leads are given here so that the readers who trust themselves to take their health into their own hands can study nutrition and form an opinion, with the whole body in mind, rather than missing the big picture by focusing on a single point.

No doubt that the concepts presented here will evolve and be refined with passing time: there will be progress. But these are our best options in the current state of science.

The first section, *Basics,* constitutes the technical portion of the book:

- **Eating Well / The Ideal Plate / What, When, How Much?**
  These three short chapters present the simple practical rules that are the backbone of our diet. It is indispensable to read them first.

  The other chapters in the section contain the scientific justification of the nutritional principles presented throughout this book.

- **Carbohydrates, Grains, Cereals and Starches**
  Shows that by eating sugar and starches we deprive our body of nutrients: since starches are very calorie-dense, they prevent us from enjoying many other foods. "Slow carbs" and grains are not significantly better than plain sugar.

- **The Hormonal Effects of Food**
  Demonstrates how eating carbohydrates can trigger vicious hormonal cycles leading to hormonal resistance, overeating and, paradoxically, malnutrition.

- **Fats and Metabolism**
  Reports on the scientific findings that fats, animal or vegetal, saturated or unsaturated, are good for us, and explains how saturated fats acquired their bad reputation.

- **Macronutrients and Energy**
  Details how we can generate energy using either carbs, fats or proteins; shows that fat is the preferred way, and that, by eating more fat and fewer carbs, we can train our body to burn a larger proportion of stored fat for energy.

- **Weight Loss - Body Fat**
  Explains how high blood sugar prevents people from burning fat. Although weight loss is not the purpose of this book, it is important to understand why the traditional low-calorie, low-fat diets don't work.

The rest of the book can be leafed through in random order. The sections contain recipes, sorted by categories, together with additional pages about nutrition. We have thought it useful to spread the information that is non-essential to the general comprehension to avoid boring the reader unduly. The observant reader will find the macronutrient that is missing from the first section, general information about cooking oils, vegetable families, sweeteners, drinks, sourcing and a few important topics:

- **Micronutrients**
  Warns about the dangers of focusing on a single nutrient and explains that we are less likely to miss something if, instead of getting lost in the nutrient nomenclature, we choose our food by color.

- **Being a Vegetarian**
  Explains how to get good protein and avoid the trap of the legume and grain combination, dangerous because of the antinutrients contained in the legumes.

- **Nutrition and Exercise**
  Shows that exercise, including high level athletic performance, doesn't require a carbohydrate-based diet, and that it is in fact desirable to switch from a sugar-based to a fat-based energy production.

The **Appendix** at the end of the book provides additional information and scientific explanations. Words in square brackets, such as [cholesterol], refer to the corresponding entry in the appendix. Asterisks in brackets, such as calories[*], refer to the entry for the word preceding the asterisk.

Note: in most recipes, for the sake of simplicity and in order to save space, we are not listing salt and pepper with the ingredients. Season to taste: if you prepare your own food, and in the absence of a particular pathology, there is no need to fear salt.

One frequent comment I receive from my friends, when I indulge in dispensing nutritional wisdom, is that the safest diet is to "eat a little bit of everything."

I suspect this is partially motivated by reluctance to part with their favorite starch. But there is certainly a lot of wisdom in their remark: excessive focus on any particular ingredient most likely results in ill health because our body, in its infinite complexity, needs a lot more than we can comprehend today and for the foreseeable future.

In practice, though, this commendable concept doesn't take into account the efforts of the food industry to make us buy whatever is profitable for them, regardless of its impact on our health. How do we define "a little bit of everything"? A little something from each aisle of the supermarket?

Without nutritional knowledge, we are easy prey for marketing and publicity.

A legitimate criticism of nutritional science is that it changes its mind all the time: first "they" said that starches were fattening; then it was not the starches, but what you put on them that made you gain weight; and now, we've gone full circle, back to starches as the bad guys. To confirm this impression, look at a 1950's cookbook – before Ancel Keys cast in stone the dogma that fat and cholesterol are the cause of heart disease – you'll find recommendations that have similarities with those advocated in this book, for example the absence of mortal fear of animal fat. (The similarity is only up to a certain point though.)

This shuffling back and forth understandably generates the feeling that science is not progressing, but going round and round instead, like a weather vane turning where the wind blows. You'd think that if we can put a man on the moon, we should be able to figure out exactly what food is best for our body.

And indeed, there are a lot of fad diets out there. But, to science's credit, understanding the human body is many orders of magnitude more complex than rocket science. In addition, among medical disciplines, nutrition has a particularly difficult position: it is impossible to rigorously test nutritional theories with randomized well controlled trials, as you would for a new drug; it seems unethical (although not unheard of) to purposefully feed a whole population some given diet with the goal to observe what percentage dies from it. So, what we are left to work with is epidemiology: epidemiology observes various populations and tries to draw conclusions by linking their health data with what is known of their eating habits. This method provides, of course, no proof of causation, it can at best show correlation, that is, association: a recent study found a connection between consuming whole milk and a lower body weight; but if people who drink whole milk are thinner than those who use non-fat, is it because whole milk makes you skinny, or is it that people drink whole milk because they feel they can afford it, being skinny already?

Also, despite appearances, nutritional science is progressing, in part thanks to the availability of new scientific tools: as an example, for a long time there was no easy way to accurately measure a person's insulin level; this impaired the ability to study the effects of sugar and insulin on our metabolism. This is not the case anymore: nowadays, insulin is easily monitored, and its nefarious effects have been proven beyond any doubt.

Another frequent objection is that "everyone is different."

This is true of course: genetics play an important role in how our body deals with food, but suspiciously, it comes up only after we heard something we don't like: we are willing to accept that there are nutritional principles, but when the principles don't suit us, everybody becomes different. Food is a very emotional issue, connecting us to our childhood, to our mother's love. We make leaps of logic to legitimize what we like to eat.

Obviously, it is impossible to prescribe a diet that would apply to everybody and address all the situations and pathologies. However, we must admit that there are some mechanisms that apply to the majority of the human race. It is worth being familiar with these principles: they offer a starting basis from which people can make informed choices depending on their particular physical needs, activity level, cultural heritage, medical problems, finances, available time, taste, environment, etc.

At the same time, it is clear that people have different metabolisms and react differently to foods: some of us should avoid salt, others should avoid legumes, for others it's onions, or kale, or cabbage, peanuts, milk, strawberries... These ingredients are real dangers for those concerned, but if we avoid everything that is a concern for some part of the population, we are left with nothing to eat. A better strategy is to pay attention to our individual response and only eliminate those ingredients that are a problem.

Lastly, there is the nagging suspicion that this is a "low calorie" diet in disguise: by eliminating starches, we might eat less, after all, our stomach only has room for so much broccoli; or maybe, without starches, meals are so unappetizing that they are not worth eating?

First, let's repeat that this is a way of eating for life, not a transitory weight loss diet.

Second, regarding whether life without starches is worth living, I hope the recipes presented here speak for themselves.

Third, that we end up eating less calories might be true or not (in our book, the starches missing from a traditional "balanced" diet are replaced by fats, which, as everyone knows, contain a lot of calories). But the truth is that we don't care: as long as you feel satiated and energetic, as long as you are not craving food, are healthy and feel good about your body, what does it matter if you consume more or less calories than before?

But don't take my word for it. Try and taste for yourself!

Liên Nguyen

Liên Nguyen

Liên was born in Paris, raised in a Vietnamese family, and trained as an electrical engineer. After a career in Silicon Valley, she retired and turned to the only really important matter: food. She has published several cookbooks, which blend culinary topics with culture and history.

Mike Nichols, M.D.

Dr. Nichols is a classically trained physician (Pre-Med U. of Chicago, Med School at Loyola U. of Chicago, Residency at Stanford), with training as a surgeon and with emergency medicine experience.

For the last 20 plus years, Dr. Nichols has been working on a quantitative model of the practice of medicine. Through a combination of software development and integration of heart rate data and other biological markers, he has developed a complete health system called "Quantitative Medicine."

Even though Quantitative Medicine entails more science than the conventional medical model, the goal remains the same: help people achieve a graceful and healthy state.

quantitativemedicine.net

What each person needs in order to attain peak health varies. Sometimes the need is diet modification, sometimes more effective exercise, often it entails dealing with stress and mindfulness, and sometimes even pills. Everybody is different, but appropriate measurements allow understanding of everyone's personal formula. For over twenty years, I have practiced medicine with this point of view, and my patients' results have vastly exceeded all expectations.

Food is, of course, an obvious and important factor in a medical philosophy that treats the body as a whole, rather than a collection of organs.

Eighteen years ago, as I was putting my new clinic together, I realized that to succeed people had to be able to prepare their own food. Thus I began interviewing nutritionists and chefs. At the time, all the nutritionists were heavily schooled in principles that I knew were wrong. Sadly, the chefs, regardless of their creativity, had also been schooled in the same outdated principles exemplified by the "low-fat, low-cholesterol" mantra, which is now well disproven.

When I met Charlie Vollmar, the first thing he declared was "the most important thing about food is that you enjoy it with your family." Boom! This was a chef that understood the human side of eating: someone I could work with on sound nutrition. Real Food is, after all, a matter of going back to our human roots.

Mike Nichols
Dedicated to Anne and Jim Sorden
AMDG

Chef Charles Vollmar

An honors graduate of the California Culinary Academy in San Francisco, following his training at *Chez Panisse Restaurant and Cafe* and *Wente Vineyards*, Chef Charles Vollmar taught at several prominent San Francisco Bay Area cooking schools. He established his company, Epicurean Exchange, in 1999.

As a practicing chef instructor and culinary health educator, Chef Charles Vollmar emphasizes wellness, prevention and lifestyle enrichment. He is interested in all topics relating to cooking, nutrition, fitness and food appreciation.

Epicurean Exchange was a pioneer in the team-cooking concept, using the kitchen as a vehicle for corporate team-building, gatherings and retreats. This continues today, as companies, families and friends gather to cook, celebrate and enjoy quality experiences together.

Chef Charles Vollmar is also a seasoned culinary guide, who leads interactive behind-the-scenes tours presenting the philosophies and practices of local food producers and artisans. He also organizes and guides tours abroad, to explore the various cultures and origins of the food world.

EPICUREAN EXCHANGE
www.epicureanexchange.com

I founded Epicurean Exchange with the belief that awareness, simply applied, adds quality to our life and helps us meet professional and personal goals. My company strives to bring balance, empowerment and enjoyment into people's lives through culinary adventures and education.

For over 16 years, Epicurean Exchange has taught classes on culinary skills and cuisine themes, has designed custom programs for individual and corporate clients, offered workshops, and conducted exclusive gourmet excursions.

The "exchange" takes place in a setting of optimal learning and understanding between like-minded participants, and is offered throughout the greater San Francisco Bay Area.

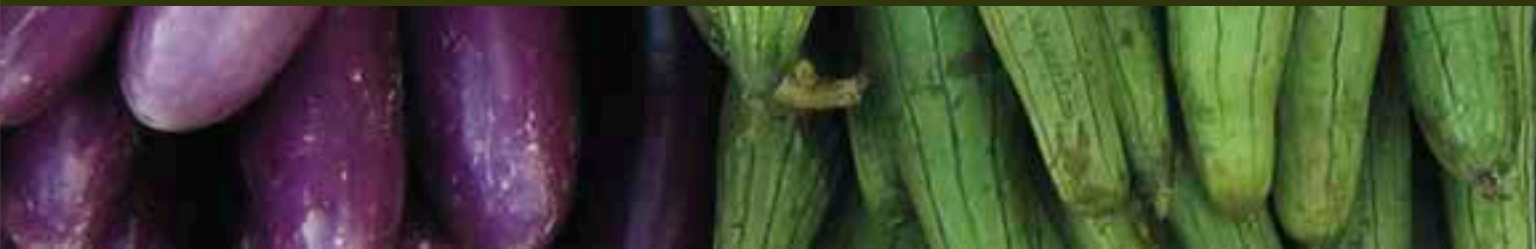
Charles Vollmar
Dedicated to Doaa, Aidan and Amelia

Words in square brackets [ ] refer to an entry in the Appendix. Asterisks in brackets [*] correspond to the entry for the word preceding the asterisk.

An asterisk without brackets refers to another recipe in this book.

The little hour-glass icons above the list of ingredients only provide an indication of the complexity of the recipe.

Basics



Eating Well

Historically, we looked at food in terms of macronutrients. This classification served a purpose, in particular with respect to energy production. However, as we learn more about the biology of nutrition, it makes a lot of sense to also think in terms of micronutrients.

MACRONUTRIENTS

As package labels show, food is traditionally classified into three categories: fats, proteins and carbohydrates. This is the macronutrient-based approach. An important property of all macronutrients is their capacity to produce energy. Each type of macronutrient also has specific properties:

- **Carbohydrates** are the main components of plants; they include sugars (smaller molecules), starches (long chains of sugars) and dietary fiber[*] (indigestible chains of sugar). Sugars are also present in dairy products. Their reputation is for providing energy rapidly, but in fact they are not uniquely qualified in that respect[energy].
- **Fats** play important structural functions in our body, particularly in cell membranes. We can synthesize most of the fats we need. There are only two types of fat that our body requires but is unable to build: these are called *essential fatty acids* and must be obtained through food.
- **Proteins** are chains of amino acids. They are responsible for the largest array of functions in our body for structure, hormones, enzymes, antibodies… We are able to synthesize many of the 20 amino acids we need; the rest must be supplied by our food and are referred to as *essential amino acids*.

MICRONUTRIENTS

Nutritional science has established that our bodies rely on many substances and chemicals found in our food to grow, repair and regulate themselves. These are *micronutrients, electrolytes and minerals (or elements)*, and they tend to work in small quantities. Even though they are technically classified in different categories, we'll often group them under the term "micronutrients" or even "nutrients" for short.

Nutrients are so numerous that it is impossible to list them all. They include vitamins, but are not, by any means, limited to them.

Vitamins[*] are defined as the micronutrients whose deficiency quickly leads to diseases. You may know that:

- Lack of vitamin B1 leads to beriberi.
- Lack of vitamin C causes scurvy.
- Lack of vitamin D is associated with rickets, etc.

The list of vitamins (A, B, C, D…) is in fact relatively short, and we now know that a much broader array of nutrients (in the thousands) is necessary for optimal health.

Vitamins can be the proverbial tree that hides the forest: by focusing on vitamins only, we expose ourselves to the serious consequences of deficiency in the other nutrients. These effects can build up slowly[glycation], however, they lead to severe ailments such as cancer, cardiovascular disease and immune system malfunction.

PUT A PALETTE OF COLORS ON THE TABLE!

The body is an infinitely complex machine, the seat of countless interactions. Food operates as a whole, and when nutrients are isolated, they don't work as well, or don't work at all.

Given the dauntingly vast quantity of indispensable nutrients, it is impossible, as of today, to offer an exhaustive list of recommended foods. Besides, this would turn meals from a pleasure into an accounting nightmare.

At this point of nutritional knowledge (or lack thereof), our best bet is to consume the widest possible variety of foods, while following three simple guidelines:

1. Seek colored, micronutrient-rich food

With some exceptions, micronutrients are richly colored. Let that be your guide: seek deeply, intensely colored ingredients.

- Look for the blue-indigo to purple-red pigments, as found in berries, eggplants, radicchio, purple cabbage, bell pepper, red onion…

- Find orange-red to yellow nutrients in carrots, tomatoes, pomegranates, berries, squashes…

- And all the shades in between! Train your artistic eye, and soon you'll be able to distinguish subtle hue variations.

Some notable exceptions to the color rule:

- Cruciferous vegetables (such as cauliflower) contain an important class of micronutrients that don't bring much color.
- The allium family (onions, shallots, garlic), revered for its many proven medicinal virtues, is not very colorful either.

2. Seek whole real food

This is food as produced by nature, food that is closest to:

Pulled from the ground,
Cut from the flesh,
Plucked from the plant.

Look for fresh ingredients that received as little processing as possible: humans coevolved with this kind of nourishment for several hundred thousand years and have genetically adapted[*] to it. Keep in mind that, on the evolutionary scale, agriculture is a very recent development!

Industrial processing almost always lowers the nutritional value of ingredients and, willingly or not, introduces chemicals.

3. Seek healthy sources

Consuming foods that have been grown in contaminated soil or with chemical fertilizers and pesticides will lead to elevated amounts of dangerous substances in the body[sourcing].

If buying organic food exclusively is neither practical nor affordable, keep in mind that foods have different capabilities to absorb chemicals, and that ingredients with concentrated nutrition also have the potential for concentrated contaminants.

At special risk are:

- Root vegetables (carrots, turnips, potatoes…)
- Fall berries (blueberries, raspberries, blackberries…)
- Eggs
- Dairy products

So, go the extra mile for these!

(...)

(...)

Carbohydrates, Grains, Cereals and Starches

With the exception of a few extremes, most people agree that we need to consume a balanced mix of the three macronutrients. The source of disagreement is what ratio of these nutrients constitutes a "balanced diet": opinions on this topic diverge radically.

Plants are mostly carbohydrates and water

At the macroscopic level, carbohydrates are the main constituent in a plant's structure: plants breathe in CO_2, grabbing the carbon atom to build the carbohydrates they need, in particular for their cell walls.

Fruits and vegetables are mostly made of carbohydrates and water. Water content ranges from 75 % (banana, potato) to 95 % (zucchini, cabbage).

Carbohydrates are, by definition, chains of sugar molecules:

- Short chains (fructose, glucose, sucrose) are what we customarily call "sugar."
- Long chains, commonly designated as "starch," make up grains and vegetables in general.

It was previously believed that longer sugar molecules took more time to be digested and pass into our blood; hence the notion of "slow carbs" or "complex carbs," as opposed to "fast carbs" in simpler sugars.

And indeed, slow carbs are desirable, but speed has more to do with the fibrous structure of the food than the complexity of its carbohydrate molecule: the sugar from an asparagus goes into our blood slower than that from potato, yam or rice, because it is trapped in fiber, which needs to be broken down first.

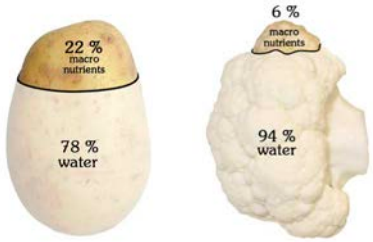
All carbohydrates can be divided in 2 categories:

- **Fiber**, which is mostly not digested.
- **Non-fiber**, which is exactly the same as short-chain sugar, as far as our body is concerned.

The macroscopic view

Since all vegetables are mostly made of carbohydrates, fiber (a sub-category of carbs) and water, what then distinguishes one vegetable from another? The answer is mainly in the ratio of macronutrients to water.

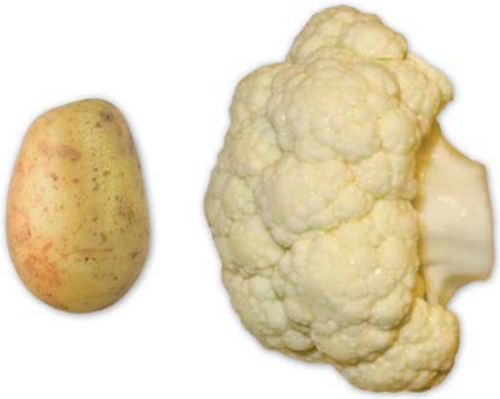
Let's compare a cauliflower floret to a potato (the results are similar for raw or boiled):



The potato has almost four times the amount of macronutrients, mostly carbohydrates, as the cauliflower.

This is why you get so many calories from eating grains and starchy vegetables such as potatoes: since water contributes no calories, eating the same weight of cauliflower or potatoes results in dramatically different caloric intakes. If you go trekking, you'll want to carry potatoes in your backpack instead of cauliflower.

Conversely, for the same amount of carbohydrates or calories, you get 3 to 4 times more cauliflower than potato.



A more comprehensive view

The macroscopic view doesn't tell the whole story about the nutritional worth of an ingredient. When we are concerned about the quality of our food, we need to go beyond basic calorie count and examine the value of its micronutrients.

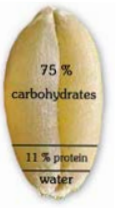
Our food must supply:

- Sufficient energy (i.e. calories) for our daily activity.
- Enough proteins and the full range of essential amino acids.
- The widest possible range of micronutrients, electrolytes and minerals.
- Enough fats and the full spectrum of essential fats.

The next pages show that these properties vary widely from one ingredient to the next and that balancing food is always a trade-off.

Starch is, by definition, a long chain of glucose molecules. It is present in most plants. The chain can be linear (as in amylose) or branched (as in amylopectin).

- By extension, **starches** designate foods containing a large proportion of starch such as potatoes, cassava, wheat, cereals and all the grains in general.
- **Legumes** are a family of vegetables such as lentils or beans that are fairly loaded with carbohydrates, though not as loaded as grains.



Wheat

Grains

Grains are deeply rooted in most civilizations:

- For evolutionary reasons, sugar and starches taste very good! At the dawn of mankind, sugar was a precious commodity; as early humans were in constant need of calories, it is likely that those with a sweet tooth had an advantage.
- Then came agriculture: its development made it possible to feed larger populations with grain, enabling the division of labor and the development of arts, war and political systems. Grains were essential to the development of our civilization.

Not surprisingly, every culture has its favorite starch: picture Vietnam without rice, Italy without pasta, France without bread, Germany without potatoes, Morocco without couscous... It is nearly impossible to cook a traditional meal without starch.

- Starches are cheap and convenient. They keep well, sparing us the trouble of replenishing the refrigerator with fresh produce.
- Starches provide a lot of calories. This is important in the parts of the world where many people don't get enough to eat.
- In subsistence cultures, grains and legumes offer an alternative to animal proteins, that can be scarce.

(...)

(...)

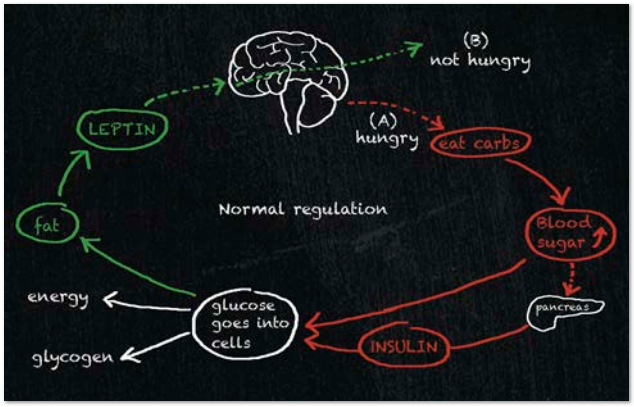
The Hormonal Effects of Food

Everybody has heard of hormones and how they govern our lives, especially sex hormones. Less known is the fact that food is tightly connected to a whole system of hormones, with dramatic health implications. We will only talk about a few here, but these are only the tip of the iceberg. Whole books are devoted to the issue. Also see the Weight Loss - Body Fat *pages in this book for more discussions about hormones and nutrition.*

Sensitivity = Regulation

During digestion, carbohydrates are broken into simple sugars and passed into our bloodstream. The increased blood sugar causes the pancreas to produce **insulin**, a hormone that allows the cells to let sugar in (while insulin also allows the uptake of other macronutrients, its secretion is closely tied to eating carbohydrates). This happens when the cells respond properly to the insulin signal: they are said to be *insulin sensitive*.

The glucose taken away from the blood and into the cells can be burned to provide immediate energy (TCA cycle). If energy is not needed, sugar is stored as *glycogen*. When the glycogen storage is full, which doesn't take much (total capacity is around 2000 Cal), the remaining glucose is stored as fat in fat cells.



Leptin, or the "satiety hormone," is produced by our fat cells when they have enough fat in store. Our brain recognizes leptin as a signal that we have accumulated enough energy and can stop eating.

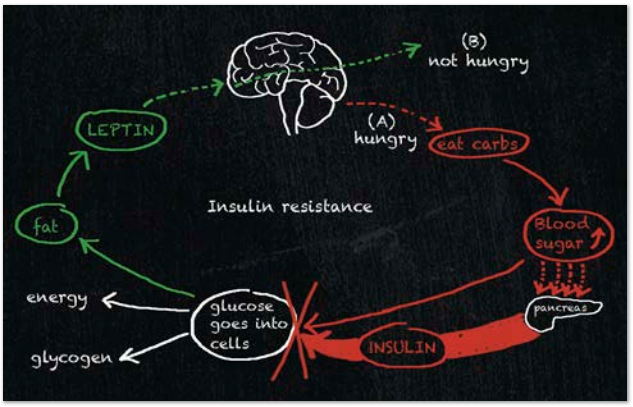
This feedback system regulates the amount of food we eat to a proper level: concerning body fat in particular, we need a certain amount, not too much, not too little. Ideally, the process starts at point A (hungry) and stops at point B (not hungry).

Ghrelin, also nicknamed the "hunger hormone," is produced by the empty stomach. Its action on the brain is to increase appetite, the opposite of leptin.

Glucagon is secreted by the pancreas when blood sugar is low: it stimulates the liver to convert stored glycogen back into glucose and to release it in the bloodstream. Glucagon, therefore, has the opposite effect of insulin, and together they work to balance blood sugar.

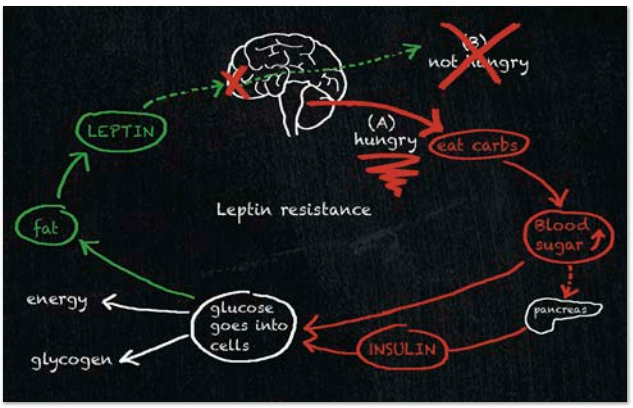
Resistance = Imbalance

"Resistance" designates a condition where a signal is not recognized by our body. Resistance usually leads to a cascade of disastrous events:



Insulin resistance happens when the cells ignore the insulin message and don't let sugar in. As a result, the blood sugar level stays high; this tells the pancreas to keep producing insulin in an attempt to diminish blood sugar. Eventually, the pancreas maxes out and breaks, losing its ability to produce insulin altogether, a cause of diabetes.

Diabetes can also emerge with the intact pancreas working as hard as it can, but being unable to keep up with the demands of a poor diet; the result is elevated insulin and glucose in the blood.



Leptin resistance happens when the brain doesn't hear the leptin signal and keeps urging us to eat. The obvious consequences are overeating and obesity.

What causes resistance?

Various factors can lead to resistance, some of them genetic, others linked to the eating behavior. To mention a few:

- High levels of insulin can lead to insulin[*] resistance.
- Chronically elevated blood sugar can cause leptin[*] resistance (thus blocking the satiety signal and leading to a vicious circle of more eating, more blood sugar and more leptin resistance).
- *Lectins* (present in large quantity in grains and beans) can cause leptin resistance.
- Leptin resistance can lead to insulin resistance: one theory is that the cells that are already full of fat resist the insulin message because they don't "want" to take in more fat.
- Etc., etc.

Many more mechanisms lead to insulin and leptin resistance, with one common cause: the overconsumption of carbohydrates.

Consequences of resistance

Body fat is not necessarily a bad thing in itself. The danger resides in the hormonal side effects of eating carbs. Just to cite the most important:

- Chronically elevated blood sugar is responsible for *glycation*[*]. The body is continually making new proteins, and the manufacturing environment is important: molecules produced in presence of a lot of sugar will be defective. Glycation leads, in particular, to small vessel diseases in the kidneys, eyes, fingertips, toes and brain.
- Chronically elevated insulin is bad in itself: insulin[*] directly increases arterial stiffness, which leads to high blood pressure and atherosclerosis. Elevated insulin also clearly increases cancer risks.
- Elevated insulin impairs the action of glucagon[*], thus preventing the use of stored fat for energy.
- The excessive presence of carbohydrates in the blood shifts the body's energy[*] preference to burning sugar and impairs the burning of stored fat.

> Hormones are necessary chemical signals that play an important role. Our food choices have the power to trigger a healthy or unhealthy hormonal response in our body.
>
> We want to make our body as sensitive as possible to the hormonal signals so we can respond to them in a dynamic fashion.
>
> It is very important to manage levels of insulin and sugar in our blood.
>
> Overconsumption of carbohydrates leads to a vicious circle of insulin production, elevated blood sugar and resistance.

(...)

(...)

Fats and Metabolism

To untangle the controversies surrounding dietary fats, it is critical to look at food scientifically, and break away from popular wisdom and simplistic analogies. There is not one single thing called fat but many different types of fat.

In the context of our nutrient-rich diet, we need to consume plenty of fats. Fat is of the highest importance to our metabolism:

- Fats play a broad role, both in the structure and function of all the cells across our body: membranes, ligaments, tendons; you name it.
- Fat is necessary for neural transmission: the myelin sheath, responsible for the speed of nerve transmission, is mostly made of fat. Without myelin and fat, we don't have a functional neurological system.
- Many vitamins (A, D, E, K) are only soluble in fat, so consuming them without fat has about the same nutritional value as eating cardboard.
- Fat is a good source of energy.

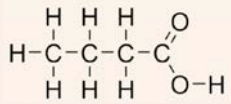
- Fat makes most people feel full more efficiently than sugar and carbohydrates. And contrary to conventional wisdom, eating fat doesn't make you fat[*]: unlike sugar, fat doesn't trigger the hormonal responses that lock body fat in.
- As surprising as it may sound, the relationship between dietary cholesterol[*] and heart disease in the general population has been disproved; it is now well established that sugar causes the production of hormones responsible for cardiovascular disease.

The next few pages expand and justify these surprising assertions.

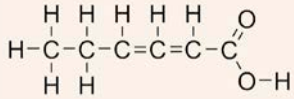
Saturated vs. Unsaturated Fats

The backbone of fatty acids (the building blocks for all fat molecules) is a chain of carbon whose structure defines whether the fatty acid is saturated or unsaturated:

- If the carbon chain contains no double bonds, the molecule is *saturated*. Pictured below is butyric acid, a saturated fat found in dairy. (Note that there is a double bond between the final C and O, but we are looking only at the bonds between C atoms.)



- Otherwise, the molecule is unsaturated, *mono* or *polyunsaturated* depending on the number of double bonds in the carbon chain. In the classical 2-D representation, double bonds are shown as a double line. Pictured below is a polyunsaturated fat molecule containing 2 double bonds in its carbon chain.



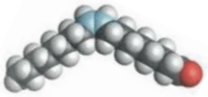
All foods contain a mix of saturated and unsaturated fat. However, animals tend to have a larger proportion of saturated fat than fruits and vegetables.

An unsaturated molecule can be made saturated by breaking all its double bonds and attaching more hydrogen atoms. And vice versa, a saturated molecule can be unsaturated easily by our body: enzymes can remove atoms and create double bonds between two adjacent carbons.

Fat has a shape

Molecules are not flat or linear. They have a 3-dimensional structure from which they get physical and chemical properties. While saturated fats are relatively straight, the double bonds create "kinks" in unsaturated molecules, as depicted below.

saturated fat



unsaturated fat

Fatty acids must have a specific length and shape in order to perform their tasks. Our body has a whole array of mechanisms to convert available fat molecules to fill the job: by saturating or desaturating them, it can turn them very precisely into the required unit. One of these mechanisms is through the enzyme *desaturase*, which, its name says it, transforms saturated fat into unsaturated fat by creating double bonds.

Another effect of unsaturation is that the molecule is thinner at the location of the double bond. This "notch" is important: for example, it allows a fat molecule to insert itself properly in the cell walls. The position of the notch matters also: for the molecule to be functional, the notch needs to be exactly in the right place.

For this type of functionality, the body cannot use random polyunsaturated fat molecules, because the position of their double bonds will not necessarily fit the need. It is easier for us to desaturate[*] a saturated fat instead.

Our body is very good at doing this, when and where a specific fat molecule is required. This process works better than relying on artificially desaturated fats from our diet. (Natural unsaturated fats found in wild animal meat are fine because they are the ones our body can use "as is.")

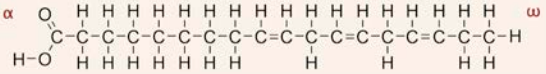
In conclusion, saturated fats are more versatile than unsaturated fats: they can be viewed as the universal donor from which various structurally different fats can be built.

However, this marvelous mechanism has a limitation: the enzyme desaturase can desaturate bonds in all positions, except for the ones closest to the molecule's extremity, hence the essential omega-3 and omega-6 fats that we cannot produce in sufficient quantities.

Essential fatty acids, omega-3, omega-6

Our body needs a vast array of fatty acids, but it can fabricate most of them. There are, strictly speaking, only 2 fatty acids that we cannot synthesize:

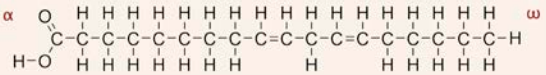
- **Alpha-linolenic acid (ALA)** is an 18-carbon chain member of the omega-3 family. It is a poly-unsaturated fat, with the first double bound located at the 3rd carbon from the omega end.



  Our body uses ALA to synthesize **EPA** (20-carbon) and **DHA** (22-carbon), longer chain omega-3 molecules that are vital to our metabolism: they are the building blocks for some hormones that control immune function, blood clotting and cell growth, as well as components of cell membranes.

  ALA is found in plants such as flax, hemp, pumpkin seeds and walnuts.

- **Linoleic acid (LA)** is the shortest member of the omega-6 family, also 18 carbons long. It is also an unsaturated fat, with its first double bond in the 6th position.



  Our body uses it to synthesize prostaglandins, an important group of hormones involved in, among other things, inflammation.

  LA is present in abundance in vegetable oils.

As an additional complication, conversion from ALA to EPA and DHA is inefficient. In fact, some people just cannot synthesize EPA and DHA. For these reasons and others, longer chain fatty acids such as DHA and EPA may be an important factor in our diet. These come mostly from fish and meat; they are not found outside of animal sources (except for some recently engineered algae-based DHA).

Note that the essential fats are not essential in terms of energy production. For fuel, the body will use any type of fat indifferently.

As a general rule, it is good to consume fatty acids of different lengths: we can transform them into the whole spectrum that we need, more easily than if we only ate the shorter ones.

The conversion from one fatty acid to another requires other nutrients: nutrient deficiency will impair that process. This is yet another reason to eat plenty of micronutrients.

(...)

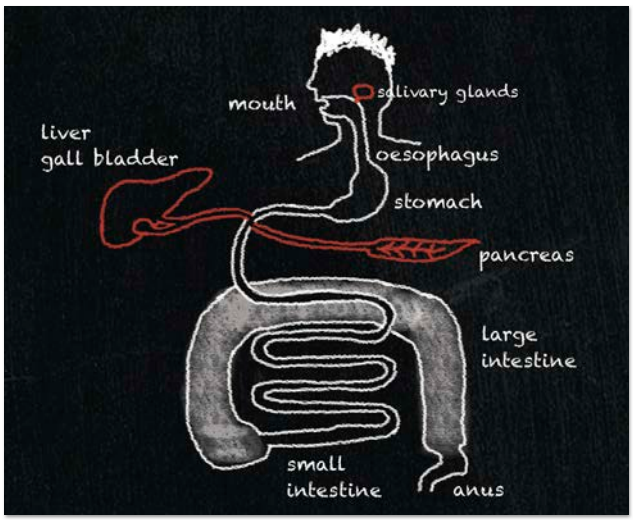
(...)

Macronutrients and Energy

This might not be suitable table talk, but a minimal understanding of our digestive system is required in order to see how nutrition affects us, in particular concerning energy production, and to dispel dangerous yet well-established myths.

The purpose of food, in addition to its social function and the pleasure it provides, is to supply energy and raw material for building and repairing our body.

This happens through digestion: at various points between the mouth and the intestine, food is mechanically and chemically broken down; the proteins, fats and carbohydrates that we ate are disassembled respectively into amino acids, fatty acids and sugars (glucose mostly). This operation involves many of our organs communicating through an exceedingly complex web of hormonal and electrical messages. The whole process is regulated mostly by our liver.



The resulting nutrients are absorbed through the lining of the small intestine into our bloodstream and transported to the liver to be detoxified and broken down further. Proteins and transport molecules are also synthesized in the liver.

The blood is then circulated to our entire body. All our cells grab nutrients on this "conveyor belt" as needed, and use them for a million purposes, including energy production.

From food to energy

Energy is generated through *cellular respiration*, a complex series of chemical reactions that take place in small organelles present in our cells, the *mitochondria*. It is an *aerobic process*, requiring the presence of oxygen.

Two other mechanisms can quickly generate short bursts of energy in response to particular needs: the *Anaerobic* system and the *Creatine-Phosphate* system.

However, we'll focus on the aerobic process, since it generates the bulk of our energy.

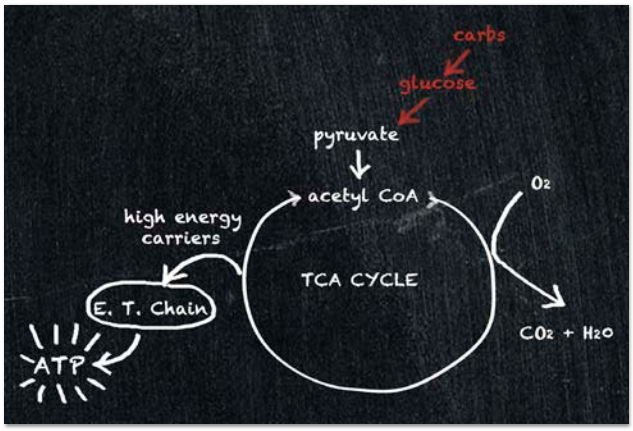
Cellular respiration generates ATP molecules, the energy currency that is used everywhere in our body. It consists of:

- the *Tricarboxylic Acid cycle* (*TCA cycle*, also known as the *Citric Acid cycle,* or *Krebs cycle*) and
- the *Electron Transport Chain (ETC).*

It is important to note that the three types of macronutrients, carbohydrates, fats and proteins, can serve as fuel.

All three are processed in similar ways, delivering CO_2 (that we breathe out) and ATP molecules (the energy).

Historically, the TCA cycle was described with a sugar molecule as its "fuel" or "input", thus creating the enduring belief that sugar equals energy. It has nevertheless been known for a while that, in fact, fat or protein will work as well.

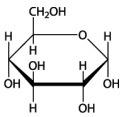


Memorizing the details of the chemical reactions and molecule names is not required, but a general understanding of the process is necessary in order to realize that nutrients don't provide energy by magic, but only through a complex sequence of chemical reactions.

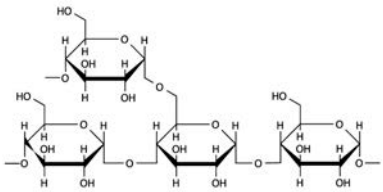
Carbohydrates and energy

Carbohydrates are traditionally classified as sugars or starches.

- *Sugars* are small molecules. Our metabolism uses several sugars but the most common simple sugar in our body is glucose.



- *Starches* are long chains of sugar, up to tens of thousands of units. Pictured below is the structure of a relatively short starch, amylopectin:



Carbohydrates must undergo several transformations before they become energy:

1. They are broken down into their basic building blocks: for example, glucose molecules.
2. The glucose molecule is split into two pyruvate molecules.
3. The pyruvates are oxidized to produce Acetyl CoA.
4. Acetyl CoA enters the TCA cycle. The TCA cycle generates high energy electron carriers.
5. The electron transport chain uses the high energy electron carriers to produce the bulk of the ATPs.

One molecule of glucose will produce, under ideal circumstances, 38 ATP molecules.

Glucose is special among sugars in our body because it can readily be cleaved into 2 pyruvates. This is not the case for fructose.

(...)

(...)

Weight Loss - Body Fat

Even though weight loss is not the purpose of this book, it is necessary to touch on the subject because it is seldom absent from people's minds.

The temptation is great to modify the diet advocated here, maybe cutting down on fats, or changing a few other elements, in order to adapt it to some weight loss belief. But in fact, we are confident that respecting the principles offered in these pages is the surest path to a pleasant body image.

As a society, we need to get away from the thought that "thin" equals "healthy" and think in terms of nutritional quality instead. Weight loss is not desirable per se: if you lose tendon, bones, ligaments and muscle, you become less healthy. If you choose to become thinner, make sure that the loss is restricted to body fat.

Most of the discussion here is directed to people that really need to lose weight for health reasons, not to those who would like to shed a few pounds for cosmetic purposes (those will achieve their goal effortlessly on our diet).

Low-calorie diets don't work

The current popular dieting wisdom sees our body as a bag that inflates if we put more calories in (by eating) than we take out (by exercising) and vice versa.

This simplistic view has been proven wrong: all the controlled experiments to make people lose weight by restricting their caloric intake have failed; not only were the subjects very disturbed physically and mentally, but they regained all the weight and then some once they went off the diet.

Most of the time, failing to lose weight is not due to lack of will. How many people exercise for hours, walk, jog, run, work out, starve themselves to death, without any result? They don't lose any significant weight; they feel hungry and lifeless...

(Note that exercise is highly desirable, but for other reasons. The pursuit of weight[*] loss often results in ill health: most people are metabolically weaker, and their VO_2max goes down after they lost weight.)

Fat regulation

How much fat is stored in our cells is a complex, tightly regulated system, with the body trying very hard to stabilize the amount of fat around a set value. Even when we pack more fat than we'd like, usually we gain weight until some kind of equilibrium is reached. Those who gain weight indefinitely are few.

(This leads people to think that they can diet to lose the undesired pounds, and then go back to their old ways. Indeed, since they were stable, albeit a little heavy, wasn't it that what they ate balanced exactly what they expended? The fact that people gain all the weight back once they go off the diet is another proof that the view of the body as a bag is wrong.)

The set value for body fat is a function of our genetics, as well as our long term nutritional behavior, environment and medical history; with age our body is less resilient, our machinery doesn't work so well anymore, and coping with excesses becomes more difficult.

It is true that weight gain can be associated with more calories in than calories out. But what is the cause, and what is the effect? Is eating causing weight gain, or is gaining weight causing the eating? This question seems pretty stupid, but think about it: a child going through a growth spurt eats a lot. Is he growing because he's eating, or is he eating because he is growing (as noted by several authors)?

If, for any reason, a person's metabolism wants to store calories as fat, this person has to eat more in order to maintain a proper level of disposable energy.

Pre-requisites to fat loss

The built-in regulation explains why willpower has so much trouble dealing with the problem. It is very difficult to change the regulation set point, and it takes time.

But, in spite of all the shattered beliefs, some things remain certain. If we want to lose fat, we need to:

1. Either burn the fat in the fat cells, or get it out of the cells for burning elsewhere.
2. Be able to burn fat, that is, use fat for energy in the Krebs cycle, which also takes place at the cellular level.
3. Accumulate fat at a slower rate than we burn it.

Conversely, people don't lose fat because:

- Their fat is locked in the fat cells.
- They lack the enzymes that would allow them to burn fat for energy.
- They accumulate fat faster than they can burn it.

(...)

Soups, Salads and Appetizers

Micronutrients

Those expecting to find a detailed list of nutrients here will be disappointed: the number of nutrients is so large and their interaction in our body so complex that any list can only be reductive and misleading.

Beware of supplements!

Carotenoids are a family of pigments present in orange vegetables. There are hundreds of carotenoids in nature, of which 3 are known for their vitamin A activity in humans, an important feature.

However, vitamin A is only the tip of the carotenoid iceberg. By focusing on vitamin A, we risk losing all the other benefits of carotenoids: antioxidant, protection against chronic diseases or cancer, just to name a few.

By taking vitamin A supplements instead of eating plain carrots, we deprive ourselves of the benefits of lycopene and lutein.

And if we ate only carrots instead of a range of orange vegetables, we would miss hundreds of other carotenoids.

Based on current knowledge, our best bet is to eat the greatest diversity possible of foods.

Consume the widest variety of:

- Micronutrients
- Minerals (a.k.a. elements)
- Essential amino acids
- Essential fatty acids

In order to provide some guidance, nutrients will be addressed, but only in terms of the large families known to be important in our body.

- Vitamins don't get special treatment: vitamins don't share a common chemical structure, and they are included in the other families of nutrients.
- Flavonoids, an important family of nutrients, are also colorful: another argument for eating a spectrum of colors without looking at individual nutrients.

MICRONUTRIENTS BY COLOR

Micronutrients, with a few important exceptions, are colorful and can be easily classified by color.

We deliberately won't enumerate subclasses (carotenoids include alpha-carotene, beta-carotene, lycopene, etc.) because this could appear like an exhaustive list of nutrients. At this point, science is very far from being able to provide one: just consume the widest possible range of carotenoids and don't single out any particular one!

Eating by color is a guarantee that you'll get many forms of nutrients.

BLUE - PURPLE - RED

Anthocyanidins, anthocyanins and other similarly named substances constitute a large family of purple-blue pigments. The nomenclature of bluish chemicals is very complex and could obscure their nutrient value. Don't get a headache, forget about names, just eat blue stuff! We'll call them "cyans" for the sake of simplicity.

"Cyans" are found in many berries (grapes, blackberry, blueberry, cranberry, cherry), in the skin of other fruits (pear, apple, plum), red cabbage, red onion and everything that's dark red to blue.

Among other effects, they enable our immune system to respond to injuries and infection; they are associated with fighting cancer.

"Cyans" are mostly advertised as antioxidants, but don't focus on that property: we don't want to eat antioxidants only. Food works in the context of the whole nutrient symphony. Taking antioxidant supplements, apart from being inefficient, can make you miss the many other properties, known or yet to be discovered, of "cyans."

RED - ORANGE - YELLOW

This is the color signature of *carotenoids,* the red of a ripe tomato, the orange of a carrot.

While carotenoids are famous for their vitamin A activity, they have many other benefits. For example, lycopene, a carotenoid with no vitamin A activity, has cancer fighting properties. Other carotenoids help with macular degeneration.

A diet rich in a large array of carotenoids has beneficial effects on prostate cancer. On the other hand, lycopene supplements don't seem to help: another example that the healing properties of food depend on a large number of parameters.

See the big picture, eat all types of red, orange and yellow food and don't rely on supplements!

GREEN

Chloroplasts are organelles in plant cells that use the famously green chlorophyll to perform photosynthesis, transforming light into chemical energy.

Chloroplasts are densely packed with enzymes (proteins) and coenzymes (usually minerals) that are necessary for digestion.

Chloroplasts also contain carotenoids and some "cyans." Although the color of the carotenoids in the chloroplasts is concealed by the green, the presence of chlorophyll can be taken as an indicator of carotenoids and "cyans."

Chloroplasts are present in the young stems (eat the stems of your veggies too), but their richest source is in the leaves.

EXCEPTIONS

Sulforaphanes (in cabbages and dark leafy greens) are not very colorful, but extremely important nonetheless. The same can be said for the allium family (garlic, onion, etc.).

Note that the green in the dark leafy vegetables is due to chlorophyll.

Of course, most foods contain a mix of micronutrients. You can pretty much figure out what's in your vegetables just by looking at their color. By training your eye to register subtle hue variations, you'll learn to distinguish the bluish red of "cyans" from the yellowish red of carotenoids: red cabbage is more orange than radicchio, and indeed, it contains more carotene.

Mostly "Cyans"

"Cyans" & Carotenoids

Mostly Carotenoids

Carotenoids & Chlorophyll

Chlorophyll & Sulforaphanes

Allium family

Fennel, green pepper

Fresh herbs

etc.

Carrot, Ginger & Coconut Soup

Turmeric and cinnamon play an important part in many traditional medicines, in particular Ayurvedic. Western medicine also acknowledges specific health benefits for turmeric, notably regarding its impact on insulin resistance.

Carrots are related to parsnip, fennel, parsley, anise, caraway, cumin and dill.

While we usually associate carrots with the color orange, they can actually be found in a host of other colors. In fact, purple, yellow and red carrots were the only color varieties of carrots to be cultivated before the 15th century.

Serves 4 to 6 ~ ⧖ ⧖

- 1 piece of fresh ginger, about 2 inches
- 5 large carrots
- 1 medium onion
- 3 cloves garlic
- 2 tablespoons oil or butter
- 2 teaspoons turmeric
- 2 cups vegetable broth
- 8-oz can coconut milk
- Coconut chips and minced chives for garnish

⚠ *As everyone knows, carrots contain **carotenoids**, which confer them the orange tint: beta-carotene is very widely publicized these days, but in fact, it is not necessarily better or more important than the other hundreds of carotenoids.*

Rather than focusing on buzzwords such as alpha-carotene, beta-carotene, etc., seek all sorts of orange foods that will supply a variety of carotenoids.

***Carrots** that reflect the colors of the rainbow are not only beautiful; their pigments hide a treasure trove of nutrients.*

- *Red carrots are rich in lycopene (another carotene), the same pigment found in tomatoes.*
- *Yellow ones are rich in xanthophylls and lutein.*
- *Purple ones have extra "cyans."*

Their core, usually colored differently, contributes additional value.

Many of the carotenoids are very heat tolerant: tomato sauce can be cooked for hours and still retain its nutrients.

⚠ *Eating carrots alone doesn't take care of your carotenoids: you need to consume all the shades of carotenoids found in beets, tomatoes, squash, peppers and all the other orange-red vegetables.*

1. Peel and mince the ginger: first make slices then cut crosswise.

2. Peel and dice the carrots and the onion into ¾-inch pieces. Mince the garlic.

3. In a medium saucepan, heat the oil (or butter) over medium heat. Add the onions, ginger, garlic and turmeric and sauté until the onions are soft, about 3 to 4 minutes.

4. Add the carrots and broth and stir to combine. Bring to a boil and reduce to simmer. Cook for 8 to 10 minutes.

5. Add coconut milk to taste and continue to cook until the carrots are soft.

6. Blend the soup. Season to taste with salt and freshly ground black pepper. Adjust the consistency by adding broth as needed.

To serve, ladle soup into serving bowls and garnish with coconut chips and minced chives.

NOTES

You can also garnish with a dollop of the creamy top of the coconut extract.

Don't pour in too much broth at the beginning. It's always easier to add some later than to remove it!

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(...)

Being a Vegetarian
(is not easy)

There are many reasons why a person would want to be a vegetarian; we will only comment on the health aspect of vegetarianism.

The China Study is considered the founding book, proving that vegetarians are healthier and live longer than the rest. On this highly touchy topic, enough reliable sources have pointed to serious deficiencies in *The China Study*[*]. Vegetarians are urgently advised to go and look for themselves at the conflicting evidence, rather than trusting their health to flawed research and special interest.

Not eating meat is often an ethical choice, and this honorable concern should be respected, but don't think you're doing your body a favor:

- Studies say protein[*] of animal source is protective in many ways.
- Using *The China Study* data itself, which is available to the public, it can be shown that meat consumption is associated with a longer life.
- Our dentition and gastrointestinal tract are definitely those of omnivores. Several studies on the evil effects of red meat were performed on rabbits, notorious herbivores!

⚠ ***Phytoestrogens***

Soybeans *and* ***mung beans*** *must be soaked before using, or cured in brine, or fermented, in order to reduce the negative effects of the lectins and phytoestrogens they are rich in.*

Eating a lot of soy means taking phytoestrogens at pharmacological level. Since they are female hormones, abnormally high levels of phytoestrogens are understandably bad for men, but could they be beneficial for women?

When a food has such a specific effect, it is affecting the balance in the person: at this point the long term effects of this imbalance are unknown (hormone replacement is potentially harmful).

Although once in a while is OK, soy should not be a dominant part of our diet. Don't splash soy sauce on everything!

Not surprisingly, vegetarians need to pay particular attention to the protein they eat. Higher protein[*] diets raise HDL cholesterol, which is protective against cancer of all kinds, stroke, heart attack and all cardiovascular diseases.

Eat, by order of importance:

1. Fatty proteins that help absorption of the fat soluble vitamins (A, D, E, K). The most protective proteins in that respect are dairy and eggs, and both happen to provide a relatively fatty environment: cheese, butter, ghee, yogurt, kefir, farmer's cheese... Egg yolks are the only source of B12 for vegetarians.

   (This is addressed to the ovo-lacto vegetarians, as there is, unfortunately, not a lot of advice for the vegans[*], people consuming no animal products at all).
2. Nuts and seeds, while healthy, come in second because they don't provide the animal fats and animal proteins our body needs.
3. Other fatty fruits and vegetables: avocados, hearts of palm, coconuts.
4. Vegetables other than grains: dark leafy greens, cruciferous vegetables, colorful root vegetables.
5. Legumes that are not high in antinutrient activity.

Beware of antinutrients

Foods rich in lectin, such as rice, beans and soy beans, can impair the absorption of protein and other nutrients.

Grains and legumes are complementary in their amino acid content: grains are poor in *lysine* and rich in *methionine,* and vice versa for legumes. Hence the widespread idea of associating grains and legumes to provide a wider range of nutrients. ⚠ *The danger is that many legumes actually bind to the protein in the grain and inactivate its nutritional value.*

The better legumes include: chickpeas, lentils, peas. To be avoided because of their high lectin concentration are: kidney beans, navy bean, red beans.

Avoid phytoestrogens

Mung bean, alfalfa beans and sprouts are in the same family as soybeans: high in phytoestrogens, they pose a danger for women at risk of breast disease (not for the general population); for men they are objectionable because they raise estrogens to abnormal levels.

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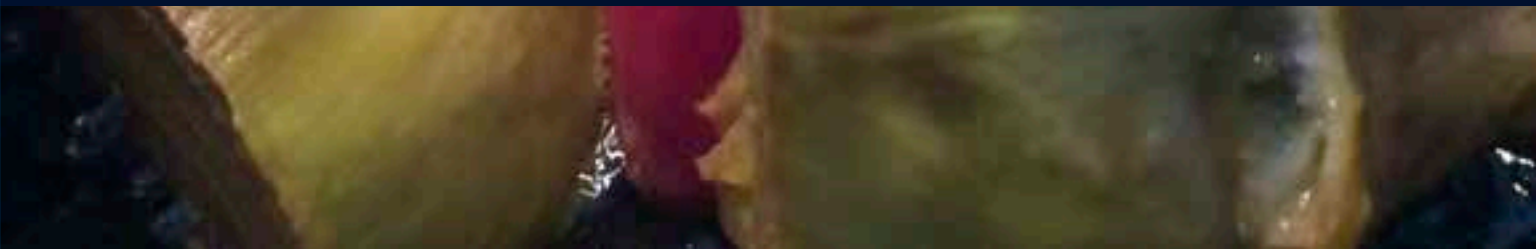
(...)

Vegetables



This is a whole system!

For the advice to make sense, it must be in the context of a *diversified real food diet*. Don't combine it with another type of diet. Don't pick elements that you like from various diets.

- Select vegetables with a high nutrient to sugar ratio.
- Don't be afraid of fat: low-fat diets are unhealthy.
- Eat protein: they are your body's building blocks.
- Eliminate or, at a minimum, limit sugar and starch consumption (including whole grains and cereals).

If you eat a real food, micronutrient-rich diet, you don't need to add sugar and starches. You will get all the carbohydrates you need from your micronutrient-rich vegetables.

Don't think in terms of calories: think in terms of diversity and richness of your food.

Vegetable Families

To get the broadest value out of your food, think in terms of nutrient families *instead of single nutrients.*

In the same vein, think of vegetables as families and make sure you get the widest variety within each group: while families have general characteristics, each individual in the family possesses its own personality.

Cruciferous vegetables / Dark leafy greens

Their signature is an abundance of sulforaphanes, a chemical with huge health benefits.

Sulforaphanes are colorless, and the distinctive green color of these vegetables is due to chlorophyll: in addition to being a useful nutrient, chlorophyll can also be a promise of carotenoids, as the two pigments are often found together (both are involved in harvesting energy from light).

Some members of this family are more colorful, showing a stronger presence of other nutrients. As a bonus, cruciferous vegetables and dark leafy greens are good for intestinal transit, thanks to their high fiber content.

Septate fruits / Mediterranean vegetables

These are, technically speaking, all fruits. They include: squash, tomatoes, eggplants, peppers, cucumbers, watermelons…

The members of this family owe their unique nutrient density to their seeds, the germs of life. They are mostly rich in carotenoids, but some also contain a fair amount of "cyans."

Root vegetables

Carrots, potatoes, turnips, beets, radishes, yams…

Starchy, but nutrient-dense, their strong suit tends to be the carotenoids, as evidenced by their yellow or orange tint. Thanks to their deep roots, they have a nice tap into mineral sources different from those of most vegetables.

Their contribution to the intestinal flora is essential for vegetarians; in particular, their skin harbors a whole biome of useful bacteria: eat the skin whenever possible; don't peel carrots!

Allium

Leek, shallot, onion, green onion, garlic…

Their uncommon chemistry is rich in flavonoids, and they are unique in sulforaphane concentration. Another of their strengths is the capability to donate sulphur, which contributes to cartilage and joint health.

Fruits
(Other than septates)

Fruits are not created equal: the farther North and winterward you go, the more nutrient-dense the fruits. (Possibly so hibernating animals can load up.)

Use fruits sparingly because of their high sugar content. The good news is that their skin is the single richest source of "cyans" (short for the bluish nutrients, cyanidins, anthocyanidins, anthocyanins…).

Nuts and seeds

These are great sources of minerals that are relatively rare in other foods (zinc, magnesium, manganese). They constitute a healthy source of essential omega-3 and omega-6 fatty acids, as well as short and medium-chain saturated fats. They are also a source protein with a fairly broad spectrum. Vary the nuts and seeds you consume, as they complement one another.

Legumes

Legumes are plants that carry their seeds in pods. Usually only the seeds are consumed: legumes are rich in starches, and more importantly in antinutrients such as lectins and phytates; therefore, they should be used with caution.

Green beans are in a separate category since we eat both seeds and pods.

And all the others!

The list of vegetables is endless. Many important vegetables don't belong to any of the families above: fennel, asparagus, celery, artichoke, herbs and spices, just to name a few.

Eat the widest possible variety of vegetables!

Spaghetti Squash

This fall squash deserves a special mention as a great resource for those with nostalgia for pasta. Its wonderful texture and versatility make it an easy solution for the everyday meal or for entertaining.

Young squashes work better as their flesh is firmer and yields nice firm strands.

Although boiling is an option, baking is the preferred method here, due in part to the technical difficulties in finding a large enough pot.

Baking face-down allows the squash to cook in its own steam. Moreover, after baking, the outside takes a bright shiny aspect, making this natural container the most perfectly elegant serving platter.

Serves 4 ~ ⌛

- 1 medium spaghetti squash

To serve as a savory dish:

- Oil, salt, pepper
- Italian Meat Loaf*

To serve as a dessert:

- Butter, cinnamon, nutmeg...

Like all fall squashes, spaghetti squash is rich in nutrients of all sorts, sugar included. However, compared to other squashes (sugar pie, butternut, acorn...) their sugar content is much lower: their glycemic load is at most half that of most other fall squashes.

***Color perception** is strongly linked with nutrient density and taste: as a general rule, a paler squash contains less sugar and also less nutrition. There must be reasons why we evolved to see colors...*

⚠ ***A good metabolism?***

It's true that some people can eat all the starches they want without getting fat. However, obesity is not the only metabolic consequence of eating starches and sugar.

Appearance is not the main concern. By consuming large amounts of starches, people deprive themselves of the other nutrients they could have eaten instead.

In addition, digesting starch requires a lot of fluid and can have a wash out effect that depletes the body of minerals[gelatinization].

1. Preheat oven to 375 °F.

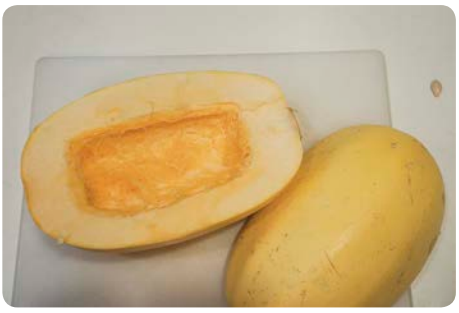
2. Cut the squash in half. Discard the fibers and seeds in the middle, clipping the stringy fibers with scissors if necessary.

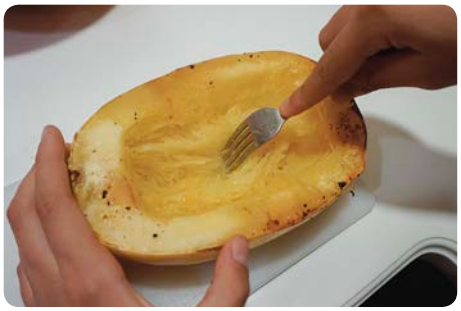
3. Sprinkle salt and drizzle oil onto each half.

4. Bake squash, cut face down, for 30 to 60 minutes, depending on size.

5. Using a fork, gently scrape the flesh of the squash: you will get strings that are reminiscent of spaghetti strands.

Spoon meat sauce on top of the "spaghetti." Sprinkle with Parmesan cheese and enjoy!





For a dessert, replace the oil with butter when cooking, and sprinkle with cinnamon and nutmeg before serving.

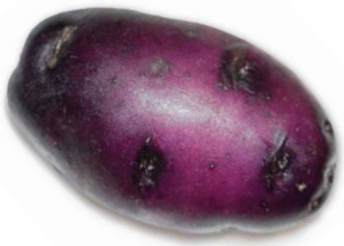
Glycemic Index vs. Glycemic Load

- *The **glycemic index (GI)** of a given ingredient indicates how quickly the sugar it contains passes into the blood.*
- *The **glycemic load (GL)** additionally takes into account how much sugar is present in the ingredient. It is a better number for assessing the effect of a food on your blood sugar level.*

Here is an illustration:

- *Carrots have a rather high glycemic index: their sugar goes rapidly into your blood, but their glycemic load is low, because they don't contain much sugar.*
  Carrots will not raise your blood sugar level as much as other foods with high sugar content, such as mashed potatoes, and should absolutely not be placed in the same category. This is unfortunately often the case when only glycemic index is taken into consideration.
  In addition, carrots are so loaded with nutrients that they are worth eating in spite of the sugar!
- *Beets on the other hand have a relatively high GI and heavy GL. They should not be used as freely as carrots, but since they have a lot of nutritional value, they can be part of our vegetable choices, although not too often.*

When evaluating an ingredient, take into account its glycemic index, glycemic load and nutritional value.



⚠ *When picking food, look at the big picture, instead of focusing on any single property.*

Take the example of al dente pasta versus potato :

- *A potato is a complete nutrition matrix rich in vitamin K, minerals and unusual enzymes.*
- *Pasta has a lower glycemic index, but a much lower nutritional value.*

(...)

(...)

Cruciferous Vegetables

The cruciferous family is an important group of vegetables, with amazing nutritional properties. Its name comes from the shape of its flowers, four petals arranged as a cross. In the plant, the branches and leaves tend to intricately cross each other.

This class of vegetables is more tightly linked to cancer prevention than any other.

Romanesco, the spectacular fractal vegetable

Red cabbage

Broccoli

Cauliflower

Brussels sprouts

Chinese cabbage

Cabbage

And all the leafy greens...

The cabbage and cauliflower types are all members of the cruciferous family:

- Cabbage
- Brussels sprouts
- Chinese cabbage
- Cauliflower
- Romanesco
- Broccoli
- Broccoli rabe

So are the dark leafy greens. (They are so important that they have their own page.)

All cruciferous vegetables contain sulforaphanes, to different extents. They are also rich in other "cyans."

Although most micronutrients are richly colored, sulforaphanes are an exception to the rule. The green tint of most cruciferous vegetables is due to chlorophyll, which has beneficial properties of its own, such as digestion enzymes and chloroplasts associated with carotenoids.

Most people are familiar with broccoli and cauliflower, but it's important to eat the others also because they bring a different spectrum of nutrients.

Dark Green Threads

This very basic preparation can be used with any leafy greens: chard of any color, kale of any type and collards are our favorite.

Once you start using it, you'll never stop! Dark leafy greens complement any meat or fish dish; they can accompany the eggs in your morning omelets 3 or 4 times a week; or just stand by themselves as a side dish.

The acidity of the lemon juice attenuates the bitterness of the threads.

Serves 4 ~

- 2 bunches assorted leafy greens
- 2 tablespoons oil
- 2 cloves garlic, minced
- 2 shallots, minced
- 1 lemon

You can even use salad leaves for this type of cooking: wilted salad, such as romaine, has a good mineral content. Compared to the heavier ones, the lighter leafy greens have much less protein efficiency, though. Their color content ("cyans," etc.) is also less.

⚠ ***Organic vs. Nutrient-Rich***

The more nutrient-rich and less contaminated the soils, the healthier the food produced on these soils.

The label "organic" doesn't mean "nutrient-rich": it just suggests "less contaminated."

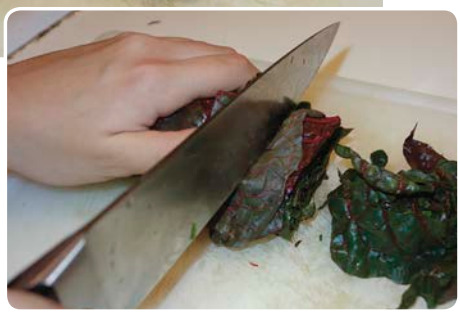
For example, hydroponic vegetables, grown in water with nutrients added, are a very poor source of nutrients because of the unavoidable limitation of adding ingredients.

This is another argument to ***buy locally****: find out where and how your food is grown, possibly get to know the farmer!*

Crop and weed rotation, fallow and weed cycles help maintain the richness of the soil, since different plants draw nutrients at different depths.

1. Wash and dry the greens well. Separate the stalks from the leaves.

2. Roll the trimmed greens together and cut into ½-inch strips.



3. In a large saucepan, heat the oil over medium heat. Add the minced garlic and shallots and sauté until soft.

4. Add the green strips and toss continuously until softened. Season with salt and freshly ground pepper.

Serve with a squeeze of fresh lemon juice.

NOTE

Instead of discarding the stalks, especially when they are as gorgeously colored as in this rainbow chard, dice them and sauté with the garlic and shallots until soft, before adding the green threads.

Plants can be consumed in baby or mature form.

Both are useful and have different properties.

An important feature is the texture, crunchiness or mellowness: vegetables at various stages of maturity offer a different mouth feel experience.

This may seem minor, but this kind of variety influences the pleasure we derive from food.

Their nutrition value is also different: the younger forms are usually less fibrous and have better nutrient value for a given volume. More mature vegetables are more filling and contribute to satiety better.

Stem & leaf

In France, people tend to eat the stems of leafy greens such as chard and discard the leaves! In the U.S., it is the opposite.

In reality, stem and leaf both have nutritional value.

- *The leaves contain the sulforaphanes.*
- *The stems have unique nutrients that are not present in the leaf. Don't discard them: they are tasty and crunchy!*

Discard only the stems that are too tough, such as in some types of kale.

(...)

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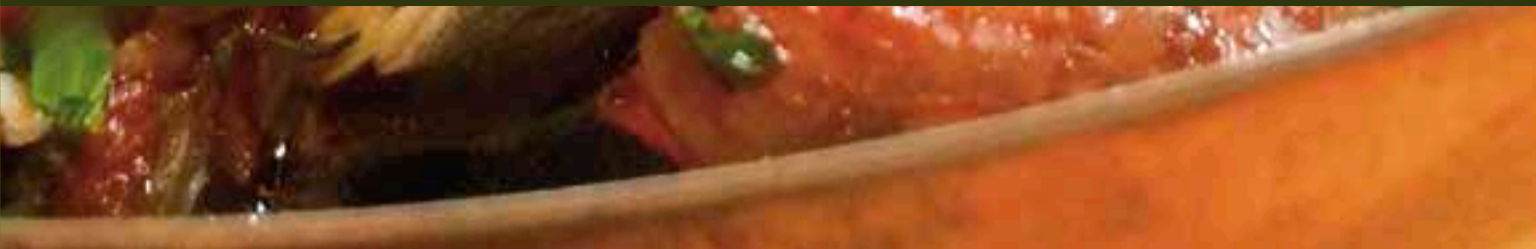
Main Courses



Proteins

If you work with the simplified model of nutrition that emphasizes macronutrients and calorie count, you ignore the thousands of useful micronutrients that are associated with proteins. The only way to access them is to eat the whole animal or vegetable at different stages of maturity.

Protein quality

The proteins we eat must bring us the essential amino acids that our body requires to function. But even more important is the context in which the protein exists: consider protein as a whole real food rather than individual amino acids.

In that respect, the modern American diet, by focusing on muscle as the meat of choice is missing out a lot:

- **Fats**
  A deboned, skinless chicken breast has very little fat and does not bring the much needed fatty acids.
- **Bones**
  Even if you don't chew on them, minerals from the bones leach into the food during the cooking. Bone marrow is a sulphur donor. (Sulphur is good for our ligaments, tendons, joints.)
- **Skin**
  The skin has great nutritional value. It is also a good sulphur donor: since sulphur is often present in a bound state that is not usable, foods that contain bioavailable sulphur are precious.

  Ceramides and collagens contribute to the plumpness and health of the animal's skin and ours.
- **Liver and organs**
  Kidney, gizzards, tripe, stomach, heart are all good.

  While it is the detoxifying site, liver is not the storage site for toxins: liver is healthy and nutritious since it is a distribution site for many micronutrients and minerals, including iron and B12.

Fat quality in meat

Protein almost always comes with fat: to be healthy, these fats must provide a wide range of essential fatty acids.

For that purpose, wild animals are superior: an active animal, employing its natural metabolism produces more essential fats.

The health of the animal is also crucial: healthy animals produce a well balanced combination of omega-3 and omega-6 fats, while sick animals overwhelmingly produce omega-6, as a response to inflammation.

Free living animals are always healthier due to their food source and activity level. The old American Indian view that "a healthy animal is healthy food" is definitely true!

Organ meat *should be occasionally part of the diet, to provide some micronutrients that it contains in a uniquely dense way.*

The exception is the lymphatic system, which is a garbage collector and should be avoided: cheap ground meat and some types of sausage might include it.

The main complaint about organs is their high density in purines. People suffering from gout have trouble clearing the uric acid resulting from the break down of purines.

However, the majority of people who have gout[*] are also insulin resistant. For these people, diminishing the insulogenic part of their diet reduces the gout symptoms.

(...)

(...)

(...)

Pork Roast with Rosemary

An Italian classic... Picture yourself in a garden, on a sunny afternoon, enjoying food and conversation with a group of lifetime friends...

Cuts of meat

For the same animal, protein quality is pretty much the same for the different cuts of meat. The less expensive cuts are at least just as nutritious as the expensive ones.

Generally, the more expensive the cut, the less fat it contains. Another consideration is that grass-fed meat is leaner: it makes sense to select a more fatty cut when buying grass-fed meat than you would when getting grain-fed.

Don't "French" too much!

Frenching is a butcher's technique where all the fat and meat at the end of the ribs are removed to give the rack roast a cleaner look.

The amount of fat taken away varies, but in general, too much is removed because of the misguided fear of fat and cholesterol. In fact, in many other countries, including France, a lot more fat is left on the roast.

Buy a pork roast with the bone in, the pork equivalent of a rack of lamb: figure about 2 chops for 3 people (or for 2 people with a large appetite).

Ask the butcher to leave all the fat on, as it is tasty and will keep the roast from drying out during the long, slow cooking. (Ironically, the fear of fat is such that nowadays, pork, traditionally one of the fattest and succulent meats, is raised to be too lean.)

Serves 6 to 8 ~

- 4 lb bone-in pork roast (about 5 chops)
- 8 sprigs fresh rosemary
- 4 cloves garlic
- ½ tablespoon salt
- ½ teaspoon pepper
- 2 tablespoons olive oil

1. Preheat the oven to 350 °F.

   Reserve half the rosemary sprigs. Discard the hard stem from the other half and chop the leaves. Mix them with the minced garlic, salt and pepper.

2. Using a good butcher's knife, separate the bone, cutting as close to the bone as possible, but leaving the meat and bone attached along one edge of the roast.

3. Using a sharp knife, punch a longitudinal slit throughout the center of the roast.

4. Stuff some rosemary mixture in the central slit and spread the rest in the space between the bone and meat.

5. Turn the meat bone-side down, arrange the rosemary branches on top, tie the roast with kitchen string.

6 Place in a baking dish, bone-side down; pour the oil all over and bake for 1½ to 2 hours.

   The cooking time depends on the oven and the size of the roast. It is safer to check with a meat thermometer that the internal temperature has reached 170 °F.

Take the meat out of the oven, cover to keep warm, let rest 5 minutes before carving.

First separate the roast from the bone; then carve slices. The bones make a nice portion of ribs!

Fat quality

Consume a large spectrum of fats to get a variety of molecule lengths and the essential fatty acids that our body cannot synthesize.

Once the potential issue of ω-3, ω-6 deficiency has been taken care of, remember that the quality of fat is mainly determined by the health of its source, not by its ω-3 / ω-6 ratio[*], or its saturated / unsaturated composition.

A (too) Frenched rack of lamb.

LIQUIDS

Hydration

Our body is constituted of about 65 % water. Our ability to distribute nutrients and to clear waste is very dependent on how well hydrated we are.

Needs vary depending on age, activity level, climate; also, as always, we must pay attention to our individual conditions. For these reasons, it is not possible to give precise instructions on how much to drink. However, to put things into perspective:

- *We lose 2 to 5 % of our body weight in fluids during the day and night, through all our metabolic functions.*
- *A deficiency in fluids of as little as 1 % of our body weight can mean dehydration[*]; that's not much when you think of it: for an average person, it translates into 1 or 2 pounds only.*

The several pounds of lost fluid must be replenished through what we eat (vegetables contain a lot of water) and drink.

Water

Our most natural source of hydration is water. It is not necessary, though, to drink during the meals: drinking a lot while eating dilutes the digestive enzymes; it might also make you eat faster, thus impairing digestion and nutrient absorption.

Drink throughout the day, even if you are not thirsty. Thirst is not a good enough indicator that you are dehydrated; in particular, with aging we might lose the thirst drive, but not the need for water.

Energy production at the cellular level also involves water. Active people need to drink more, and not only because of sweat, but also to replace what was used for producing energy.

If you are drinking tap water, pay attention to the quality of your municipal water supply.

Vary your bottled waters (especially the carbonated ones) for mineral content.

Coffee and Tea

Drink as much coffee[*] and tea as you want, as long as it doesn't disrupt your sleep, upset your stomach or make you nervous.

Coffee and tea are associated with a lower incidence of serious diseases, and this is true of all types of teas, not only green tea.

Although there is no proof at this point that it is as beneficial as coffee or tea, there is some evidence that cocoa[*] is healthy. Unfortunately, cocoa usually comes loaded with sugar.

Milk

Milk is a good source of minerals and vitamins. Lactose intolerance is a false problem: lactase can be induced[*], even in the populations reputed to lack it, simply by drinking milk regularly.

Several studies found that milk did better than sports drinks for post-exercise hydration and returning to electrolyte balance.

Drink whole milk:

- Fat is necessary to absorb vitamins, which are in turn required for us to absorb calcium. Low-fat milk can even be considered dangerous[milk].
- Removing fat changes the natural balance of the food and adds a layer of processing: always a bad thing.
- The missing fat in low-fat products is replaced by sugar to compensate for taste and texture.

(...)

(...)

(...)

"Breaded" Fish Fillets

This recipe replaces the usual bread crumbs with nut meal, an easy way to limit starches. Use your favorite one: almond and hazelnut meal are the more commonly available.

Any thin fish fillets can be used: sole, catfish, halibut. This is a good way to make kids and grown-ups eat fish!

This cooking method is perfect for an everyday meal and also works well with thin, flat cuts of white meat: veal, chicken breast, turkey breast, or whatever you happen to have in the refrigerator!

Watch the heat as the nut meal will darken quickly if the pans get to hot. Reduce heat or temporarily remove pan from heat, should this happen.

Farmed vs. wild

Always attempt to get wild caught fish because farmed fish is often raised in a contaminated environment. This danger is particularly acute for salmon.

Smaller is better

Small body fish have a shorter life and therefore have less time to accumulate toxins, such as mercury and other heavy metals, from the environment.

It is best to avoid the largest, long-lived fish that are high in the food chain such as swordfish, shark and large tunas (some can be 100 years old!)

Excellent in that respect and many others are: sardines, mackerel, anchovies... The smaller yellowfin tuna is safer than the large bluefin or the slightly smaller albacore.

Among the freshwater fish, catfish, a bottom feeder with a long life, is a "dirty fish." Trout on the other hand is much cleaner.

***Frying** has been demonized, in large part due to the fear of fats. As long as you fry reasonably (with fresh oil, not oxidized or rancid, and below the smoke point), there is no need to fear fried foods.*

Serves 4 ~

- 4 tilapia (or other firm fish) fillets
- 1 cup almond (or other nut) meal
- 1 egg
- Oil for sautéing

Garnish:

- Parsley
- Lemon

1. Wash and dry the fish fillets well with a paper towel. It is important that they be dry so the egg can stick. Season the fillets with salt and freshly ground black pepper.

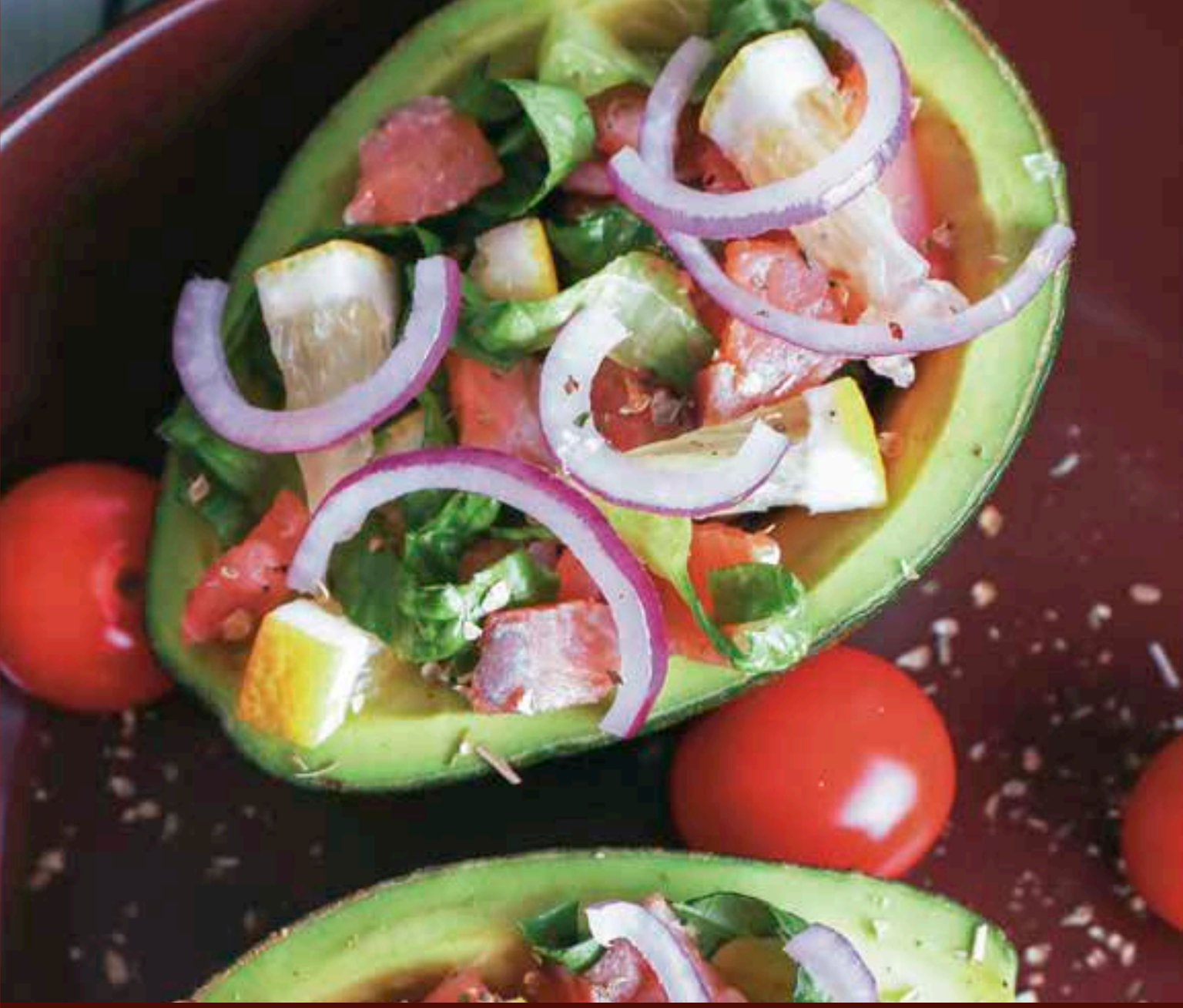
2. Dip the fillets in the egg so that they are entirely coated. Shake off the excess.

3. Dredge each fillet into almond meal, making sure it is covered all around.

4. Heat a large, non-stick sauté pan over medium heat. Add enough oil to coat the bottom of the pan. Have the oil heated, but not smoking.

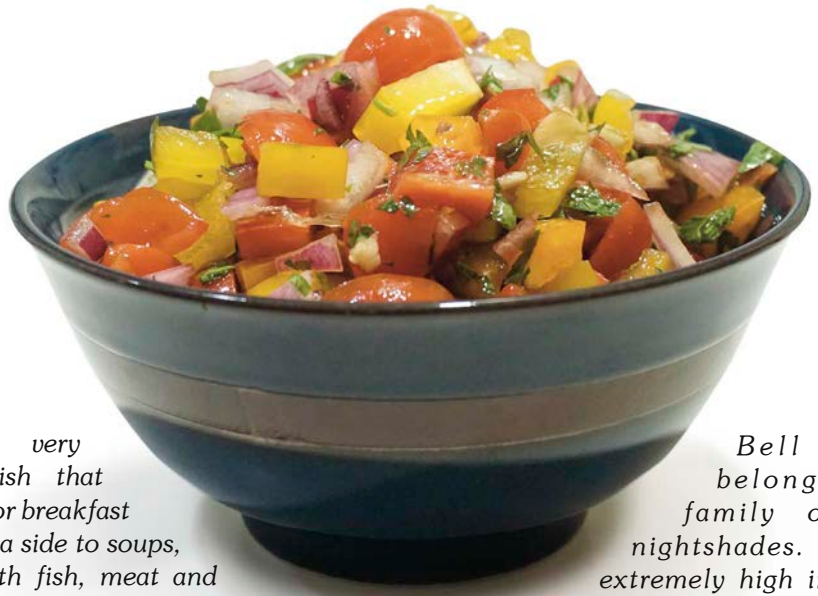
5. Cook the fillets over medium heat until lightly browned, about 3 minutes. Turn and cook on the other side for another 3 minutes.

Finish with fresh lemon juice and a sprinkle of chopped parsley. Serve immediately.



Breakfast, Snacks and Condiments

Tomato & Bell Pepper Relish



This is a very adaptable dish that can be used for breakfast with eggs, as a side to soups, or served with fish, meat and poultry.

The relish is best when using ripe, summer tomatoes picked at their peak, sweet and flavorful. But in colder months, seasoning properly with salt helps bring forward the sweetness hidden in the winter tomatoes.

Serves 8 ~ ⌛⌛

- 2 cups assorted cherry tomatoes, halved
- 1 red bell pepper, finely diced
- 1 orange bell pepper, finely diced
- 1 yellow bell pepper, finely diced
- ½ teaspoon crushed red pepper flakes
- 1 medium red onion, finely diced
- 3 garlic cloves, minced
- 4 tablespoons chopped fresh flat-leaf parsley, plus whole leaves for garnish
- ½ cup extra-virgin oil
- 4 tablespoons red wine vinegar
- 2 tablespoons fresh lemon juice

Bell peppers belong to the family of septate nightshades. They are extremely high in potassium and carotenoids and deserve to be used more often!

Depending on their color, bell peppers display a different balance of micronutrients, so include them all! The red ones have a better micronutrient score; the yellow ones stand out for minerals and amino acids. And enjoy the green ones too!

The mix of colors says it all, this dish is replete with micronutrients: yellow to red carotenoids, red to purple "cyans," allium, fats...

Malnutrition[*] *(micronutrient poverty) can sometimes have worse consequences than* ***undernutrition*** *(not enough food):*

The effects of not having enough food can be reversed with food, whereas micronutrient deficiency has longer term effects.

1. Combine all the ingredients in a medium-sized bowl.

2. Season to taste with salt and freshly ground black pepper.

Serve as a side dish to any protein course, or use to create a salad (filling the hollow part of a half avocado for example).

Understanding sugar information

Food labels display total carbohydrates and, immediately below, dietary fiber and sugars. For example:

Total Carbohydrate	*37 g*
Dietary Fiber	*4 g*
Sugars	*1 g*

How are these mysterious figures related?
Do you add something to something?
Or subtract???

Here is how to decode the information:

- ***Total Carbohydrates*** *include: dietary fiber, starches, natural sugars and added sugars.*
- ***Dietary Fiber*** *has no or little impact on our blood sugar level.*
- ***Sugars*** *are the simple sugars, mono or disaccharides.*

The labels single out simple sugars, but in fact we know that starches or complex sugars are no better than simple sugars: if the food is not very fibrous, starches will pass to the blood as quickly as simple sugars.

By taking the	*Total Carbohydrates*
and subtracting the	*Dietary Fibers*
we get the	*Simple Sugars + Starches*
	(that is, the total amount of sugar that has an impact on our blood.)

In the example above, the label[*] should state:

Total Carbohydrate	*37 g*
Dietary Fiber	*4 g*
All Sugars	***37 - 4 = 33 g***

Nutrition Facts
Serving Size 2/3 cup (55g)
Servings Per Container About 8

Amount Per Serving

Calories 230	Calories from Fat 72
	% Daily Value*
Total Fat 8g	**12%**
Saturated Fat 1g	**5%**
Trans Fat 0g	
Cholesterol	**0%**
Sodium 160mg	**7%**
Total Carbohydrate 37g	**12%**
Dietary Fiber 4g	**16%**
Sugars 1g	
Protein	
Vitamin A	10%
Vitamin C	8%
Calcium	20%
Iron	45%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily value may be higher or lower depending on your calorie needs.

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

⚠ ***Sugar in disguise***

Be aware that sugar can be listed under many names, among others: dextrose, cane crystals, cane sugar, caramel, corn syrup, evaporated cane juice, fructose, fruit juice concentrate, high-fructose corn syrup, honey, invert sugar, lactose, malt syrup, maltose, maple syrup, molasses, raw sugar, ribose rice syrup, rice malt, sucrose, syrup...

Less common names include: disaccharides, erythritol, galactose, glucitol, glucosamine, hexitol, inversol, isomalt, maltodextrin, mannitol, pentose, sorbitol, sucanat, xylitol, xylose...

And don't forget that things such as ***corn starch*** *or even* ***wheat flour*** *are also hidden sugar.*

Cooking Oils

Manufacturing oil involves extracting it from its source (seed, nut, fruit) and refining it to modify its taste, aspect and shelf life.

Extraction can be achieved:

- Mechanically, by decanting and centrifugating, or by pressing, the expeller press being the most common. (Note that "cold press" extraction is misleading; it is a legal term that actually allows some heating of the product.)
- Chemically, using solvents, most commonly hexane.

Refining usually involves heat (up to 500 °F) and further chemical processing.

The heating destroys some of the oil's nutritional value and can create harmful "trans" molecules. The chemical solvents are toxic and carcinogenic[oils].

Unrefined oils, mechanically extracted under lowest possible heat, retain the most nutritional properties. They are the best. Whenever possible, seek these characteristics in the extra-virgin oils you buy.

However, sometimes you'll need pure oils, which can be used at higher temperatures. By definition, pure oils require additional processing in order to remove the impurities. Look for **oil that was purified by filtration**. That might prove difficult. Coconut oil is a good refined oil. Pure olive oil refined reasonably might be available too.

⚠ Smoke Point

Heating oils and fats in general beyond their smoke point (the temperature at which the fat decomposes and smoke becomes visible) degrades them with unhealthy consequences.

The smoke point depends on what the oil is made of and also on how it was processed. "Virgin" oils have a lower smoke point than the more refined (purified) oils. This explains, in part, the variations in the numbers found in the literature: for olive oils, smoke points range from 320 °F to 470 °F.

Rather than relying on generic data, it is useful to observe and recognize when the oil's temperature is too high. Symptoms include:

- Smoke (by then, it's too late; discard the oil and start over.)
- Burnt smell (by then, it is usually too late also.)
- Color (might be hard to tell in a black pan.)
- The shimmer that appears in the oil is a good indication that it has reached its maximum, and that you can safely cook in it.

This is easier to see when using a stainless steel pan. The bubbles, produced when you throw shallots in, are not a problem; they are simply caused by the release of water present in the ingredient.

Modern processing

Use natural oils. Avoid man-made trans fats (natural occurring trans fats are OK, though).

For each cooking method, select an appropriate type of oil:

- For cooking at high temperatures and frying, choose oils that have a high smoke point such as coconut oil, pure olive oil, filtered peanut oil, refined safflower oil…
- Other oils we want to use, but not cook with, include: virgin olive oil, non filtered peanut oil, sesame oil…
- Don't use: Canola or soybean oil.
- Vary your oils.

To protect it from rancidity, keep your oil in a closed container and store it in a cool, dark place.

Homemade Mayonnaise

Making your own mayonnaise is simple and easy if you respect a few principles: all the ingredients should be at room temperature, and the oil should be incorporated slowly to ensure a proper emulsion whether using a food processor or whisking by hand.

Unlike commercial products, which can be stored for an almost indefinite amount of time, the home-style version, if refrigerated properly, will only keep for 3 to 4 days. This recipe can be used as a spread, or as a base for other dressings, aïoli or remoulade.

*For **Aïoli**, add a crushed clove of garlic to the ingredients.*

Makes 1 cup ~ ⏳

- 1 egg yolk
- 1 teaspoon Dijon mustard
- 1 teaspoon lemon juice or vinegar
- 1 pinch of salt
- 1 cup extra-virgin oil of your choice

1. Let the egg sit at room temperature for at least one hour.
2. Whisk together the egg yolk, mustard, lemon juice and salt (and optionally the crushed garlic). Set aside half of the preparation, it will be useful for making more, or for a second try, should you miss the first time around.
3. Using a whisk or a fork, add the oil to the mixture a few drops at a time, turning constantly and rapidly in small circles.

   The trick is to add the new oil in a corner and mix with the rest only when it has been completely absorbed. When the mayonnaise begins to thicken, you can start adding oil a little faster.

⚠ ***Mayonnaise*** *- Today, store-bought mayonnaise is prepared almost exclusively with soybean oil. Regular consumption of soy products is not advised because the heavy quantity of phytoestrogens they contain can affect and destabilize your hormones.*

If you consume a lot of mayonnaise, it's easy to make your own, using different oils to increase the diversity of fatty acids in your diet.

Since the preparation is not heated, this is a great opportunity to try varied oils, even the more fragile ones. Use extra-virgin oil with the least processing possible: mechanically extracted, without heat treatment or solvents.

Deviled Eggs

A classic dish, easy to prepare and easier still to eat!

Add ingredients in the yolk mixture according to your taste:

- *Minced shallots*
- *Chopped pickles*
- *Tabasco sauce*
- *Worcestershire sauce...*

Garnish with toppings of your choice:

- *Capers*
- *Avocado*
- *Olives*
- *Parsley...*

Macronutrients

Our "ideal plate" has a built-in way to limit the total intake of food by imposing a fixed 3 to 1 proportion of vegetables to proteins. While the 3/1 ratio was determined empirically, for most people, observing these rules will make them feel full before they overeat.

The "ideal plate" limits addictive foods by removing sugar and starches, making the body more responsive to its satiation signals. If you obey these principles, your body will not develop hormonal resistance, and it will be able to tell you reliably when to stop eating.

Makes 12 pieces ~ ⧖ ⧖

- 6 large eggs
- 2 tablespoons Homemade Mayonnaise*
- 1 teaspoon white vinegar
- 1 teaspoon Dijon mustard

Garnish:

- Paprika

⚠ ***Calorie restriction*** *may lead to missing nutrients, that is, malnourishment.*

Calorie restriction has many other potentially negative effects, depending on the nature of the restriction: if food intake is limited across the board, it is probably OK. But, if the restriction concerns mostly protein or fat, as is the trend today, it is harmful because the proportion of carbs in the diet is increased. Low-fat-low-carb diets are equally dangerous because they can result in burning muscle for energy.

If you eat right, you don't need to restrict your calories to achieve a good, healthy body shape.

The quality of the calories is more important than their quantity: the impact of our food on our blood sugar and insulin production is more important than its caloric value.

1. **Hard boil the eggs:** place them in a saucepan; add enough cold water to cover the eggs by 1 or 2 inches. Bring to a boil. Cover, turn heat off and let stand, covered, for 15 minutes.

2. Drain immediately and rinse for 1 minute under cold running water. Tap the eggs to crack the shells all over and peel. Slice the eggs in half lengthwise; carefully extract and reserve the yolks.

3. Mash the yolks with a fork. Add the mayonnaise, vinegar, mustard and optional ingredients; season to taste with salt and pepper and stir well.

4. Spoon the yolk mixture into the half egg whites. For cleaner results, you can make a piping bag out of a plastic bag by cutting open one of the corners.

Garnish with paprika and the toppings of your choice.

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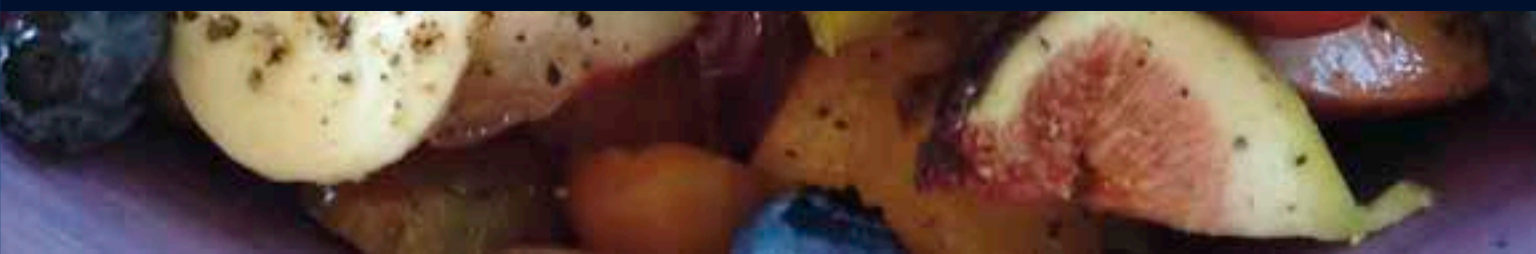
Desserts



Limit sugar consumption

Dessert should be an occasional treat, not a routine. Choose the best and enjoy it mindfully. Make it worth the trouble!

All the natural sweeteners have pretty much the same effect as table sugar on your body.

While there are essential fats and essential amino acids, there are no essential carbohydrates: the body can manufacture all the carbs it needs.

But in fact, the diet we propose is not a low-carb diet: by eating a lot of colorful nutrient-dense vegetables, you do consume a good amount of carbohydrates.

Sugar is addictive for hormonal reasons. It is also addictive for psychological reasons. It's worth trying to break the habit.

Sweeteners

Our sweet tooth evolved at the dawn of mankind, when sugar was scarce. Now that sugar is ubiquitous, this fondness has become a liability: it is part of an ancient signaling system that is completely unadapted to the modern world.

- **Glucose** is a simple sugar. Our body processes most of the carbohydrates we eat into glucose.
- **Fructose**, also a simple sugar, is naturally occurring, predominantly in fruit.
- **Sucrose**, or table sugar, is a disaccharide; its molecule is a combination of glucose and fructose.

Sucrose, glucose and fructose are sparsely spread in nature; therefore our body is not equipped to deal with an over-abundance of either.

The main problem with glucose is that it triggers the production of insulin. Excessive sugar and insulin are toxic to our body. For a detailed discussion of the nefarious effects of glucose, see section *The Hormonal Effects of Food*.

⚠ Fructose

Our body processes fructose differently than glucose. However, fructose[*] doesn't solve the problem of the physiological harm of sugar.

Fructose is more readily converted into triglycerides, which are easily converted into body fat. Fructose decreases the diameter of our LDL particles, which increases their ability to migrate through the arterial walls and damage our arteries. Fructose carries an array of negative hormonal effects, different from those of glucose, but as deadly.

If you consume fructose in its natural environment, such as a whole fruit, it is not so nefarious. When extracted and super concentrated, it becomes very toxic.

⚠ High fructose corn syrup

Never, ever, ever, ever, ever, use it! Although there is nothing uniquely bad about it, this is highly concentrated fructose. Its introduction is responsible from a lot of modern evils.

Eating whole corn? Once a month is OK. As with all starches, the main drawback of corn is its high sugar content.

⚠ Artificial sweeteners

For a lifetime of food enjoyment, we must re-train our palate. Once we are able to appreciate natural flavors, the pleasure in food will increase exponentially; food will once again be thrilling!

In order to do so, we have to get away from seeking the sugary tastes of our childhood. This is one of the reasons why we should avoid artificial sweeteners: their usage will only reinforce a bad habit and prevent our palate (and brain) to re-train.

Additionally, artificial sweeteners, even though they may not contain actual sugar, will trigger some brain and body chemistry associated with a response to sugar. The artificial sweetness will disrupt the neuroendocrine system that regulates hunger and activity[sweeteners].

⚠ Agave nectar

This is another manufactured sugar. It has more nutrient value than plain table sugar, but it is still highly concentrated sugar.

⚠ Honey

Honey has a high glycemic load, but it also has some redeeming properties: it contains small amounts of minerals, enzymes and micronutrients; it might also have some anti-viral effects.

For these reasons, honey is preferable to other sweeteners: if you're going to use a sweetener, use honey.

However, it is still is a concentrated, manufactured sugar (albeit by the bees). Use it sparingly.

Sugars occurring in their natural context come with other nutrient values, and thus we can endorse their *occasional* use.

Nutrition and Exercise

Nowadays everybody agrees that exercise is necessary. Motivations differ from person to person: health, weight loss, strength, body build-up, athletic performance...

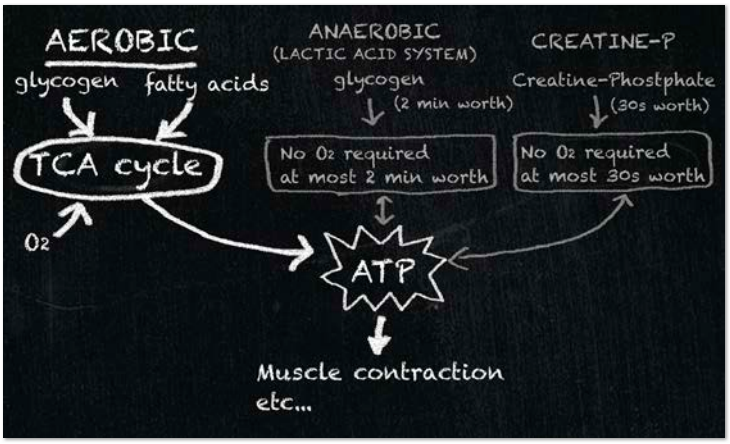
In this section, we will examine how nutrition affects and complements exercise.

ENERGY PRODUCTION

Exercise and energy are tightly connected, so first, we need to understand how the food we eat is stored and used to produce energy.

Our body's ability to produce energy all boils down to ATP production: ATP molecules are the immediate source of energy that enables us to move our body around.

Our cells hold a small amount of ready-to-use ATP that can be consumed in a matter of seconds and must be replenished. This replenishment is achieved in three manners:



1. **Aerobic (TCA cycle)** - An important characteristic of this system is that it requires oxygen to operate: that's why our capacity to extract O_2 from our breathing is important (VO_2max). This system can generate large amounts of ATP, but its rate of production is relatively low.

2. **Anaerobic (Lactic Acid System)** - This method is engaged when oxygen is too scarce for the needs of the aerobic system: it produces ATP quickly, but its capacity is limited to less than 2 minutes' worth of effort. It is accompanied with the production of lactic acid, hydrogen ions and the well known sensation of muscle burn. Its fuel is primarily muscle glycogen.

3. **Creatine-Phosphate** - This system can replenish ATP quickly but it is only good for up to 30 seconds of exertion: its function is to supply very high intensity, short bursts of energy; its fuel is a chemical (phosphocreatine) present in limited quantity in our cells.

All three methods come into play at some point during athletic activity, but one will be predominant depending on the intensity and duration of the exercise:

- The Aerobic System is important for sports emphasizing endurance, from a 5-minute run to a marathon.

- For events requiring a maximal energy output for 30 to 120 seconds (200 to 800 meter run), the Anaerobic System will come into play.

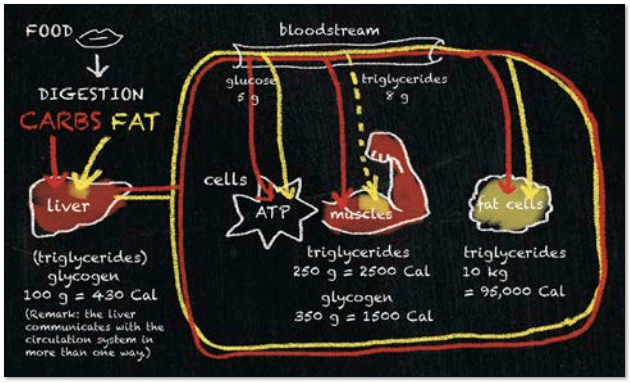
- Athletes such as weight lifters or sprinters, producing short, intense efforts, take advantage of the Creatine-Phosphate System.

While very important under specific circumstances, the last two systems can be considered as specialty items. In this section, we will focus on the aerobic process, since it produces the bulk of the energy for most of us common mortals.

FUEL STORAGE AND RELEASE

Although proteins are also used under special conditions, the major sources of fuel for the TCA cycle are fats and sugars (numbers given as a rough estimate):

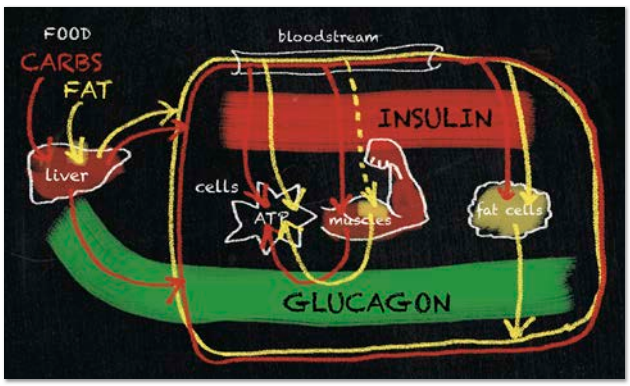
1. In the blood, as circulating sugar (mostly glucose, 5 g total) and fats (mostly triglycerides, 8 g). These are immediately available.
2. In the liver, as glycogen (100 g = 430 Calories) and a small amount of triglycerides. Glycogen can be viewed as short term energy storage.
3. In the muscles, as glycogen (350 g = 1500 Cal) and triglycerides (250 g = 2500 Cal).
4. In the fat cells, as triglycerides (10 kg = 95,000 Cal). Fat is longer term energy storage.



The carbs we eat are broken down during digestion and circulated through the blood (after a passage through the liver). When blood sugar is high enough, sugar is taken into our cells to produce energy immediately, or stored as glycogen in the liver and muscle cells. When glycogen tanks are full, sugar is stored as triglycerides in fat cells: fat cells are by far our largest energy reservoir.

The fat, after being digested, first goes into the lymphatic system, but eventually ends up in the bloodstream. It can then be used for energy production or pass into the muscle and fat cells to be stored as triglycerides.

When needed, glucagon enables the release of glycogen (as glucose) and triglycerides from their storage: after some conversion, they are circulated into the blood and can be grabbed by our cells everywhere to produce energy. One exception is for muscle glycogen that cannot circulate in the blood but must be consumed "on site."



Armed with this basic technical knowledge, let's examine how nutrition can enhance exercise. For a given athletic activity, the problem is to start generating ATP fast enough and to have enough fuel to sustain the production of ATP for the whole duration of the activity.

1. Very low level of activity

At rest, our energy expenditure is very low: our glycogen tanks are easily filled up, any excess food is stored as fat. In the course of the day, glycogen and fat reserves get slowly depleted to provide energy for our basal needs and must be refilled through meals.

Our eating patterns should be cyclical. Grazing (eating very small amounts) all day long to avoid insulin spikes would be a mistake. Our biological machinery is supposed to work in cycles: constant insulin and sugar levels can lead to resistance (the body quits paying attention). We want to trigger our insulin/glucagon cycles by alternating periods of eating and fasting that will deplete our glycogen reserves.

Periodicity also governs the anabolic (building) and catabolic (tearing down) states of our body. Catabolic mode (happening during the fasting time) is needed to get rid of old stuff.

2. Exercise for health

The first benefit of exercise, even for those with no particular health problems, is increased well being and enjoyment of life.

> Exercise substantially improves our hormonal response to food, making us less prone to hormonal resistance. It enables the harmonious regulation of the cycles of hunger and satiation, as well as blood sugar and insulin. It improves cellular health and leads to a vibrant energetic personality.

We make a distinction between "health" and "fitness." Fitness is usually interpreted in terms of performance, the training and eating being optimized for a specific goal to the detriment of long term health. Health is a global concern of the whole body and mind.

(...)

(...)

Baked Apples

The quintessential dessert of yesteryear! The traditional recipe calls for brown sugar, but when you are used to real food, the natural sweetness of the apple, enhanced by baking, is more than enough.

The apples that work best are the ones you'd use for baking a pie: the very common Golden Delicious works well; other more tart varieties are worth trying too.

⚠ *Don't seek food only for their fiber content. We get plenty of fiber with the all the nutrient-rich vegetables in our diet!*

Serves 2 ~ ⌛

- 2 organic baking apples
- 2 tablespoons unsalted butter
- 2 pinches of salt
- Cinnamon, nutmeg, or other spices of choice

Serve with:

- 2 tablespoons sour cream or crème fraîche

Dietary fiber

Dietary fiber[*] is a special type of carbohydrate that does not turn into blood sugar.

- ***Insoluble fiber,*** *such as cellulose, passes through the body, absorbing water in the process. Its claim to fame is to facilitate transit. Fiber is the reason why broccoli must be cooked to release the nutrients it traps.*
- ***Soluble fiber*** *breaks down in water. It can absorb water to become a gelatinous substance that is fermented by bacteria in our digestive tract, yielding physiologically active products.*

The notion that "fiber cures everything" is over-simplistic: fiber is more than just transit. By putting too much focus on fiber, we deprive ourselves of nutrition (while absorbing water, insoluble fiber also pulls out nutrients.) Soluble fiber is less prone to that effect; on the other hand, it can cause negative gastrointestinal reactions.

There is such a thing as "fiber quality," determined in part by the soluble to insoluble fiber ratio. But again, don't become a fiber accountant!

Don't invest everything in fiber.

This being said, the fiber in the apple is a "good" fiber with a healthy soluble to insoluble ratio.

Nutritious, with a healthy fiber[*] composition, the apple is the poster girl of the northern seasonal fruits!

Don't peel apples: the peel is a great opportunity to get quercetin, a natural remedy against allergies and colds. Red apples are the richest in that respect, but try others too!

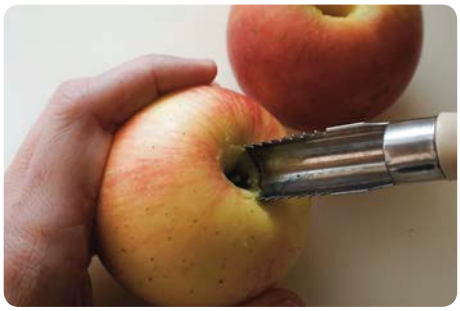
⚠ *It is especially important to pay attention to the way the apple was grown if you are going to eat the peel.*

1. Preheat oven to 350 °F.

2. Scoop out the core of the apples, making sure you don't go all the way through, so you get a well that's closed at the bottom. Place the apples in a baking dish.

3. Fill the well in each apple with 1 tablespoon of butter and a pinch of salt; sprinkle with cinnamon.

4. Bake for 30 to 45 minutes, or until the apples are tender.



Optionally top with a tablespoon of cream and an extra pinch of spices before serving.

Biology vs. Free Will

The emotional attachment to food shouldn't be underestimated: it is obviously very hard to reject the foods you grew up on, the foods your mother fed you.

The psychological implications of food are strong: it's hard to give up sugar for physiological reasons (hormonal vicious cycles), as well as psychological reasons (the brain knows it will be rewarded with immediate pleasure by sweet food).

However, you can also make psychology work in your favor:

Surely, some people are endowed with "better" genes than others; everybody has a friend who can eat huge amount of any foods, apparently without adverse effects, whereas they must be permanently on guard. Genetic conditions can be the cause of hormonal resistance, with the effect that biological signals go unheard, in particular the "Stop eating!" signal.

If you suffer from such a condition, you must acknowledge it and move on. Although it's tougher, you still have freedom of choice.

Bad genes don't mean you are doomed and condemned to bad nutrition: you still have free will! Awareness of your biology should help your will's efforts: if you are leptin resistant, know that you must struggle more than others to stop eating and do it!

The physiological signals have authority but not dictatorship. Your behavior can win over them.

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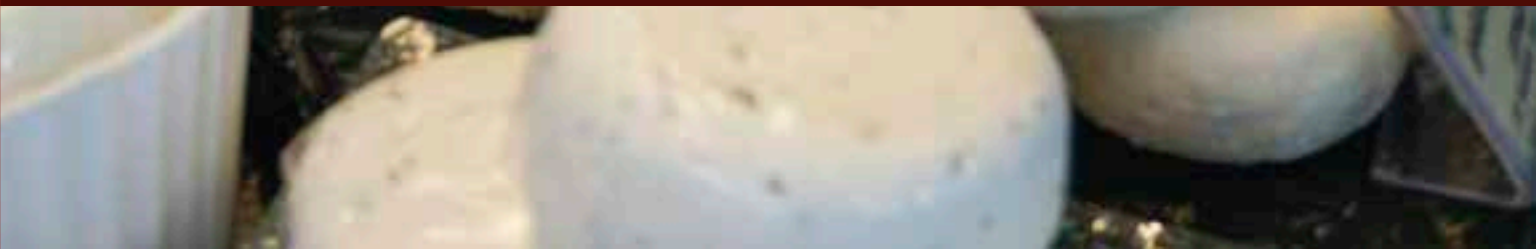
Appendix



Further Reading

Science and politics

Nutritional science is, at this point in time, very incomplete; the only certainty is that there is no certainty. You don't have to agree with all the ideas expressed in the books listed below, but they demonstrate clearly that the science behind our "certainties" is not as solid as we have been led to believe.

Denise Minger. *Death by Food Pyramid*. Primal Blueprint Publishing.

A witty account of *"How Shoddy Science, Sketchy Politics and Shady Special Interests Have Ruined Our Health."*

A very serious book, yet entertaining and humorously written, *Death by Food Pyramid* exposes the fallacies of several nutritional dogmas and the underlying motives.

The book is an eye opener with a detailed history of how incomplete science, scientific feuds and political battles led to the current dietary situation. After reading the book, it becomes obvious that nutritional beliefs don't rest on firm science, that the current dietary guidelines do not reflect the scientific knowledge, and that our health is not necessarily the foremost priority for policy makers.

Nestle, Marion. *Food Politics*. Berkeley: University of California Press.

"How the Food Industry Influences Nutrition and Health."

Marion Nestle chaired the New York University department of Nutrition, Food Studies and Public Health from 1988 through 2003. She was the editor of the 1988 Surgeon General's Report on Nutrition and Health.

In her own words, this is a book about "how food and beverage companies encourage us to buy and eat more, [...] how they lobby government agencies, forge alliances with health professionals, market to children, sell junk food as health food, and get laws passed that favor corporate health over human health."

Michael Pollan. *In Defense of Food. New York*: Penguin Press (2008).

A nice short read, this is a great book to promote eating real food and not food-like substances.

Although we disagree with the assertion that we don't need to eat meat, and although we don't share the dislike of saturated fats, the book is great at explaining the links between politics, business and nutrition. It also demonstrates how modern processing is depriving our food of its nutritional value.

While it is true that the average American eats too much meat, the moto ("Eat mostly plants") undervalues animal proteins that are necessary, albeit in smaller quantity than is currently the norm.

Gary Taubes. *Good Calories, Bad Calories*. New York: Knopf.

A very intelligent and well documented investigation on how bad science and politics conspired to establish the current dietary dogma. It is an engrossing book that reads almost like a mystery novel.

All the important health issues linked to nutrition are addressed in a systematic, chronological manner, unrolling the various processes that led to the current situation. It shows clearly how the exact same scientific data is interpreted by scientist in opposite ways.

You'll find the history of the research on: fat, cholesterol and heart disease; insulin and diabetes; diets and weight loss; and more... The complexity of the hormonal systems involved in nutrition emerges clearly.

This is a long, intense read, but it is well worth the effort for anybody who wants to understand nutrition beyond the clichés.

Nina Teicholz. *The Big Fat Surprise*. Simon & Schuster.

"Why Butter, Meat & Cheese Belong in a Healthy Diet."

Another convincing account of how fats have been unjustly demonized; how low-fat nutritional advice based on weak scientific evidence has created vast health issues.

This fairly easy to read book contains a detailed investigation on nutritional research over the last 60 years. It exposes how false beliefs and misinformation took hold and spread through the scientific community and the public.

Public policy

The U.S. Senate Select Committee on Nutrition and Human Needs. *Dietary Goals for the United States*. Washington D.C. (1997).

Also referred to as the "McGovern committee," this committee was established to make urgent dietary recommendations in the face of the rising health problems caused by bad nutrition in the United States.

At some point in the 1970's it was concluded that America's health was deteriorating and that congress should be doing something about it. Thus the Federal Government officially got into the nutrition business. Out of this was born the famous Food Pyramid.

This document significantly propelled Keys's ideas on cholesterol and saturated fat from hypothesis to established fact.

Reference books

While the debate rages around food, and various parties push forward their arguments, an understanding of the body is necessary. These books make difficult reading, but without a wide view of the entire body, we easily get confused by "experts," who only look at parts of the body with a magnifying glass and focus on their pet issue.

David L Nelson; Albert L Lehninger; Michael M Cox. Lehninger principles of biochemistry. New York: W. H. Freeman.

A good basic biochemistry book for those who really want to dig in!

Human Physiology: An Integrated Approach.

Another large text book...

Veganism, vegetarianism

T. Colin Campbell. *The China Study*. Dallas: BenBella Books.

This is the vegans' reference book. Its title refers to the China-Oxford-Cornell Project, a series of observational studies done in 69 counties in China (see reference below). *The China Study* book (not to be confused with the study itself) is a huge book, which covers a lot of ground. Its conclusion is that "plant-based foods are beneficial, and animal-based foods are not."

There is heated controversy about this book. Several serious authors have pointed out that the assertions Dr. Campbell makes don't appear to be supported by the China-Oxford-Cornell data itself.

The China-Oxford-Cornell Project (data for *The China Study*)

http://www.ctsu.ox.ac.uk/~china/monograph/

The 1989 data for *The China Study* is available online for anybody to download, and attempt to verify the conclusions of the book. Analyzing the data, it becomes clear that the China-Oxford-Cornell Project doesn't prove that a vegan lifestyle is healthy, and that in fact the contrary is very likely.

Technical Notes

The notes below are intended as a starting point for those who want to explore the science behind nutrition. All the assertions found in this book are based on strong scientific evidence, thorough documentation and the continual study of the latest research. But, rather than engaging in a scientific papers "shoot-out," we have chosen to provide the reader with pointers that explain the main idea behind our assertions. We encourage people to critically examine the arguments from various sides, no matter how imposing or influential the authors or institution who proffer them seem to be.

The vast quantity of existing documents means that science can be quoted to justify any position: it is especially easy to selectively pick the data that confirms your point of view, and ignore the rest. It is hard for the public to judge the scope and validity of research papers. This is even truer for some articles found on the internet that disseminate false information under a most serious appearance. Scientific research needs to be examined with a broad knowledge of medical issues, and must be put into context. Only by examining all of the evidence can one form a valid, informed opinion.

If you have time and the interest, the following website provides links to research that is relevant and well conducted:

http://quantitativemedicine.net/bibliography/

Adaptation

"Humans coevolved with this kind of nourishment for several hundred thousand years and have genetically adapted to it."

If you believe in the theory of evolution in general, you have to believe that our body has adapted to certain types of food. Can nutritional engineering come up with better foods than what nature provides? Theoretically yes, but we are very, very, very far from being able to do so: it is way beyond our capacity at this time. In the meantime, eat real food!

Trans fats are a good illustration. Natural trans fats are healthy: dairy, for example, contains a lot of natural trans fat, and in larger amounts when it comes from grass-fed animals; trans-palmitoleic acid in dairy is associated with many benefits, in particular a lower incidence of diabetes. The health benefits of trans fats are seemingly connected to their "trans" feature. On the other hand, man-made trans fats are now widely known to cause serious health problems.

Provided we had the right information, it wouldn't be bad to eat as our ancestors did, especially with regards to the nutrient density and variety of their diet. However, beware, there is a lot of faulty anthropology out there!

We can look at adaptation on two levels: the first one is encoded in our genome, and has a time scale of 100,000 of years. The second one is the lifetime adaptation within each individual, and is measured in years: a person can evolve to be a fat burner, or a carb burner; lactase can be induced; muscles are built.

Aflatoxin

"The risk of aflatoxin is an overblown concern."

Aflatoxin is a fungus present everywhere, not only in peanuts. It is toxic in high doses. Aflatoxin has been labeled a carcinogen based on the flawed AMES test. The benefits of eating peanuts highly outweigh the dangers of aflatoxin.

Alcohol

"Well conducted studies have shown that any amount of alcohol increases women's' risk of breast cancer. Studies showing cardiovascular benefits in men all have serious flaws."

"Concerning wine, most of the claims of cardiovascular benefits are questionable. The cancer risks in women are an argument against using wine for health benefits."

Alcohol presents no benefit for women; it is possibly mildly protective against heart disease for men, at low levels of consumption (less than 20 g of pure alcohol per day). Red wine is higher in histamines (a draw back), but overall a little healthier than white wine because of the resveratrol and blue-red nutrients it contains.

However, epidemiology studies have associated wine consumption with various cancers, both in men and women (possibly in combination with other things): breast cancer seems the most sensitive, but a single drink a day also significantly increases the risk of esophageal cancer. In addition, alcohol consumption raises triglyceride levels as alcohol is directly related to the manufacturing of triglycerides in the liver.

The claims that alcohol is beneficial were based on comparing drinkers to non-drinkers. The methodology was flawed: a lot of non-drinkers are former drinkers who quit drinking for health reasons, so they appear in studies as "sick non-drinkers." Later studies that didn't count the reformed drinkers as non-drinkers found no benefit in drinking.

Consume alcohol prudently!

Alcohol-dehydrogenase

"For the many people who lack the liver enzyme alcohol-dehydrogenase, alcohol is a cellular poison."

Two steps are needed to fully detoxify alcohol. Alcohol-dehydrogenase is involved in the first step: when it is missing, the cells are directly exposed to alcohol; alcohol completely blocks the oxidative pathways of the cell, preventing the Krebs cycle from functioning properly: this kills the cell.

The alcohol flush reaction, frequent among Asians, is due to the lack of alcohol-dehydrogenase. This enzyme cannot be induced in those who don't have the genetics. If you suffer from that syndrome, alcohol increases your risk of liver cancer. (Contrary to lactase that can be induced because all mammals possess it at birth).

AMES Test

"Is grilling or frying meat carcinogenic? The testing that established a link with cancer was flawed."

There might be some danger at a certain level in frying meat, but the original thought was based on the AMES testing: this experiment, dating from the early 70's, was initially a bacterial study that tested the mutagenicity of substances, looking at chemicals that would cause mutations in the bacteria. (Mutations are involved in cancer, but don't necessarily lead to cancer.) The next step used rats, again very different from humans. The current version of the test is still not very good. The AMES test is not an appropriate research model for humans.

Antioxidants

"Our nutrition should not be all about antioxidants."

The protective effect of antioxidants was asserted in the 1980's and exploited by the pharmaceutical industry, the idea being that cells are damaged by oxidation, which is caused by free-radicals ("oxidants"). Since then we have been encouraged to consume as many antioxidants as we can. But in fact, oxidants are needed by our body for a lot of purposes, and now some research reports on the benefits of suppressing the antioxidants (thereby increasing the activity of the oxidants) in some cancer cases.

Beef

"Grass-fed beef brings essential nutrients that you cannot get from vegetal sources, no matter how much grain you consume."

Beef in general supplies efficient amino acids, fatty acids, and bioavailable minerals, as well as B12 (not available from vegetal sources) and iron (more bioavailable from beef than spinach).

Grass-fed beef supplies longer chain omega-3 (EPA, DHA) fats that are not readily found in vegetable sources.

Beer

"With its high glycemic load, combining grain and alcohol, beer is one of the worst drinks possible."

The alcohol in beer raises the triglycerides, and the carbohydrates trigger high insulin, which also raises triglycerides. High triglycerides mean bad LDL. (See "Triglycerides.")

The claim that beer is nutritious is based on the fallacy that grains are nutritious. Beer was a staple in ancient diets because there weren't many practical ways to preserve and distribute nutrition.

Bioavailability

Within our context, bioavailability is a measure of how much of a nutrient that we ate is absorbed into our blood and made available where we need it. The presence of certain chemicals impairs the bioavailability of the micronutrients contained in the food by binding to them.

There are wildly different capacities across the population for absorbing and utilizing nutrients: some people absorb vitamin D and B12 very poorly; some avariciously absorb iron.

Biome

"Fermented milk might help the biome, but it brings only ten species as opposed to the trillions resident in our biome."

The biome designates the bacteria resident in our body, or on it: we are host to around 100 trillion bacteria that perform a number of critical functions and identify us as precisely as fingerprints.

Not all bacteria is bad: the biome is an important part of our ability to digest food and fight off infections. Because of this broad array of biological functions, a healthy biome is a great friend. By the same token, an unhealthy biome can induce chronic diseases, autoimmune diseases and increase the risk of cancer.

There are a few simple rules for maintaining a healthy biome: minimize antibiotics (including antibiotic hand soap), don't be excessively clean, and eat a diet that includes animal ingredients, since these organisms have a biome similar to ours.

(...)

(...)

The man-made molecule has an altered shape, compared to the natural molecule. Since the body doesn't know what to do with that new molecule, the triglycerides made with them aren't readily taken up by the cells, and so the particles containing them shrink as they continue to circulate. This causes heart problems. If the cells do take them up and try to use them as cell wall material, defects result. This has been well known for a long time.

"Grass-fed, grass-finished animals contain healthy fats with a high ratio of long-chain omega-3 and very few trans fats."

Long-chain omega-3 fatty acids are important to our metabolism: they must mostly be obtained through our food since our body's capacity to manufacture them is limited.

We don't actually have a lot of information one way or the other concerning the effect of animal trans fats. (The exception is trans-palmitoleic acid, which is definitely associated with positive health effects.)

A tidbit of technical information: "trans" is a lower bond energy state then "cis." This explains why some naturally occurring trans configurations require heating to convert them to the "cis" state. One more reason to cook foods.

Trans-palmitoleic acid

Trans-palmitoleic acid is uniquely dense in dairy and beef. It is associated with improved blood pressure, reduced diabetes and improved insulin sensitivity. Many studies show that dairy fat is beneficial.

Triglycerides

There are not a lot of free-floating fatty acids in our system. The majority of fats generated by the liver are in triglyceride form. They are circulated in the blood bound up in lipoproteins (VLDL, LDL, etc.).

Paradoxically, eating a lot of fat doesn't cause high levels of triglycerides. Eating high amounts of carbs does: insulin goes up, telling the cells to use glucose; the cells stop using triglycerides, which accumulate in the blood (and eventually get stored in fat cells).

It is undesirable to have high triglycerides for many reasons:

- The liver packages triglycerides into VLDL particles consisting of a cholesterol core surrounded by a thick layer of triglycerides. If triglycerides are high, more VLDL particles are produced. Since the available cholesterol stays the same, each particle has a smaller cholesterol core. After the particle has circulated and its triglycerides have been picked off by cells here and there, what is left is a much smaller cholesterol core (LDL particle) that can get stuck behind the artery walls.
- When there are a lot of triglycerides in the blood, triglycerides are broken near the cells by the cell enzyme lipase (LPL), and the resulting free fatty acids are taken in. As a result, the cells get clogged with free fatty acids, mostly in the mesenteric section of the body, that is, inside the muscle wall of the abdomen: triglycerides are more prone to deposit there (maybe because it's the first place they get to after leaving the liver, or because of our hormonal distribution). This results in abdominal fat rather than subcutaneous fat.

  This mesenteric fat is the least healthy fat because this tissue has a particular signaling role for the entire body in terms of energy behavior; it secretes a whole array of hormones and can be viewed as an organ: for example mesenteric fat produces more leptin than subcutaneous fat does.

The way to lower triglycerides is to cut down on sugar, starch and alcohol.

Vitamins

Vitamins are not totally unrelated to macronutrients: for example, some vitamins are synthesized from fat. Note that the efficiency of vitamins can be affected by the rest of our diet: for example, glucose inhibits the uptake of vitamin C by competing for the same resources.

"By focusing on vitamins, we expose ourselves to the serious consequences of deficiency in the other nutrients."

"Vitamins are linked with short term disease. They don't take into account nutrient deficiencies with long term consequences."

The causal mechanism between vitamin and disease is not always clear, but the time lapse between deficiency and disease is always relatively short (by definition of vitamins). For instance, scurvy was associated with vitamin C deficiency a long time ago by observing British sailors.

Epidemiological facts linking diseases with nutrients not classified as vitamins take longer to establish, but they are statistically significant as well:

- Deficiency in long-chain omega-3 is statistically related to a higher incidence of stroke, heart attack and cancer.
- We know that people who have diets higher in sulforaphane, over time have a lower incidence in cancer.

Because these effects have a longer time scale, the role of sulforaphane or omega-3 is obscured, and they are not classified as a vitamin.

Vegans

See also *Further Reading - Veganism*.

It is frequently claimed that veganism (not eating any animal product at all) prolongs life. The fact is that vegans and vegetarians are usually health conscious individuals.

Some studies show that both health conscious vegetarians and health conscious non-vegetarians have the same mortality rate, and that it is significantly lower than for the rest of the population. While vegans also have a lower mortality than the general population, their mortality is higher than that of the average health conscious person. The only conclusion to be drawn is that it pays to be health conscious.

Some important components we need are mostly found in animal products: vitamin B12, vitamin D, omega-3 oils... It is possible to take supplements but the real problem is that we don't know how many substances are necessary: it could be 5,000 or 5,000,000, at this point we don't have a list. In fact, nutritional science makes advances by looking at the effect of deficiencies in vegans.

Weight Loss

See also *Weight Loss* section.

Weight loss is a real health need for part of the population. However, the obsession with thinness is also unhealthy:

The Body Mass Index (BMI) is an estimation of body fat based on a person's height and weight. It is often used as a health indicator: for a woman a "normal" BMI is between 18.5 and 25; a BMI higher than 25 is considered overweight. But in fact, several studies show that people with a BMI that would classify them as overweight live longer. Thinner is not necessarily healthier.

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This book presents a way of eating that is both enjoyable and healthful. Its focus is on whole body health. Its fundamental principle is to enjoy the widest possible variety of fresh foods, while avoiding those high in sugar and low in nutrients.

Eat Real Food or Else... offers:

- A comprehensive system that promotes lifelong health, with nutritional advice based on the broad view of the entire body.
- Illustrated step-by-step recipes proving that healthy everyday food can be delicious.
- Detailed explanations about the effects of various foods on our bodies, with simple yet scientifically accurate justifications that take into account the latest findings of medical research.
- Tools to make informed food choices.
- Perspectives from which to examine the existing diets and the nutritional literature.

Nutrition is a difficult science, reflecting the huge complexity of our body. It cannot be reduced to a set of simplistic rules. However, some principles can be established, old myths must be debunked.

In these pages, you will not find a "one-size-fits-all" diet, but you will learn to listen to your body and adapt your diet accordingly.

We cannot tell you food by food what you should eat, but we can guide you step by step on your way to health and satisfaction.

Mike Nichols, M.D. has been helping people get the maximum out of their life for decades. He believes that everyone can attain a vibrant, graceful, healthy state, even though the way to achieve it is different for each person: it might require diet modification, or exercise, or dealing with stress and mindfulness, and sometimes even pills.

Liên Nguyen was born in Paris to Vietnamese parents and trained as an electrical engineer (X-Telecom). After a career in Silicon Valley, she retired and turned to the only really important matter: food. She has published several books, which blend culinary topics with culture and history.

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Chef Charles Vollmar, an honors graduate of the California Culinary Academy in San Francisco, is the founder of Epicurean Exchange, a popular chef, cooking instructor, recipe developer and wellness coach. His classes and work emphasize foods appreciation and exploration, essential skills and techniques, as well as prevention and lifestyle enrichment.