Upgrade yourself and unleash your inner potential

BIOHACKER’S HANDBOOK

Olli Sovijärvi / Jaakko Halmepa / Teemu Arina

Sold to Fred Block Block (#GJ57MBGL)
Consult with your doctor before ordering or using any of the herbs or supplements mentioned in this book. Experience and scientific research. This book and the viewpoints that it expresses should not be treated as medical advice.

This book is based on the personal experiences of its authors and the advice it contains is based on a combination of

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How can we achieve optimal health?

We know an approach that doesn’t work: visiting the doctor and obtaining prescriptions for pharmaceutical drugs. Despite over a trillion dollars of research expenditures, few curative drugs have been invented. Antibiotics for bacterial infections are almost the only candidates, and bacteria are already evolving resistance. Drugs often help mitigate symptoms, but generally the underlying disease persists. Prolonged use of antibiotics can help mitigate symptoms, but can also lead to the development of antibiotic-resistant bacteria, which can cause chronic health conditions. As a result, many have a long list of diagnosed health conditions and an equally long list of prescriptions.

Search for other means of healing, such as natural health movement, which focuses on natural interventions – diet and lifestyle – as a means to regain health and lose weight by eating the way you were meant to eat.

Preface

Paul Jaminet, Ph.D., author of the Perfect Health Diet:
healing. The ancestral health movement specifically proposes that the best natural interventions are those that mimic the ancestral or natural environment experienced by wild animals and Pleistocene humans. Based on this principle, our diet should be a natural whole foods diet of plants and animals, such as ancient humans hunted and gathered; our lifestyle should resemble the rhythmic life, attuned to nature, of hunter-gatherers who lack artificial light and other modern technologies.

Seeking to integrate natural health with the best of modern technology, a new movement has arisen: biohacking. Supported by quantified self tools that help us monitor personal health, it’s easier than ever to do personal experiments and assess their effects. In principle, biohacking has the potential to achieve an effective optimization of one’s personal health.

In practice, biohacking is not without risks. My friend Seth Roberts, an extraordinarily creative man who built his life around the principle of self-experimentation, died prematurely from heart failure after adopting a high-oil diet, to which he had been led by efforts to maximize neurological performance. High-fat diets are very good for nerve function, but they can be bad for the heart.

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To get to the summit of Everest by climbing uphill, you have to start on the lower slopes of Everest. You have to know where the summit is and get close to it before you begin searching for it. (It doesn’t hurt, either, to have an experienced Nepalese Sherpa to guide you.)

This is where the Biohacker’s Handbook and its authors, technology expert Teemu Arina, nutritional expert Jaakko Halmetoja and medical doctor Olli Sovijärvi, can come to your aid. Experienced biohackers all, they recognized the need for a biohacking guide that could give nascent biohackers an optimal starting point. They worked for 3 years to generate a compendium of the best wisdom of the ancestral health and the biohacking communities. It’s a great starting point for anyone’s health journey.

One can quibble over individual bits of advice, but by and large, Teemu, Jaakko, and Olli have assembled a compendium of the best wisdom of the ancestral health and the biohacking communities. It’s a great starting point for anyone’s health journey.

Follow the advice of the Biohacker’s Handbook, and you’ll soon be feeling well. You’ll also be well positioned to successfully execute any personal experiments necessary to find the diet and lifestyle that work best for you. You’ll also be well

Paul Jaminet

My first health advice: Don’t climb Everest without a Sherpa, and don’t start biohacking without the Biohacker’s Handbook. My second: Don’t delay the journey; you have found your journey to good health be swiftly completed!

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Dear reader! You are holding in your hands the Biohacker's Handbook, which weaves together novel perspectives on technology, nature and self-development. The biohacker sees his or her body as a complex system that can be probed, analyzed, understood, and put to test. Such controlled experimentation (i.e., biohacking) can be used to pursue self-development and put to test both our bodies and our minds, both on the individual and collective levels.

This book contains tools for those of you who are self-made pioneers, journeying into the unknown, towards a higher understanding of yourselves. It teaches you to go deeper, to dismantle inner locks, to open new doors, to test your own beliefs, and to overcome many challenges. This book is written for the busy person who burns the candle at both ends. Some have tried to find equilibrium by lifestyle changes – for example through dietary interventions, exercise routines and time management techniques – only to end up back at square one. Indeed, how can people learn to know themselves, find a balance, and successfully execute their plans for change, when they are so stressed?

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In the spring of 2013, technology expert Teemu Arina, nutrition expert Jaakko Halmetoja and medical doctor Olli Sovijärvi met to discuss the big challenges of our time: work pressure and incessant stress, and their consequences to health and well-being. The idea for writing this book (which combines studies, insight and visual materials) was born from the insatiable thirst of its three authors for optimizing bodies and minds, both on the individual and collective levels. Whatever your background or goal, finding a balance with your environment is paramount.
Olli Sovijärvi, Medical Doctor:
My reception takes care of each and every human being in a holistic way, and provides individually tailored health planning. A large proportion of my patients today have problems that are increasingly brought on by chronic stress caused by a wide variety of factors. It is important to seek out the root causes of illness and provide healing right at the source. From this position we can restore health, and also balance body, mind and spirit. By restoring our own regenerative processes each of us can be cured of a number of different illnesses.

Jaakko Halmetoja, Nutritional Expert:
I have always been interested in matters of health, physical stamina, the capacity of our minds, the deep underlying passions of my life, and in order to discover the deeper underlining directions and passions of my life I have been practically standing me in the face. So myself to pause, every now and then, in order to discover the deeper underlining directions and passions of my life. Every time the correct answer has been practically staring me in the face, so how does the body of the human being function? Who am I really? Who am I really? The question: Who, or what, are we really? The most important question: The question: Who, or what, are we really? The question: Who, or what, are we really? For many years now I have allowed myself to pause, every now and then, in order to discover the deeper underlining directions and passions of my life and to discover the deeper underlining directions and passions of my life. The meaning of life is to recognize oneself and never stop learning how to become better. To live is to be in motion and in play; saying quiet and becoming stagnant are the very opposite. Responsible for their own well-being, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living. When a person comes to terms with him/herself, they can also muster the courage to be of living.

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There is hope in men, not in society, not in systems, not in organized religious systems, but in you and in me. – Jiddu Krishnamurti

Teemu Arina, Technology Expert:

Technological development has made it possible to know one’s self in unprecedented ways. A number of technologies, and sources of information, that were previously available only for the privileged few, are now available for everybody. After curing myself of a stress-related illness the privileged few, I am convinced that technology is an extension of our bodies and minds. By measuring myself with the help of various technological tools, sensors, internet databases, expert systems in different fields and personal experiments, I can now upgrade my personal experimentations, monitoring and measurement.

The Biohacker’s Handbook treats the human organism as complicated machinery. How does this system actually work? Whether it’s your sleep, work, exercise, nutrition, or mind that you wish to improve upon, the book provides access to “hackable” systems and a guide to upgrading them. Whether it’s your sleep, work, exercise, nutrition, or mind that you wish to improve upon, the book provides access to “hackable” systems and a guide to upgrading them.

Know yourself and upgrade yourself, so you can give more to others.
Increased productivity
Reduced stress
Life extension
Increased performance
Improved health

UPGRADE YOURSELF

Mind
Sleep
Nutrition
Work
Exercise
Use your mobile device to read the following QR code, or open the link in your browser, to have access to the book’s bonus materials:

How to use this book

Each chapter of the book is composed of four essential parts:

1. An introduction based on a story.
2. A technological section that describes the hackable systems.
3. A technological section that describes the biological and technological tools needed for upgrading oneself.
4. A measurement section that describes the tools needed to track progress.

In addition, the book’s bonus materials (biohack.to/nutrition) contains product recommendations, bonus materials, videos, audio recordings, book and article recommendations, references with hyperlinks, and the opportunity to send us your feedback. These features are accessible in a browser or a mobile device.

If you need a QR code reader, open the following link into a browser, http://biohack.to/qr, and download a suitable application.

Tell your friends about the book and your suggestions, and if you find our advice useful, please use the above site to give us feedback and tell your friends about the book.

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“One should eat to live, not live to eat.” – Molière (1622–1673)

“Let the food be thy medicine and medicine be thy food.” – Hippocrates (460–370 BCE)

“All things are poison, and nothing is without poison: the dose alone is without poison; the dose alone makes a thing not poison.” – Paracelsus (1493–1541)

“Most people work hard and spend their health trying to achieve wealth. Then they retire and spend their wealth trying to get their health back.” – Dalai Lama (b. 1935)
Mary shuffles into the kitchen while rubbing the sleep out of her eyes. Feeling lethargic, she tries to think of something convenient to take on the go. She throws a yogurt and a banana into her bag and starts the car. The morning traffic crawls along slowly. Mary snacks on the banana she brought along to postpone the hunger.

Once at the office she hangs up her coat, gets a cup of coffee and sits down for a chat with her colleagues. Half an hour later, she refills her coffee cup and heads to her desk. Mary feels restless and has difficulty concentrating. The important project on her plate will have to wait until the afternoon. Responding to emails feels less exhausting for now.

At lunch Mary selects basic cafeteria fare: a white bread sandwich with mayonnaise sauce, deli meat and a few lonely pieces of salad and cucumbers. The stomach is filled and a few minutes pass as Mary remembers her radiant skin and positive appearance. A thought surfaces in Mary’s mind: Could it be that her vibrant colors, vegetables, berries and fresh produce are more than just good for her body?

At the checkout, Mary notices the radiant appearance of the woman in front of her in the line. Her skin looks amazing; smooth. Her shopping basket is full of vegetables and fresh produce.

Mary roams the familiar aisles and collects milk, bread, juice, cheese, ham, yogurt and cookies in her cart. For the kids, she picks up mac & cheese, canned soup and a frozen lasagna. Finally, she adds a bottle of soda and a few bottles of beer. For the family, Mary picks up a few snacks on her way home: “The supermarket is busy as ever with everyone hurrying to get home. Get groceries on your way home.” Mary decides to buy a text message from her husband: “Remember to get something edible on your way home!” Mary grabs her bag. The clock strikes five.

The banana she brought along to postpone the hunger is gone. The morning traffic crawls along slowly. Mary snacks on a yogurt and a banana into her bag and starts the car. She throws something convenient to take on the go. She throws out of her eyes. Feeling exhausted, she tries to think of something... I guess I should eat something...”
The archetype of nutrition in this book is the bear, one of the largest land predators in the Western world. The bear is the totem of many indigenous peoples, a revered and respected animal, and the symbol of the tribe and family. The bear is the totem of many indigenous peoples, revered and respected as the largest land predators in the Western world. The bear is also a symbol of strength, endurance, and survival. Like bears, most people are also omnivores with predominantly vegetarian diets. However, different species have adapted to their respective environments, using a variety of ingredients for sustenance. In the spring season, bears may also hunt elk, example vegetables, berries, fish, mushrooms and honey, also opportunistic carnivores. They are known to eat for bears acquire most of their nutrition from plants. They are bears' diet mainly consists of seeds whereas pandas exclusively eat bamboo shoots. Although North American and Nordic vegetarian diets. However, their environmental challenges and there is significant variation between them. Polar bears, deer have adapted to their respective environments, challenges and there are significant differences in their diets. Most bear species are omnivores with predominantly vegetarian diets.
YOU ARE WHAT YOU EAT

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Tell me what you eat, and I will tell you what you are.
– French gastronome Jean Anthelme Brillat-Savarin (1755–1826)

Food brings people together. It is a source of pleasure. The following pages outline the effects of food on the general public. and the weakness of these recommendations made for simplification and generalization are both the strength and the general nutrient intake recommendations. We are all aware of the official dietary guidelines. The following pages outline the effects of food on the general public.
The general nutrient intake recommendations often represent the threshold at which the risk to develop a certain illness is greatly reduced. However, demographic averages are not necessarily relevant for the optimal levels of an individual. Vitamin D is a good example. Genetic variation in the vitamin D receptor (VDR) in individuals affects the absorption of calcium and there is roughly 90% of energy intake. Rice and wheat alone feed approximately 60% of the world. The 15 of those most widely used in the world. Today, we spend proportionately less money on food and our connection to the origin of the food we eat is weaker than ever before. As the diversity of food has decreased, many illnesses that were rare in our ancestors have increased.

There are approximately 50,000 edible plants in the world. The 15 of those most widely used represent roughly 90% of energy intake. Rice, corn, and wheat alone feed approximately 60% of the world population. To compare, throughout human history, our diet has included at least a hundred plant species depending on the local habitat. It is worth remembering that in a market economy, supply will meet demand. Our purchasing choices determine the direction in which the food industry develops our nutrition. The biohacker is now equipped with the latest research findings and the most advanced technology available to bring nutrition to a personalized level.

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1. Eat well for tomorrow, not just for today.
2. Invest in the quality of ingredients, particularly for
   the products you use the most.
3. Regularly measure and analyze the effects of food on
   your system.
4. Increase the nutritional density of your food.
5. Reduce toxins.
7. Don’t eat terms. “Low fat” or “sugar-free” does not
   necessarily mean a healthier option.
8. Adopt nutritional principles and strategies to apply
   in different situations.
9. View mealtimes as means to share experiences
   and knowledge.
10. Consider the environment when making choices,
    both in the short and long term.

COMPASS

1. The ability to intelligently utilize the nutritional
   resources available, even in challenging situations.
2. The means to maintain energy levels, clarity of
   mind and other objectives relevant to life and
   well-being.
3. The knowledge and ability to increase one's own
   health and well-being.

OBJECTIVES

1. Add natural, vibrant colors and flavors to your diet.
2. Invest in the quality of ingredients, particularly for
   the products you use the most.
3. Regularly measure and analyze the effects of food on
   your system.
The digestive system consists of organs whose functions involve digestion, nutrient absorption, waste product removal, and the formation of feces. The digestive system includes the salivary glands, pancreas, liver, spleen, and gallbladder, each with their specific role in digestion. The digestive system also includes the gastrointestinal tract, consisting of the mouth, esophagus, stomach, small intestine, large intestine, and anus. The most important parts of the digestive system are the esophagus, stomach, small intestine, and colon, each with specific functions. For example, the esophagus is responsible for the mechanical digestion of food, while the small intestine is responsible for the absorption of nutrients. The large intestine is responsible for the formation of feces. Eating slowly and chewing the food thoroughly may create a greater feeling of fullness and increase the absorption of nutrients. Chewing the food properly also helps in the mechanical digestion of food, making it easier to break down and absorb nutrients. Another important function of the digestive system is the maintenance of the body's defense system against pathogens. This is discussed in more detail in the "Microbiome" section.
The stomach is located between the esophagus and the duodenum in the top left corner of the abdominal cavity, immediately below the diaphragm. The stomach contains two sphincters that control the movement of food into the duodenum: the lower esophageal sphincter and the pyloric sphincter. The stomach's capacity is approx. 4 liters or food, and it secretes gastric juice that contains hydrochloric acid and enzymes necessary for digestion. The acidity of gastric juice destroys harmful microorganisms present in food, however, many people suffer from a deficiency in the production of hydrochloric acid due to stress, poor diet, or harmful chemicals. This deficiency contributes to nutritional deficiencies, osteoporosis, vitamin B12 deficiency, and various infections. Many people suffer from a deficiency in the production of hydrochloric acid due to stress, poor diet, or harmful chemicals. Hypochlorhydria (the low level of hydrochloric acid) can lead to stress, poor diet, or harmful chemicals. The acidity of gastric juice destroys harmful microorganisms present in food. Vitamin B12 is required for the absorption of food digestion, hydrochloric acid for breaking down food, and intrinsic factor, which contains hormones and enzymes necessary for the absorption of vitamin B12. The capacity of an empty adult stomach is approx. 75 milliliters (2.54 ounces). The stomach is located between the esophagus and the duodenum in the top left corner of the abdominal cavity.
<table>
<thead>
<tr>
<th>Compound Function in the Stomach</th>
<th>Enzyme / other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pepsin Breaks down proteins into peptides</td>
<td></td>
</tr>
<tr>
<td>Lipase Breaks down fats into fatty acids</td>
<td></td>
</tr>
<tr>
<td>Mucin Mucus matter that protects the stomach</td>
<td></td>
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<tr>
<td>Intrinsic factor (IF) Binds to vitamin B12 and promotes its absorption</td>
<td></td>
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<td>Enzyme / other Function in the Stomach</td>
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<tr>
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<tr>
<td>Lipase</td>
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</tr>
</tbody>
</table>
Small intestine

The small intestine is located between the stomach and the colon. The small intestine forms a coil-like structure roughly seven meters in length. It is located in the abdominal cavity, surrounded by the colon. The small intestine consists of the duodenum, jejunum, and ileum. The small intestine is approximately 5-6 meters in length and has a coiled-like structure. It is located between the stomach and colon.

<table>
<thead>
<tr>
<th>Function in the Small Intestine</th>
<th>Enzyme</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breaks down carbohydrates into shorter chains of saccharides or sugars</td>
<td>Amylase</td>
<td>Breaks down carbohydrates into shorter chains of saccharides or sugars</td>
</tr>
<tr>
<td>Breaks down sucrose into fructose and glucose</td>
<td>Sucrase</td>
<td>Breaks down sucrose into fructose and glucose</td>
</tr>
<tr>
<td>Breaks down maltose into glucose</td>
<td>Maltrase</td>
<td>Breaks down maltose into glucose</td>
</tr>
<tr>
<td>Breaks down lactose into glucose and galactose</td>
<td>Lactase</td>
<td>Breaks down lactose into glucose and galactose</td>
</tr>
</tbody>
</table>

The small intestine breaks down the macronutrients into smaller form factors. For example, glucose and starch are broken down into monosaccharides. Proteins are broken down into peptides and amino acids. Fats are broken down into fatty acids and glycerol. Carbohydrates are broken down into simple sugars.
<table>
<thead>
<tr>
<th>Hormone</th>
<th>Function in the small intestine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secretin</td>
<td>Inhibits the secretion of gastrin and small intestine, curbs the movements of the stomach, bicarbonate, enzymes, and insulin, stimulates the secretion of pancreatic secretions</td>
</tr>
<tr>
<td>Enteroglucagon</td>
<td>Inhibits the secretion of insulin, and small intestine, stimulates the movements of the stomach, bicarbonate, enzymes, and insulin, stimulates the secretion of pancreatic secretions</td>
</tr>
<tr>
<td>Cholecystokinin</td>
<td>Stimulates gallbladder contractions, stimulates gallbladder contraction, and small intestine, stimulates the movement of the stomach, bicarbonate, enzymes, and insulin, stimulates the secretion of pancreatic secretions</td>
</tr>
<tr>
<td>Glucagon-like</td>
<td>Promotes the secretion of insulin, inhibits the secretion of insulin, and small intestine, stimulates the movement of the stomach, bicarbonate, enzymes, and insulin, stimulates the secretion of pancreatic secretions</td>
</tr>
<tr>
<td>Glucagon-like peptide (VIP)</td>
<td>Promotes the secretion of insulin, inhibits the secretion of insulin, and small intestine, stimulates the movement of the stomach, bicarbonate, enzymes, and insulin, stimulates the secretion of pancreatic secretions</td>
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</tbody>
</table>

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<th>Enzyme</th>
<th>Function in the small intestine</th>
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<tr>
<td>Phospholipase</td>
<td>Breaks down phospholipids into fatty acids and other fat-soluble substances</td>
</tr>
<tr>
<td>Lipase</td>
<td>Breaks down triglycerides into fatty acids and glycerol</td>
</tr>
<tr>
<td>Trypsin</td>
<td>Breaks down polypeptides and dipeptides into peptides and amino acids</td>
</tr>
<tr>
<td>Chymotrypsin</td>
<td>Breaks down proteins into amino acids</td>
</tr>
<tr>
<td>Trypsin</td>
<td>Example starch) into glucose</td>
</tr>
<tr>
<td>Glucoamylase</td>
<td>Breaks down glucose polymers (for example starch) into glucose</td>
</tr>
<tr>
<td>Enteroglucagon</td>
<td>Releases the smooth muscles of the intestine, pancreatic bicarbonate, enzymes, and insulin, regulates the secretion of pancreatic secretions</td>
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<td>Glucagon-like peptide (VIP)</td>
<td>Promotes the secretion of insulin, inhibits the secretion of insulin, and small intestine, stimulates the movement of the stomach, bicarbonate, enzymes, and insulin, stimulates the secretion of pancreatic secretions</td>
</tr>
</tbody>
</table>
The colon is located between the small intestine and the anus. It is roughly 1.5 meters long and consists of the cecum, ascending colon, transverse colon, descending colon, and sigmoid colon. The colon is located in the abdominal cavity where it surrounds the small intestine.

The functions of the colon include the maintenance of the bacterial strain in the intestine as well as the absorption of water and the remaining nutrients before the feces move on to the rectum. The vitamins absorbed include K vitamins, thiamine (B1), and riboflavin (B2).

The colon turns digested food into fecal matter. The bacterial strain in the intestine feeds on the fiber mass in the feces and produces fatty acids which are used as a source of energy (see the "Microbiome" section for more details). The bacteria also help remove waste products and toxins.

Recent studies suggest that the treatment of inflammatory bowel disease (IBD), such as ulcerative colitis and bowel disease (IBD), is located in the abdominal cavity. The cecal and sigmoid colon, transverse colon, and rectal parts consist of large amounts of processed food and are responsible for the absorption of water and the remaining nutrients before the feces move on to the rectum.

There is a link between the Western diet consisting of large amounts of processed food and the development of diseases such as ulcerative colitis, Crohn's disease, and hygiene syndrome. The appendix is located below the cecum in the colon. It produces hormones that regulate eating (peptides). The appendix acts as a storage space for beneficial bacteria and may play a role in the immune response. According to the latest research, these diseases are also linked to the disturbance in the immune response. The appendix may appear in genetically predisposed individuals due to changes in the bacterial strain of the intestine and may be removed in the event of adulthood appendicitis. Recent studies suggest that the treatment of inflammatory bowel disease (IBD), such as ulcerative colitis and bowel disease (IBD), is located in the abdominal cavity. The cecal and sigmoid colon, transverse colon, and rectal parts consist of large amounts of processed food and are responsible for the absorption of water and the remaining nutrients before the feces move on to the rectum.

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A diet that removes potentially intestine-damaging antinutrients (see the “Antinutrients” section for more details) and reduces inflammation is usually very beneficial for recovery from the illness. Specifically, gluten is associated with increased inflammation, decreased immune function, and decreased barrier integrity. Therefore, removing gluten from the diet can help reduce inflammation and promote healing.

Based on the review of recent research (2014), the majority of IBD patients benefit from removing gluten from their diet. This is supported by studies showing that athletes who removed gluten from their diet experienced decreased intestinal permeability and increased immune function.

The pancreas is located in the abdominal cavity and is connected to both the small intestine and the gallbladder. The pancreas is connected to both the small intestine and the gallbladder. The pancreas secretes hormones such as insulin and glucagon, while the exocrine part of the pancreas secretes hormones such as insulin and glucagon, while the exocrine part of the pancreas secretes digestive enzymes into the small intestine.
**Enzyme**

<table>
<thead>
<tr>
<th>Enzyme</th>
<th>Function in the Pancreas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trypsinogen</td>
<td>(several) Proteins into amino acids</td>
</tr>
<tr>
<td></td>
<td>Breaks down elastin and a few other</td>
</tr>
<tr>
<td>Chymotrypsin</td>
<td>(several)</td>
</tr>
<tr>
<td></td>
<td>Breaks down nucleic acids (DNA and RNA)</td>
</tr>
<tr>
<td>Carboxypeptidase</td>
<td></td>
</tr>
<tr>
<td>Pancreatic Lipase</td>
<td>Breaks down triglycerides into fatty</td>
</tr>
<tr>
<td></td>
<td>acids and other fat-soluble substances</td>
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<tr>
<td>Phospholipase</td>
<td>Breaks down phospholipids into fatty</td>
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<tr>
<td></td>
<td>acids and glycerol</td>
</tr>
<tr>
<td>Amylase</td>
<td>Breaks down starch and glycogen into</td>
</tr>
<tr>
<td>Pancreatic</td>
<td></td>
</tr>
<tr>
<td>Nucleases</td>
<td></td>
</tr>
<tr>
<td>Elastase</td>
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</table>

**Function in the pancreas**

- **Enzymes**
  - Breaks down proteins into amino acids
  - Breaks down nucleic acids (DNA and RNA)
  - Breaks down triglycerides into fatty acids and glycerol
  - Breaks down phospholipids into fatty acids and other fat-soluble substances
  - Breaks down starch and glycogen into carbohydrates and other substances

- **Hormones**
  - **Glucagon**
    - (from alpha cells) Increases secretion of digestive enzymes
    - (from delta cells) Inhibits the secretion of insulin and somatostatin
    - (from gamma cells) Regulates the secretion functions of the pancreas (endocrine and exocrine)
  - **Insulin**
    - (from beta cells) Inhibits the secretion of digestive enzymes
    - (from alpha cells) Inhibits the secretion of glucagon
  - **Somatostatin**
    - (from delta cells) Inhibits the secretion of insulin and glucagon
  - **Pancreatic Polypeptide**
    - (from gamma cells) Inhibits the secretion of digestive enzymes

**Other metabolic effects**

- **Blood sugar regulation** (see section "Blood sugar regulation" for more details)
- **Stress**
  - Other metabolic effects (see section "Stress" for more details)
  - In the blood by promoting insulin absorption
  - In the blood by converting glycogen
  - Increases the concentration of glucose
  - Increases glycolysis of glucose
  - Increases glucosuria
  - Increases gluconeogenesis

**Pancreatic**

- **Trypsinogen**
  - (several) Proteins into amino acids
  - (several) Breaks down elastin and a few other
  - (several) Carboxypeptidase

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Liver
The liver is located in the top right corner of the abdominal cavity, immediately below the diaphragm, to the right of the stomach. Below the liver is the gallbladder. Compared to other internal organs, the liver has a double blood supply via the portal vein and the hepatic artery. This is indicative of the importance of the liver to the entire system.

Main functions of the liver:

• Carbohydrate metabolism:
  – Produces glucose from amino acids, lactic acid and glycerol
  – Breaks down glycogen into glucose
  – Produces glycogen from glucose
  – Produces glucose from amino acids, lactate and acetaldehyde

• Fat metabolism:
  – Oxidizes fatty acids into energy
  – Forms glycogen from glucose
  – Breaks down glycogen into glucose
  – Produces glycogen from amino acids, lactate and acetaldehyde

• Protein metabolism:
  – Produces blood plasma proteins (including albumin)
  – Converts toxic ammonia into urea (urea cycle)
  – Breaks down amino acids

• Bile secretion

• Storing glucose (glycogen), iron and copper

• Producing blood plasma proteins (including albumin)

• Converts toxic ammonia into urea (urea cycle)

• Breaking down amino acids

• Produces blood plasma proteins (albumin)

• Produces bile acids

• Produces bile ducts which carry bile to the gallbladder and duodenum.

From the liver to the gallbladder and duodenum, bile generally travels through bile ducts which collect the bile produced by the liver. The bile ducts also contain the bile duct system which transports bile to the gallbladder and duodenum.
Cleaning and defense functions:

- Breaks down several hormones (including insulin)
- Breaks down and neutralizes toxins (detoxification)
- Removes (through urine) bilirubin released by red blood cells

Liver disease mortality has tripled in the last 40 years. Today’s stressful work culture, alcohol, problematic diet, and other environmental burdens have led to abdominal obesity, fatty liver disease, and hepatitis, which puts people at risk for cirrhosis, liver failure, and liver cancer.

Liver damage plays a significant role in the development of liver damage. Impaired liver function in some individuals is a dominant genetic predisposition. A diet rich in fatty liver disease is well balanced with meat and other environmental burdens may lead to alcohol, alcoholic, and non-alcoholic fatty liver disease.

Hepatitis C, fatty liver, and alcohol abuse are the most common causes of cirrhosis of the liver.

FACT

Liver disease mortality has tripled in the last 40 years.

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Phase 1

Converting foreign matter into harmless compounds. Supporting nutrients:

- Vitamin B complex
- Glutathione (the main antioxidant in the liver)
- Branched-chain amino acids (BCAA)
- Flavonoids
- Phospholipids
- Carotenoids
- Vitamin C
- Vitamin E
- Selenium, zinc, copper and manganese
- Ubiquinone (coenzyme Q10)
- Silybum marianum (Milk thistle)
- Artichoke
- Turmeric
- Cruciferous plants (such as broccoli, Cruciferous plants such as - Cabbage, Cauliflower, Brussels sprouts, Kale, etc.)
- Lignans
- Melatonin
- Cysteine
- Glutamine
- Lysine
- Glycine
- Taurine
- Glutamine
- Alanine acids:
  - MSM
  - Calcium D-glucarate
  - N-acetylcysteine (NAC)
  - Alpha lipoic acid (ALA)
  - Ingredients that contain sulfur - Egg, Cruciferous plants, Garlic and other onions

Phase 2

Including metabolic byproducts, pesticides, environmental toxins, additives and pollutants, including meat.

A water-soluble molecule is bound to the substance to be removed in order for the compound to be safely removed from the body. The body:

- Gallbladder
- Kidneys
- Feces
- Urine

Detoxification mechanism of the liver

Sold to Fred Block Block (#GJ57MBGL)
The gallbladder is located below the right lobe of the liver. It is a small organ, approximately 8 centimeters in length, and its main function is to store the bile produced by the liver. The gallbladder and the hepatic duct merge to form the bile duct which leads bile into the small intestine from the ampulla of Vater (a merging point with the pancreatic duct).

Bile is secreted from the gallbladder into the small intestine during the digestive process. Bile facilitates the formation of micelles which are essential for the absorption of fats. Bile also plays an important role in the absorption of fat-soluble vitamins (A, D, E and K) and the recycling of bilirubin in the body.

Bile acids function in a manner similar to hormones, participating in the regulation of bile flow in the body. They also help in the absorption of fats and fat-soluble vitamins. Bile acids also have an important role in the formation of micelles which are essential for the digestion of fats. Deficiency in the production of bile and bile acids may cause significant health problems such as excess weight.

Risk factors contributing to the formation of gallstones include:
- Excess weight
- Rapid weight loss
- Constipation
- Decreased intake of fiber and nutrients (folate, vitamin C, calcium, magnesium, etc.)

The gallbladder may also form gallstones due to indigestion or imbalanced diet. For instance, a deficiency in the production of bile salts in the liver, in combination with a diet rich in cholesterol, may lead to a decreased intake of bile acids in the bile, leading to the formation of gallstones.

Ingredients and compounds that promote the production of bile and bile acids as well as the flow of bile are:
- Soluble fiber (for example from oats)
- Phenolic compounds (for example from artichoke)
- Turmeric
- Flavonoids
- Orange
- Dandelion
- Bitters

Melatonin may also be used to prevent the formation of gallstones.

Deficiency in the production of bile and bile acids may cause significant health problems such as excess weight and liver dysfunction. A dietary supplement of vitamin C may prevent the formation of gallstones. A decrease in bile flow may also lead to an increased risk of gallbladder disease.

The gallbladder is located below the right lobe of the liver. It is a small organ that stores the bile produced by the liver.
The microbiome refers to the colonies of symbiotic (both parties benefit from each other), commensal (one party unilaterally benefits from the other), and pathogenic (illness-causing) micro-organisms. These colonies exist, for example, on the skin’s surface, on the mucous membranes of the mouth, the conjunctiva, and the intestine. It is estimated that there are 500–1000 distinct bacterial species living in the intestine. The most common bacterial species in the intestine are Bacteroides, Blostridium, Fusobacterium, and Bifidobacterium. Other bacterial species include Escherichia, and Lactobacillus. In terms of genes, the difference is much greater – for each human gene in your body, there are 100 micro-organisms living in your body, of the cells of the bacteria, fungi and viruses. Did you know that only 40–50% of the cells in your body are of human origin? The other 50–60% is made up of the cells of the bacteria, fungi and viruses. Therefore, the condition of the intestine also has a significant influence on energy production. The functions of the bacteria in the intestine include breaking down carbohydrates (fermentation) that the body cannot otherwise digest. This process creates short-chain fatty acids which are used for energy in the organism. For example, butyrate is utilized by the surface cells of the intestine, propionate by the liver, and acetate by muscle cells. Furthermore, the production of bile (magnesium, calcium, and iron), the production of vitamin K, and some minerals (vitamin B, vitamin D) also contributes to the intestinal bacterial strain also has a protective role against various pathogens.

FACT

Did you know that only 40–50% of the cells in your body are of human origin? The other 50–60% is made up of the cells of the bacteria, fungi and viruses. Therefore, the condition of the intestine also has a significant influence on energy production. The functions of the bacteria in the intestine include breaking down carbohydrates (fermentation) that the body cannot otherwise digest. This process creates short-chain fatty acids which are used for energy in the organism. For example, butyrate is utilized by the surface cells of the intestine, propionate by the liver, and acetate by muscle cells. Furthermore, the production of bile (magnesium, calcium, and iron), the production of vitamin K, and some minerals (vitamin B, vitamin D) also contributes to the intestinal bacterial strain also has a protective role against various pathogens.
Antibiotics affect the bacterial strain of the intestine

A single course of antibiotics can affect as much as 30% of the entire bacterial flora in the intestine and can throw off the bacterial balance for six months up to two years.

However, antibiotics are necessary when a harmful pathogen, such as Salmonella, Shigella, Campylobacter or Yersinia, has entered the intestine. Alongside viruses, these bacteria are also the most common causes of traveler’s diarrhea and intestinal infections.

The increased use of antibiotics has also resulted in an increase in antibiotic-resistant bacteria worldwide. The liberal use of antibiotics may cause predisposition to infections.

Depending on the individual, the bacterial balance can affect as much as 30% of the intestine and can throw off the bacterial balance. The same antibiotics given to animals to keep them healthy can contaminate meat and cause clostridium difficile infection.

5. Humans are infected by the same antibiotics given to animals to keep them healthy.

The development of antibiotic-resistant bacteria.

1. Antibiotic is given to farm animals to keep them healthy.
2. Antibiotic protects animals against known strains of bacterial infections.
3. Mutated form of bacteria resists antibiotic and contaminates meat.
4. Consumers of contaminated meat may acquire the disease.
5. The same antibiotics given to humans may have no effect as the pathogen is already immune.
The gut-brain axis refers to the neurological and biochemical connection between the enteric nervous system of the intestine and the central nervous system. The intestinal microbiome (bacterial strain) is known to affect the function of the immune system, the nervous system, behavior, stress tolerance, mood, and affect the function of the immune system, the nervous system, behavior, stress tolerance, mood, and affect the function of the immune system. The gut-brain axis refers to the neuroendocrine and gastrointestinal system, the central nervous system, biochemical connection between the enteric nervous and the brain, and the brain sends the brain information about the intestine. The intestinal microbiome affects the brain, and the brain affects the intestine. It is important to understand the continuous nature of the communication between the brain and the intestine and the bilateral regulatory mechanisms involved. A good example of this is a strong emotional reaction which regulates the hypothalamic-pituitary-adrenal (HPA) axis system. The brain communicates with the intestine via two dis-tinct autonomic branches of the nervous system: the hypothalamus–pituitary–adrenal (HPA) axis system. The brain communicates with the intestine via two dis-tinct autonomic branches of the nervous system: the hypothalamus–pituitary–adrenal (HPA) axis system. The brain communicates with the intestine via two dis-tinct autonomic branches of the nervous system: the hypothalamus–pituitary–adrenal (HPA) axis system.
The first signs of impaired brain function may also be detectable in digestion – the impaired secretion of pancreatic enzymes, weak gallbladder activity and the general impairment of intestinal balance and function.

A continuous low-grade inflammation of the system may also aggravate gut permeability. This results in a vicious circle (circulus vitiosus).

The bilateral nature of communication between the brain and the intestine may cause deterioration of the links of the enterocytes on the surface of the intestine, causing gut permeability syndrome. Similarly, impaired brain function or stress-related hyperactivity of the sympathetic nervous system undermines the function of the vagus nerve. This impairs the function of the immune system and reduces blood circulation in the intestine, causing gut permeability syndrome. The continuous inflammatory condition or stress-related hyperactivity of the intestine aggravates gut permeability (leaky gut syndrome).

Due to gut permeability, the messenger substances are able to enter the immune system, and through the blood-brain barrier, they can damage the brain tissue and bacteria in the intestine. This can change the production of cytokines (messenger substances) in the intestine, which in turn increases the growth of harmful fungi and bacteria in the intestine, further increases gut permeability. This results in a vicious circle (circulus vitiosus), leading to continuous low-grade inflammation of the system.
The inflammation causes the blood-brain barrier to also become permeable, which in turn activates the connective tissue cells of the brain, also known as microglia cells. The result is a chronic inflammatory condition of the brain that impairs brain function and may cause anxiety and depression.

Thus completing the vicious circle which will get worse unless corrective measures such as those outlined in this book are implemented.
<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td><strong>Type 7</strong></td>
<td>Typical of the elderly and children. May be normal diarrhoea or appear together with Type 1. Entirely liquid.</td>
</tr>
<tr>
<td><strong>Type 6</strong></td>
<td>Typical of individuals who react to stress with their stomachs. May indicate high blood pressure. Floppy pieces, mushy stool.</td>
</tr>
<tr>
<td><strong>Type 5</strong></td>
<td>After each main meal. Typhoid of people who defecate 2-3 times per day. Separately, soft, clearly defined blocks.</td>
</tr>
<tr>
<td><strong>Type 4</strong></td>
<td>Typhoid of people who defecate regularly once a day. Good amount of fibre in the diet. Solid, soft and smooth.</td>
</tr>
<tr>
<td><strong>Type 3</strong></td>
<td>Similar to Type 2 but passed through the bowel more quickly. Solid, firm, cracks in the surface.</td>
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<tr>
<td><strong>Type 2</strong></td>
<td>Typical of irritable bowel syndrome. Often appears when constipated. Solid, firm, visibly lumpy.</td>
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<tr>
<td><strong>Type 1</strong></td>
<td>Not enough fibre in the diet. Feces have remained in the bowel for too long, absorbing the water. Separate, small, hard lumps.</td>
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STOOL COLOR

- Light to medium brown
- Normal
- Dark red, black, or maroon
- Yellow
- Green
- Black, tarry, or red
- Light to medium brown

DEFECATION POSITION
- Squatting position
- Sitting position
- Splayed

STOOL COLOR

- Yellow: Gallbladder problem or parasitic infection (Giardia)
- Dark red, black, or maroon: Hemorrhoids or anemia
- Light to medium brown: Normal

DEFECATION POSITION

- Squatting position
- Sitting position
- Splayed
HYPERSENSITIVITY AND TOXINS
Many ingredients affect the digestive system both positively or negatively. Allergenic foods, toxins occurring naturally or artificially in food, and particular by the adjuvants thereof, as well as the allergic diet of the mother, certain vaccines, and the liberal intake of antibiotics in early childhood, that may increase the likelihood of allergies include celiac disease and enterocolitis, are more rare. Factors unrelated to the immunoglobulin E reaction, such as antibody response (immunoglobulin E). Foods allergies treat the foreign protein as harmful, causing a quick particular response in the food. The immune system to a particular protein in the food. The immune system to food allergies is an adverse immune response to a food allergen. Foods allergies and hypersensitivity-inducing chemicals such as pesticides containing dichlorophenol affect the digestive process or provide materials to facilitate the digestive process or provide materials to reduce the inflammation reaction of the intestine, challenge bacteria. On the other hand, many ingredients inducing bacteria reacting to food all represent unique toxins occurring naturally or artificially in food, and system both positively or negatively. Allergenic foods, typical allergic reactions to food include:

- Nettle rash
- Itchy skin
- Difficulties swallowing
- Lumpy skin
- Runny nose
- Sneezing
- Nausea and vomiting
- Abdominal pain
- Headache
- Sleepiness
- Fever
- Fatigue
- Irritability
- Loss of appetite
- Diarrhea
- Cramps
- Bloating
- Swelling

A food allergy is an adverse immune response to a food allergen. Foods allergies and hypersensitivity-inducing chemicals such as pesticides containing dichlorophenol affect the digestive process or provide materials to facilitate the digestive process or provide materials to reduce the inflammation reaction of the intestine, challenge bacteria. On the other hand, many ingredients inducing bacteria reacting to food all represent unique toxins occurring naturally or artificially in food, and system both positively or negatively. Allergenic foods,
The causes of food-related hypersensitivity reactions are:

- **Digestive malabsorption**
- **General digestive disorders**
- **Increased gut permeability**
- **Immunological reactions (immunoglobulins)**
- **Toxins (additives and natural compounds)**
- **Psychological reactions**
- **Histamine, tyramine or other biogenic amine present in the food (chocolate, red wine, tuna or fermented ingredients such as cheese). In some cases, food (for example tomato or pineapple) may release histamine in the body. This is referred to as Histamine Intolerance Syndrome (HIS).**
- **Individuals with HIS typically have a low level of diamine oxidase, an enzyme that metabolizes histamine in the system.**
- This is something to consider if tests do not show a clear root cause but the individual still suffers from symptoms. This may be prevented with antihistamines or enzyme preparations containing diamine oxidase.
- **Histamine may also cause intestinal symptoms such as diarrhea and abdominal pain, as well as neurological symptoms such as dizziness and headaches. Tyramine may trigger a migraine attack.**
- **Histamine may also cause psychological reactions such as increased heart rate and causes nasal congestion and flushing.**

**Psychological reactions:**
- Toxins (additives and natural compounds)
- Immunological reactions (immunoglobulins)
- Increased gut permeability
- General digestive disorders
- Digestive malabsorption

**Hypersensitivity reactions are:**

The causes of food-related hypersensitivity reactions are:
Foods rich in histamine or other vasoactive amines:

- Wine, alcoholic cider, beer and other fermented alcoholic drinks
- Fermented foods (sauerkraut, wine vinegar, soy sauce, kefir, yogurt, kombucha)
- Aged cheeses
- Processed meat products (sausage, ham, salami)
- Yeast (promotes histamine production in food)
- Nuts (walnut, cashew, peanut)
- Dried fruit
- Smoked animal products (bacon)
- Certain types of fish such as mackerel, tuna
- Eggplant, spinach, and tomato
- Female ferments foods (sauerkraut, wine vinegar, soy sauce, alcoholic drinks)
- Wine, alcoholic cider, beer, and other fermented drinks
- Foods that release histamine in the system:
  - Banana
  - Chocolate and cocoa
  - Nuts
  - Tomato
  - Spinach
  - Tomato
  - Pork
  - Beef
  - Yellow pepper
  - Tomato
  - Spinach
  - Certain types of fish such as mackerel, tuna
- Foods that release histamine or other vasoactive amines:
  - Yeast (promotes histamine production in food)
  - Nuts (walnut, cashew, peanut)
  - Dried fruit
  - Smoked animal products (bacon)

Diamine oxidase blockers:

- Alcohol
- Black tea
- Energy drinks
- Green tea
- Yeast (promotes histamine production in food)
- Nuts (walnut, cashew, peanut)
- Dried fruit
- Smoked animal products (bacon)
- Processed meat products (sausage, ham, salami)
- Aged cheese
- Kefir (yogurt, kombucha)
- Female ferments foods (sauerkraut, wine vinegar, soy sauce, alcoholic drinks)
- Wine, alcoholic cider, beer, and other fermented drinks
Many foods contain useful compounds such as vitamins, minerals, trace elements, and fatty acids, but also unnecessary or harmful compounds, i.e., toxins. Whether or not symptoms cause adverse effects also depends on the nature of the toxin, the toxin levels in the plant eaten, and the individual's sensitivity to various substances. Proper processing methods can often reduce the level of harmful substances. For example, the false blanching. Thus, it is possible to avoid water-soluble and can be removed by water-soluble and can be removed by

Toxins that have adverse effects include:

- Heavy metals
- Mycotoxins
- Organochlorine compounds such as PCBs and PBBs
- Dioxins and furans
- Polychlorinated biphenyls (PCB)
- Volatile organic compounds (VOC) emissions
- Microplastics
- Other harmful organic
- Residues of medicinal products
- Certain fertilizers
- Certain pesticides
- Antinutrients
- the effects of estrogen which imitate estrogenoestrogens, which imitate estrogenoestrogen
- Carcinogens
- Radioactive compounds
- Mycotoxins

Selecting and processing it properly can help avoid naturally-occurring toxins in food by selecting and processing it properly.

Toxins are used in the food produc
Xenoestrogens imitate the effects of estrogen in the body. They can be synthetic or naturally-occurring compounds. Typical sources of xenoestrogens are plastic bottles and containers, hygiene products and cosmetics, teflon pans, shop receipts and canned food. For example, polycarbonate (PC) plastic may release bisphenol A (BPA) which has been associated with endocrine disorders and a weakened immune system. BPA and phthalates have epigenetic effects (activating certain genes). One can cut their consumption of these with smart choices. For example, by discontinuing the use of plastic water bottles.

Products containing xenoestrogens:

- Intensively farmed meat
- Canned food
- Plastics and plastic cling film
- Intensively farmed meat
- Detergents
- Cosmetics (including hair dyes)
- Contraceptive pills and spermicides
- Synthetic fragrances
- Phytosterogens (estrogens derived from plants)
- Many hygiene products
- Paints, varnishes and solvents
- Pesticides
- Styrofoam cups and containers
- Pesticides

Xenoestrogens mimic the effects of estrogen in the body. They can be synthetic or naturally-occurring compounds.
Antinutrients are natural or synthetic compounds that prevent nutrients from being absorbed, and may cause health problems. It is therefore useful to know which foods contain them and how food can be processed to minimize their harmful effects.

Antinutrients are often found in plant roots and seeds.

### Lectins

Lectins are carbohydrate-binding proteins that appear in plants and animals. Lectins protect plants from various micro-organisms such as insects and pests. The roots and seeds of plants are particularly rich in lectins, which are carbohydrate-binding proteins that appear in plants and animals. Lectins protect plants from insects and pests. Lectins are particularly toxic in raw kidney beans, which contain high levels of antinutrients and disruptions in digestion. This may cause increased gut permeability and disruptions in digestion.

### Antioxidants

Antioxidants are natural or synthetic compounds that prevent nutrients from being absorbed, and may cause health problems.
hemagglutinin, a substance that has the ability to cause red blood cells to agglutinate.

It has been suggested that a link exists between lectins and some autoimmune diseases such as rheumatoid arthritis. According to one research hypothesis, lectins and some autoimmune diseases such as rheumatoid arthritis may cause insulin resistance (i.e., insulin resistance) that may contribute to the development of obesity and metabolic disorders.

Phytates are compounds consisting of oxalic acid, as well as nuts, legumes of cereals and oils. Phytic acid can be found in plants in salt form, i.e., phytates.

Oxalates are compounds consisting of oxalic acid, chelates, and copper. Oxalates can also be found in bamboo shoots, almonds, and the seeds of plums, cassava, and sorghum. Phytates are often present in the seeds of plums, cassava, and sorghum. Phytates can also be found in plants, legumes, and legumes of cereals, and other plants that contain significant amounts of these compounds include the plant’s defensive system. Edible plants that contain cyanogenic glycosides, consist of a sugar molecule and an organo-sugar, glycocidic bond. They are so-called cyanogenic glycosides, which function as a part of the plant’s defensive system.

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Saponins

Saponins are glycosides consisting of sterols and minerales, particularly in the case of soybeans. On the other hand, saponins have harmful digestive effects (impaired absorption of protein ing). On the other hand, saponins have harmful anti-carcinogenic and immune system stimulat- ing effects (including ginseng).

Glycoalkaloids

Glycoalkaloids are organic compounds bound with various sugar groups. They are naturally-occurring and contain high levels of glycoalkaloids. A typical example is the solanine found in potatoes. Generally, contain various amounts of glycoalkaloids. These plants from animals. Nightshades protect these plants from animals. Nightshades protect these plants from animals.

Prolamins

Prolamins are nitrogen-storing proteins found in cereals. They include gliadin (a part of the wheat protein). Prolamins are rich in glutamine and proline. They are an essential part of the plant's defense system. Prolamins have several beneficial effects (including anti-carcinogenic and immune system stimulat- ing effects).
Goitrogens

Goitrogens are substances that interfere with the iodine storage process of the body. They include:

- Soybeans
- Pine nuts
- Peanuts
- Linseeds
- Spinach
- Broccoli
- Brussels sprouts
- Cauliflower
- Radishes
- Kale
- Chinese cabbage
- Rapeseeds and horseradishes
- Brassica genus plants (broccoli, cabbage, cauliflower, mustard, etc.)
- Horseradishes, Brassica vegetables
- Some nuts
- Plant enzymes and related pesticides
- Some medicines, particularly those that contain goitrogens

Phytoestrogens

Phytoestrogens are plant-derived xenoestrogens that affect the functions of the endocrine system. They are found in soybeans, legumes, and other plants. Phytoestrogens bind to estrogen receptors and may interfere with the female menstrual cycle. It is recommended that pregnant women or those trying to become pregnant avoid phytoestrogens due to their estrogenic effects. Phytoestrogens are also found in processed meat products.

Prolamins are a type of protein found in cereals such as oats, barley, rye, and wheat. They are responsible for gluten sensitivity in individuals with celiac disease. Prolamins can cause damage to the small intestine, leading to increased permeability and nutrient absorption issues.

Goitrogens and Phytoestrogens

Goitrogens and phytoestrogens are known to interfere with cellular functions, particularly the production of hormones and the uptake of nutrients. Goitrogens inhibit the storage of iodine, which is essential for thyroid hormone production, while phytoestrogens can interfere with estrogen receptors. Both types of compounds can have adverse effects on health, particularly in individuals with pre-existing conditions such as celiac disease or thyroid problems.

Infant formula is also not recommended due to their estrogenic effects. The use of soy-based formulas is therefore recommended for pregnant women or those trying to become pregnant as an alternative. The body is able to metabolize these compounds, but they may still cause damage to the small intestine.

Goitrogens are substances that interfere with the storage of iodine in the body, and they can be found in various plants and foods. Phytoestrogens, on the other hand, are plant-derived xenoestrogens that can mimic estrogen in the body.

Phytoestrogens are found in soybeans, legumes, and other plants and can interfere with the endocrine system. They can bind to estrogen receptors and affect the menstrual cycle in women, as well as the health of the thyroid in individuals with goiter.

Goitrogens and phytoestrogens are both known to cause damage to the small intestine, leading to increased permeability and nutrient absorption issues. Goitrogens inhibit the storage of iodine, while phytoestrogens can interfere with estrogen receptors.

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Phytoestrogens were previously believed to have an effect on male fertility and testosterone levels. However, a meta-analysis study published in 2010 did not indicate negative or positive effects on fertility or testosterone levels on the subject.

Enzyme inhibitors

Enzyme inhibitors are molecules that occur naturally in some plants. They interfere with the function of various digestive enzymes. For example, protease inhibitors, high levels of which are found in kidney beans, and amylase inhibitors, high levels of which are found in raw soybeans, are another example of enzyme inhibitors. Amylase inhibitors interfere with the breakdown and absorption processes of starch and other complex carbohydrates. Enzymes that inhibit the function of trypsin and pepsin are protease inhibitors. For example, protease inhibitors interfere with the digestion of proteins and peptides in the digestive system. Another example of enzyme inhibitors are lectin and oxalate inhibitors that inhibit the function of trypsin and pepsin.

Methods of reducing antinutrients

• Sprouting
• Soaking (adding lactic acid bacteria, diluted hydrogen peroxide, iodine, vinegar or baking soda to soaking water to boost the soaking process)
• Boiling or blanching (reduce oxalate levels, etc.)
• Cooking (reduce oxalate levels, etc.)
• Lactic acid fermentation (reduce phytate levels, etc.)
• Enzyme inhibitors

It is recommended to combine several methods to achieve the desired effect. Enzyme inhibitors are molecules that occur naturally in some plants. They interfere with the function of various digestive enzymes. For example, protease inhibitors, high levels of which are found in raw soybeans, are another example of enzyme inhibitors. Amylase inhibitors interfere with the breakdown and absorption processes of starch and other complex carbohydrates. Enzymes that inhibit the function of trypsin and pepsin are protease inhibitors. For example, protease inhibitors interfere with the digestion of proteins and peptides in the digestive system. Another example of enzyme inhibitors are lectin and oxalate inhibitors that inhibit the function of trypsin and pepsin.
REDUCING PHYTATE LEVELS USING VARIOUS METHODS

Process of quinoa preparation

Cooking (25 minutes, 100°C / 212°F)

Soaking

Fermenting with whey

Sprouting

Phytate reduction

15-20%

69-77%

83-88%

79-98%

Phytate reduction

15–20 %

69–77 %

83–88 %

97–98 %


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The acronym FODMAP is derived from “Fermentable Oligo-, Di-, Mono-saccharides and Polyols” (see section “Microbiome” for more details). The FODMAP carbohydrate restrictions are particularly suitable for individuals suffering from irritable bowel syndrome (IBS) as the recommended restriction for IBS is less than 10 grams per day.

Fermentation produces short-chain fatty acids (SCFA) that have significant health-promoting effects. Fermentation produces short-chain fatty acids (SCFA) suitable for fermentation by the bacteria in the colon, particularly the gut microbiome. The acronym FODMAP is derived from “Fermentable Oligo-, Di-, Mono-saccharides and Polyols”.

On the other hand, the fermentation process forms gases in the intestine, potentially causing bloating and flatulence. The FODMAP carbohydrate restrictions are particularly suitable for individuals suffering from irritable bowel syndrome (IBS). The recommended restriction for IBS is less than 10 grams per day.

Examples of FODMAP foods:
- Beans
- Runner beans
- Processed beans
- Onions
- Garlic
- Walnuts
- Breast milk
- Artificial sweeteners

In practice, it means carbohydrates that are particularly suitable for fermentation by the bacteria in the colon.
FODMAP CATEGORIES

- Fructose
  - Apple, apricot

- Lactose
  - Milk, yoghurt

- Saccharose
  - Sugar, chocolate, honey

- Glycerol

- Oligosaccharides
  - Cabbage, leek, beetroot, onion, garlic, onion

- Polyols
  - Sorbitol, mannitol, xylitol

- Monosaccharides
  - Fructose, lactose

- Disaccharides

- Oligosaccharides
FACTORS AFFECTING THE MICROBIOME
The bacterial strain of the intestine changes quickly whenever dietary adjustments are made. Studies on mice have found that upon changing the diet, the microbiome may change overnight. Similar changes also take place in humans but the exact time span is currently not known.

Switching to a more intestine-friendly diet has brought positive results in the treatment of chronic inflammation, obesity, and gut permeability. Gut permeability refers to the changed state of the epithelium, which allows harmful substances into the circulation. Celiac disease is a typical example of an autoimmune disease involving increased gut permeability. Whether it is a cause or an effect is currently not known.

The exact time at which the microbiome may change overnight is currently not known. Studies on mice have found that upon changing diet, changes quickly whenever dietary adjustments are made. Further research is needed to understand the exact time and factors involved in these changes.
Add these to support the microbiome:

- Fermentable fibers, i.e. prebiotics
  - For example inulin, pectin and oligofructose
- Fermented foods (see section “Probiotics” for more details)
- Resistant starch
  - Found for example in green bananas, cooked and subsequently refrigerated rice and potatoes as well
  - Meat from animals that have fed on the plants
  - Genetically modified soybeans and corn
- Polyphenols
  - Dark chocolate (contains polyphenols and fermentable fibers)
  - Pistachios
- Probiotics (certain bacterial strains, particularly soil-based ones)
- Continuous negative thoughts and feelings
- Chronic stress
- Alcohol
- Smoking

Avoid these to protect the microbiome:

- Antibiotics (unless absolutely necessary for the treatment of illness)
- Resistance starch
- Pesticides containing glyphosate (including Roundup)
- Resistant starch
- Meat from animals that have fed on the plants
- Genetically modified soybeans and corn
- Antibiotics (unless absolutely necessary for the treatment of illness)
- Continuous negative thoughts and feelings
- Alcohol
- Smoking
- Chronic stress
- Probiotics (certain bacterial strains, particularly soil-based ones)
Probiotics refer to living microbes that have positive effects on health. The benefits become apparent through the balancing of the microbiome in the digestive tract. Probiotic bacteria can be created in laboratory conditions or used as soil-based organisms (SBO).

Probiotics have numerous health benefits that have been widely studied in meta-analytic studies:

- Alleviating constipation
- May help in the treatment of acute diarrhea
- Preventing traveler’s diarrhea (particularly Saccharomyces Boulardii)
- Facilitating the treatment of Irritated bowel syndrome
- Facilitating the treatment of Irritated bowel
- Preventing traveler’s diarrhea (particularly Saccharomyces Boulardii)
- May help in the treatment of acute diarrhea
- Allowing constipation to resolve

Probiotics available from food:

- Sauerkraut and other fermented vegetables
- Kefir
- Kombucha
- Jun tea (fermented tea beverage)
- Tempeh
- Natto
- Kimchi
- Fermented vegetable juices

**RECOMMENDATION**

Probiotics in the book’s bonus materials:

- biohack.to/nutrition

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Prebiotics refer to indigestible fiber compounds such as oligo- and polysaccharides used as a growth medium by the bacterial strain of the intestine. The use of prebiotics promotes the growth of benign probiotic bacteria such as bifidobacteria and lactic acid bacteria in the intestine. The intake of prebiotics may have positive effects on the absorption of trace elements, blood pressure, and the immune system, reduced risk of colon cancer, and the reduced risk of obesity, and the positive effects on the absorption of trace elements, and the benefits similar to those of dietary fiber. Prebiotics are resistant starch that has been shown to have beneficial effects on insulin sensitivity and obesity as well as resistant starch which is beneficial to the microbiome. In addition to general prebiotic health benefits, resistant starch which has been introduced in recent years as dietary supplement to support the bacterial balance of the intestine. Potato starch is rich in levels of prebiotics can also be found for example in potato and onion. As a dietary supplement, potato starch, and onion can support the bacterial balance of the intestine.

The table shows the foods richest in prebiotics. High levels of prebiotics can also be found for example in potato and onion. As a dietary supplement, potato starch, and onion can support the bacterial balance of the intestine.

### Prebiotics available from Food

<table>
<thead>
<tr>
<th>Food</th>
<th>Ratio of Inulin to Oligofructose per 100 g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banana</td>
<td>0.59 / 0.59</td>
</tr>
<tr>
<td>Asparagus</td>
<td>2.59 / 2.59</td>
</tr>
<tr>
<td>Leek</td>
<td>6.59 / 5.29</td>
</tr>
<tr>
<td>Garlic</td>
<td>12.59 / 5.9</td>
</tr>
<tr>
<td>Chicory root leaves</td>
<td>13.59 / 10.89</td>
</tr>
<tr>
<td>Jerusalem artichoke</td>
<td>18.99 / 15.96</td>
</tr>
<tr>
<td>Asparagus</td>
<td>41.69 / 2.99</td>
</tr>
</tbody>
</table>

Prebiotics promote the growth of benign probiotic bacteria such as bifidobacteria and lactic acid bacteria in the intestine. The use of prebiotics helps to maintain a healthy microbiome and support the immune system.
METHODS THAT SUPPORT DIGESTION

Review eating habits
• Chew carefully
• Avoid stress at mealtimes
• Spend at least 20 minutes eating
• Avoid drinking liquids during meals (dilutes stomach acids)

Review foods that support digestion
• Fresh carrot juice (supports intestinal mucous membranes)
• Celery juice (promotes intestinal movements and alleviates constipation)
• Level of hydrochloric acid (betaine hydrochloride, HCL)
• Carminatives reduce gas in the intestine:
  – Orange, fennel, ginger, cinnamon, cardamon, cloves,
  – Cinnamon, rosemary, sage, lemon balm, dill, thyme, garlic
caraway, licorice, oregano, parsley, peppermint oil,
• Bitters stimulate the production of stomach acids anddigestive enzymes:
  – Jerusalem artichoke, Angelica archangelica root
  – Gentian, Angelica archangelica root, yellow
digestive enzymes:
• Vitamins A, D and E:
  – Vitamin B12
• Magnesium
• Proteins the mucous membrane of the stomach
  – Silica and silica acid-carmellose gel
• Repairs and strengthens the mucous membrane of the stomach
  – Silica and silica acid-carmellose gel
• L-Glutamine
• Hydrochloric acid and pepsin

Review dietary supplements that support digestion
• Hydrochloric acid and pepsin
• L-glutamine
• Silica and silica acid-carmellose gel
• Magnesium
• Bitters stimulate the production of stomach acids anddigestive enzymes:
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Review eating habits
• Avoid drinking liquids during meals
• Spend at least 20 minutes eating
• Avoid stress at mealtimes
• Chew carefully
FOOD PREPARATION METHODS
Choosing a food preparation method carefully can have a significant effect on the quality and absorbability of the resulting meal, as well as the amount of any harmful compounds in it.

No single preparation method is perfect. Some

- Favor the following preparation methods:
  - Slow cooking
  - Steaming
  - Boiling
  - Oven-baking slowly
  - Sous-vide
  - Fermentation
  - Raw food
  - Fermentation
  - Frying with water

During cooking, harmful compounds formed when the food is treated

- Quality-minded food preparation methods improve
  - Flavor
  - Retain precious nutrients
  - Reduce the amount of harmful compounds formed when the food is treated

A balanced mixed diet consists of both cooked and fresh ingredients. The benefits and disadvantages of

- Properly cooking complement each other when executed together.

In high temperatures, harmful compounds are best eaten raw, whereas in many cases

- Some single preparation method is perfect. Some

Carefully choosing a food preparation method can have a significant effect on the quality and absorbability of the resulting meal, as well as the amount of any harmful compounds in it.

Sold to Fred Block Block (#GJ57MBGL)
Avoid the following preparation methods:

- Frying at temperatures higher than 140 °C (285 °F)
- Stewing in tinfoil
- Grilling
- Cooking in the microwave oven
- Flambéing
- Smoking
- Deep frying

Harmful bacteria, viruses and parasite eggs are destroyed when heated. The levels of water-soluble vitamins B and C are reduced when the ingredients are cooked. Certain harmful compounds, for example, are destroyed during cooking. Heating also breaks down harmful bacteria, viruses and parasite eggs are destroyed when heated. The levels of water-soluble vitamins B and C are reduced when the ingredients are cooked.

Cooking may improve the absorption of certain nutrients. For example, beta-carotene in carrots is absorbed more efficiently once cooked. Only 4% of the beta-carotene in a raw carrot is absorbed. Pureeing and cooking may increase the absorption rate twofold. On the other hand, carotenoids may become less beneficial when cooked, as they can break down when heated, and the Maillard reaction (browning) produces harmful compounds that produce brown color and flavors that are central to the color and taste of many foods (MRP compounds).

The Maillard reaction starts at approximately 140 °C (285 °F). The Maillard reaction forms compounds that produce brown color and flavors that are central to the color and taste of many foods (MRP compounds). The Maillard reaction forms compounds that produce brown flavor. The reaction forms compounds that produce brown flavor.

The Maillard reaction improves the flavor of food, but it also impairs the absorption of proteins. The Maillard reaction improves the flavor of food, but it also impairs the absorption of proteins.

Sold to Fred Block (#GJ57MBGL)
Harmful compounds form in food at high temperatures. These include glycotoxins (advanced glycation end-products, AGEs), heterocyclic amines (HCAs) and polycyclic aromatic hydrocarbons (PAHs). The toxins formed during the browning of vegetables, cheese, butter, bacon, sausages and processed meat can increase the risk of diabetes and cardiovascular diseases.

Cut the intake of glycotoxin-rich foods such as full-fat cheese, bacon, sausages and processed meat. Acrylamide, formed during the browning of vegetables, has a distinctive yellow or dark brown color. The toxins formed while frying fat and protein-rich foods are more harmful than those formed while frying carbohydrate-rich foods.

Instead of frying, consider boiling. For example, a chicken breast fried for 8 minutes forms more than 6 times the amount of harmful glycotoxins compared to a chicken breast boiled for an hour. Temperature, not cooking time, is key. Tinfoil is typically used for stewing meat or fish on a grill or in an oven. Stewing in tinfoil reduces the formation of glycotoxins and HCAs, but the amount of aluminum released into the food is up to 6 times higher than the amount released during boiling.

The amount considered a safe daily upper limit is 7.8 mg of aluminum released into the food is up to 6 times higher than the amount released during boiling.
Throughout history, food has been marinated in herbs, fats, citrus fruit, vinegar and alcoholic beverages such as wine and beer to preserve the food and improve its flavor. Studies have also found that marinades affect the amount of harmful compounds forming in cooked food.

Reducing harmful compounds by marinating:

- The amount of acrylamide in potatoes can be reduced by adding glucose during browning.
- The amount of acrylamide by up to 90% when the dough before baking reduces the amount of acrylamide.
- Adding amino acids such as glycine and glutamine reduces the amount of acrylamide.
- Fryling in extra virgin olive oil produces the least glycyotoxins.
- Adding turmeric diminishes the effect of glycyotoxins.
- Adding vitamin E to the marinade reduces the amount of HCAs.
- Cherries, blueberries, blackcurrants, plums and berries, and strong spices such as garlic, ginger, thyme, rosemary and chilli, when food is marinated for 6 hours or more in beer.
- The meat is marinated for 4 hours or more in alcoholic beverages and strong spices such as garlic, ginger, thyme, rosemary and chilli, when food is marinated for 6 hours or more in beer.
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- Adding vitamin C reduces the amount of glycotoxins.
- Adding turmeric diminishes the effect of glycotoxins.
- Frying in extra virgin olive oil produces the least HCAs.
- The amount of AGEs can be reduced by using sour ingredients such as lemon juice and vinegar in the marinade.
- HCAs compared to other oils such as rapeseed oil.
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- Cherries, blueberries, blackcurrants, plums and berries, and strong spices such as garlic, ginger, thyme, rosemary and chilli, when food is marinated for 6 hours or more in beer.
- The meat is marinated for 4 hours or more in alcoholic beverages and strong spices such as garlic, ginger, thyme, rosemary and chilli, when food is marinated for 6 hours or more in beer.
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- Adding vitamin C reduces the amount of glycotoxins.
- Adding turmeric diminishes the effect of glycotoxins.
- Frying in extra virgin olive oil produces the least HCAs.
- The amount of AGEs can be reduced by using sour ingredients such as lemon juice and vinegar in the marinade.
- HCAs compared to other oils such as rapeseed oil.
- Frying in extra virgin olive oil produces the least glycotoxins.
- Adding amino acids such as glycine and glutamine reduces the amount of acrylamide.
- Fryling in extra virgin olive oil produces the least HCAs.
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With the sous-vide method, food is prepared under water in a sealed vacuum bag while maintaining careful control over the temperature. Food is typically prepared at a minimum of 55 °C (131 °F) for an hour or more if the chosen ingredient is a rule of thumb, cooking at a chosen temperature. As a rule of thumb, cooking at a recommended cooking temperature and time of the ingredient can be used.

Benefits of the sous-vide method:
• Close control of the temperature-induced changes
• Cooking temperature can be reduced
• Cooking time can be increased
• Pathogens can be minimized through pasteurization
• Precooking extends the shelf life and makes cooking quicker and easier
• Pathogens can be minimized through pasteurization
• Flavors, nutrients, and liquids are retained better
• Close control of the temperature-induced changes

Disadvantages of the sous-vide method:
• Sous-vide bags may release toxins
• Sous-vide bags are expensive and not ecological

To ensure safety, attention should be paid to the recommended cooking temperature and time of the chosen ingredient. As a rule of thumb, cooking at a minimum of 55 °C (131 °F) for an hour or more is usually sufficient to destroy pathogens such as Listeria, Salmonella, Helicobacter pylori, and Trichinella.

Tips
• Adding mustard seeds into the bag

Sous-vide TIP
Sold to Fred Block Block (#GJ57MBGL)

TIP
• Adding mustard seeds into the bag

Sous-vide TIP
Sold to Fred Block Block (#GJ57MBGL)
Food that has been properly precooked, rapidly cooled and kept refrigerated in an unopened sous-vide bag will usually keep for at least a week, or several months if frozen. Adding marinades or vitamins C or E to the sous-vide bag will extend the shelf life due to reduction of the oxidation of ingredients. Favor bags that do not contain BPA’s, phthalates or plasticizers. Bags made out of polyethylene or silicon are usually the safest.

DIY sous-vide

If you are not yet ready to invest in a sous-vide cooker, you can test the technique at home by using common utensils. You just need a thermometer, a cooler box and a water tight ziplock bag.

1. Place the food in the ziplock bag. Lower the bag into the water and close the lid.
2. Check the water temperature every 20 minutes. If needed, add warm water to maintain the target temperature. After a sufficient cooking time, remove the bag from the water and enjoy.

RECIPE

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PRESERVING

In the course of history, a wide variety of methods has been used to preserve food. In recent decades, the food industry has made significant developments in food additives and preservatives, as well as introducing new processing methods. In practical terms, most of us preserve food in a refrigerator, freezer or pantry on a regular basis. In addition to this, the lifespan of various ingredients can be extended with smart choices of storage material, correct preservation methods and high-quality health-promoting preservatives.

Recommended approaches to preservation:

- Protecting from light in dark or tinted containers
- Protecting from heat in a refrigerator or pantry
- Protecting from air in an airtight container or vacuum bag
- Protecting from moisture in a dehydrator or root cellar
- Preventing oxidation with strong spices and salt
- Preventing oxidation with vitamin C and E
- Sterilizing at high temperatures
- Drying and freeze-drying
- Preserving in a modified atmosphere
- Avoid using photodegradable materials such as plastic and glass.

Alcohol, vinegar, lemon juice, salt or oil are examples of food preservatives.
ENSURING THE SUFFICIENT INTAKE OF NUTRIENTS

To a large extent, nutrient intake guidelines are based on population-wide studies regarding the frequency of deficiencies and certain illnesses caused by poor nutrition. However, these guidelines do not necessarily reflect the frequency of deficiencies and certain illnesses caused by poor nutrition. Therefore, individual nutrient guidelines are based on population-wide studies reflecting the frequency of deficiencies and certain illnesses caused by poor nutrition. The individual’s current optimal intake should therefore always be the first priority for designing dietary recommendations.

**Dietary Reference Values**

<table>
<thead>
<tr>
<th>Description</th>
<th>Dietary Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower intakes level</td>
<td>The minimum amount required to prevent deficiency. Not sufficient to maintain good health and nutrition.</td>
</tr>
<tr>
<td>Average requirement</td>
<td>The nutrient amount that meets the average requirements of a specific population group.</td>
</tr>
<tr>
<td>Recommended intake</td>
<td>The nutrient amount that meets the average requirements of nearly all healthy individuals.</td>
</tr>
<tr>
<td>Optimal intake</td>
<td>The minimum amount required to prevent deficiency. Sufficient to maintain good health and nutrition.</td>
</tr>
<tr>
<td>Description</td>
<td>The nutrient amount that helps to achieve the best possible state of health.</td>
</tr>
</tbody>
</table>

However, these guidelines do not necessarily reflect the frequency of deficiencies and certain illnesses caused by poor nutrition. Therefore, individual nutrient guidelines are based on population-wide studies reflecting the frequency of deficiencies and certain illnesses caused by poor nutrition. The individual’s current optimal intake should therefore always be the first priority for designing dietary recommendations.
Nutrient absorption depends greatly on unique absorption rates. It is not possible to take this factor into account when drafting general dietary guidelines. If digestive functions are not performing, nutrients are not absorbed to the extent perhaps expected. Optimal nutrient intake should therefore begin by improving digestive processes.

Bruce Ames, an American professor of biochemistry and molecular biology, has studied cancer and aging. According to Ames’ triage theory of micronutrients and aging, the body uses the nutrient reserves of various internal organs to maintain short-term health in a state of malnutrition. For example, in the event of iron deficiency, the body uses the iron reserves of the liver to maintain normal bodily function. Long-term deficiency of minerals and vitamins weakens the body and causes DNA and mitochondrial damage. This may lead to cancer and the acceleration of aging. Ames’ recommendation for longevity is to meet the nutrient requirements at all stages of life. This means consuming food that is high in various micronutrients and vitamins, such as vitamins A, D, E, K, folate, and more. Nutrient levels depend greatly on unique absorption rates. It is not possible to take this factor into account when drafting general dietary guidelines.
<table>
<thead>
<tr>
<th>Micronutrient</th>
<th>Frequency of deficiency</th>
<th>Predisposing factors for hypothyroidism and goiter</th>
<th>Health Problems and other remarks</th>
<th>Availability from food</th>
<th>Sold to Fred Block Block (#GJ57MBGL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>Particularly in developing countries, during pregnancy, preterm birth, and lactation.</td>
<td>iron factor for iodine deficiency</td>
<td>caused by deficiency</td>
<td>Absorption of iron, Vitamin C promotes the green vegetables, increase in the risk of coronary artery disease and osteoporosis.</td>
<td>Blood, bovine liver, oysters.</td>
</tr>
<tr>
<td>Vitamin D</td>
<td>Particularly in vegans but increasingly common for other diets as well.</td>
<td>deficiency occurs particularly in the northern hemisphere where sunlight is scarce.</td>
<td>Increased risk of coronary artery disease and depression. Increases the risk of osteoporosis.</td>
<td>The sun, fish, fish oil and mushrooms.</td>
<td>Particularly in vegans but increased risk of coronary artery disease and depression.</td>
</tr>
<tr>
<td>Vitamin B12</td>
<td>Particularly in vegans but increased risk of coronary artery disease and depression.</td>
<td>deficiency occurs particularly in vegans. But increased risk of coronary artery disease and depression.</td>
<td>Causes pernicious anemia, fatigue, etc.</td>
<td>eggs, soy.</td>
<td>Increaseingly common for other diets as well.</td>
</tr>
<tr>
<td>Iodine</td>
<td>A serious public health problem in the developing world, but as much as approx. 40% of the people in the world are at risk.</td>
<td>Impoverished soil is a predisposing factor.</td>
<td>Seaweed (particularly kelp), seafood and egg yolk.</td>
<td>Promoting is duration, respiratory problems.</td>
<td>Seafood (particularly kelp), seaweed, eggs.</td>
</tr>
<tr>
<td>Micronutrient</td>
<td>The most common micronutrient deficiencies and their availability in food.</td>
<td>Headaches, heart problems, fatigue, etc.</td>
<td>The most common nutrient deficiency in the world.</td>
<td>diarrhea, weight loss, muscle problems, inability to infections, respiratory problems.</td>
<td>The sun, fish, fish oil and mushrooms.</td>
</tr>
<tr>
<td>Micronutrient</td>
<td>Frequency of deficiency</td>
<td>Predisposing factor for poor availability and other remarks</td>
<td>Availability from food</td>
<td>Health problems and other remarks caused by deficiency</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------</td>
<td>----------------------------------------------------------</td>
<td>-----------------------</td>
<td>-----------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Selenium</td>
<td>mild deficiency is common</td>
<td>soil is a risk factor for increased risk of inflammatory disease</td>
<td>Brazil nuts, wild salmon, kidney's</td>
<td>renal syndromes, kidney failure, bone fracture, cardiovascular disease, cancer, impaired immune response, auto-immune diseases and increased risk of inflammatory disease.</td>
<td>Selenium deficiency is common.</td>
</tr>
<tr>
<td>Magnesium</td>
<td>mild deficiency is particularly common</td>
<td>Improved soil is a risk factor for muscle, bone health.</td>
<td>Dark green vegetables, cocoa, nuts</td>
<td>Predisposing factor for poor condition of skin, hair and nails. Predisposing factor for poor condition of skin, hair and nails.</td>
<td></td>
</tr>
<tr>
<td>Zinc</td>
<td>mild deficiency is relatively common</td>
<td>Low level of hydrochloric acid in the stomach is a predisposing factor for zinc deficiency.</td>
<td>Insects, oysters, call liver, beef</td>
<td>Predisposing factor for poor condition of skin, hair and nails.</td>
<td></td>
</tr>
<tr>
<td>Vitamin K2</td>
<td>the leading cause for deficiency</td>
<td>Impoverished soil is a predisposing factor for deficiency.</td>
<td>Natto, miso, sauerkraut, grass-fed butter, ice cream</td>
<td>The low level of hydrochloric acid in the stomach is a predisposing factor for zinc deficiency.</td>
<td></td>
</tr>
</tbody>
</table>

Mild deficiencies are particularly common in vegans and the elderly. Magnesium deficiency is particularly common in diabetic individuals. The leading cause for deficiency is the use of antibiotics. Vitamins are particularly common around the world. Magnesium deficiency is very common in diabetic individuals.
MEASURING THE STATE OF NUTRITION
French chemist and physicist Nicholas Clément (1779–1841) introduced the concept of the calorie in the early 1800’s. The Calorie is French and refers to a unit of energy that raises the temperature of 1 kg of water by one degree centigrade. The term gained popularity in measuring the energy content of food. In 1912, Cambridge University scientist Frederick Hopkins (1861–1947) discovered that, in addition to macronutrients, human beings need so-called accessory factors to support the functions of the body. Later these nutritional factors became known as vitamins.

The importance of certain trace elements such as iron, iodine and zinc was realized as early as the 19th century. In France, schoolchildren were given iodine tablets to prevent goiter. In 1912, Cambridge University scientist Frederick Hopkins (1861–1947) discovered that, in addition to macronutrients, human beings need so-called accessory factors to support the functions of the body. Later these nutritional factors became known as vitamins.
Levels of micronutrients and trace elements

• From blood
• From hair
• From urine

Fatty acids

• From blood

Amino acids

• From blood

Hair and other parasites

• Yeast fungi

Numerous bacterial strains

Helpful bacterial strain

• Heavy metals

Testing for food allergies:

• Trial elimination diet
• Skin prick test
• IgE and IgG antibody tests

Testing for Helicobacter pylori

Measuring stomach acid and enzymes

Overgrowth (SIBO)

Measuring the possible small intestinal bacterial overgrowth and malabsorption

Comprehensive digestion analysis

Digestion analysis:

The condition of the intestine

Psychological performance is also strongly linked to microbiological balance of the intestine. Physical and psychological dysfunction linked to several illnesses that could be prevented or treated effectively by analyzing the functionality and individual can change very rapidly. These changes are

Analyzing the intestinal function and the microbiome

Open food challenge (milk and cereals)

Identifying the foods that are harmful or detrimental

Improving overall health, psychological performance and, above all, eliminating these makes for significantly better physical function of the body is particularly important.

Testing for food allergies and hypersensitivities

Testing for food allergies:

• Trial elimination diet
• Skin prick test
• IgE and IgG antibody tests

Open food challenge (milk and cereals)
Gene tests can be used to identify increased individual risks of various illnesses which are then taken into account when making lifestyle choices. It is important to understand that your lifestyle (including your diet) controls the function of your genes. Not all genes are constantly active. Epigenetics (the activation or deactivation of genes by factors external to the genome) can be perceived for example in the increased or decreased function of certain genes due to environmental factors such as diet.

Nutrigenomics involves the study of the effects of nutrition on the function of genes. For example, researchers at the Norwegian University of Science and Technology (NTNU) have found that cutting sugar consumption (to less than 40 percent of the energy content of the meal) can lower the risk of cardiovascular disease, dementia, and some types of cancer and diabetes.

Listed below are some gene variants that are worth noting in terms of diet:

- **Variant APOE4 of the APOE gene**
  - Apolipoprotein E (APOE) is crucial for fat metabolism, particularly for breaking down lipoproteins (including LDL).
  - Type 3/4 and especially 4/4 are associated with high cholesterol levels, carotid artery disease, and increased risk of cardiovascular disease (inducing LDL).
  - Apolipoprotein E (APOE) is crucial for fat metabolism, particularly for breaking down lipoproteins (inducing LDL).

- **Variant Pro12Ala of the PPARG gene**
  - PPARG (Peroxisome Proliferator-activated Receptor Gamma) is a nuclear protein that has an effect on obesity.
  - The Ala type is associated with a lower risk of developing type 2 diabetes, while the Pro type is associated with a higher risk of developing type 2 diabetes.
  - Type 3/0 and especially 4/4 are associated with high cholesterol levels, carotid artery disease, and increased risk of cardiovascular disease (inducing LDL).
  - Apolipoprotein E (APOE) is crucial for fat metabolism, particularly for breaking down lipoproteins (inducing LDL).
  - Type 3/0 and especially 4/4 are associated with high cholesterol levels, carotid artery disease, and increased risk of cardiovascular disease (inducing LDL).
A study conducted on mice found that for individuals with this variant, a high-fat diet increased obesity more rapidly and thus formed a predisposing factor for diabetes.

Variants IVS4G>T and IVS3C>T of the TCF7L2 gene
- TCF7L2 is a protein transcription factor.
- These variants are associated with an increased risk of developing type 2 diabetes.

Variants Trp64Arg of the B3AR gene and variant Gln27Glu of the B2AR gene
- Beta-adrenergic receptors have a significant effect on energy production and the function of the sympathetic nervous system.
- These variants are associated with obesity.

Variants rs9939609(A) of the FTO gene
- FTO = fat mass and obesity-associated protein
- Individuals with a type A variant have a significantly increased risk of obesity and developing type 2 diabetes.

Variant rs4988235 of the MCM6 gene
- Affects the production of the lactase enzyme (LCT).
- Individuals with a T type variant usually tolerate lactose.
- The C/T type variant is associated with obesity.

Variants HLA-DQ2 and HLA-DQ8 of the HLA-DQ gene
- HLA-DQ genes encode certain proteins that are part of the immune system.
- These variants are strongly associated with celiac disease.

Variant A118G of the OPRM1 gene
- The OPRM1 gene encodes opioid receptors.
- The type G variant can significantly increase alcohol dependence.

Variant I148M of the PNPLA3 gene
- This variant of the PNPLA3 gene related to fat metabolism slows the breakdown of triglyceride fats in the liver and thus promotes the onset of fatty liver disease.

However, a study conducted on mice found that for...
Variant 164A>C of the CYP1A2 gene
• Caffeine, mycotoxin and paracetamol (among others) are broken down in the liver mainly by the CYP1A2 enzyme.
• Each individual's CYP1A2 enzyme system functions at a different rate.
• Individuals with a type C variant have a slow enzyme system. For these individuals, drinking coffee can increase the risk of heart attack and/or high blood pressure.

Variants C677T and A1298C of the MTHFR gene and variant A66G of the MTRR gene
• Methylene tetrahydrofolate reductase (MTHFR) is an enzyme needed to convert folic acid and certain other forms of folate into methylfolate (5-MTHF).
• Folic acid can be found in vitamin supplements and in certain food items, such as enriched grains, beans, and some fruits and vegetables.
• Individuals with these variants are unable to efficiently convert folic acid into active folate. This results in a high homocysteine level, a known risk factor for cardiovascular diseases, particularly in individuals with variants C677T and A66G.
• Switching from folate acid to more efficient methylfolate is recommended.

Variant A1 (Taq1A polymorphism) of the ANKK1 gene
• ANKK1 (ankyrin repeat and kinase domain containing 1) is fundamentally linked to the dopamine D2 receptor (DRD2), i.e. reward and motivation.
• A mutation in this gene is a predisposing factor for addictive behavior (alcohol, tobacco, sugar).
• The A1 allele is especially found in obese (BMI > 30) and gambling, opiate-dependent individuals.
• The A1 allele is linked to the dopamine D2 receptor (DRD2), i.e. reward and motivation.
• ANKK1 (ankyrin repeat and kinase domain containing 1) gene is variably associated with obesity and addictive behaviors.

Variant rs1229984 of the ADH1B gene
• Accelerates the conversion of alcohol into acetaldehyde (a more rapidly developing hangover).
• Individuals with this variant have a lowered risk of developing alcoholic liver disease.

Mutation of the ALDH2 gene
• Significantly lowered isoenzyme ALDH2-2 activity (especially found in North Asia).
• A predisposing factor for adverse effects from alcohol and alcoholic poisoning.
• Variation in this enzyme is correlated with a high homocysteine level in individual with a type C variant of MTHFR, i.e. folic acid is converted to active folate. This results in a high homocysteine level, a known risk factor for cardiovascular diseases, particularly in individuals with variants C677T and A66G.
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Folate is recommended.
• Variants C677T and A66G.
• Cardiovascular diseases, particularly in individuals with a high homocysteine level, a known risk factor for cardiovascular diseases.
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REVIEWING NUTRIENTS
"Everything should be made as simple as possible, but not simpler."

– Albert Einstein (1879–1955)
Dietary changes should be implemented with care. For instance, studies indicate that current, popular extreme diets can lead to micronutrient deficiencies. On the other hand, ordinary home-cooked food may not fulfill dietary guidelines. Low-quality ingredients are relatively easy to rule out by applying a few core principles. To paraphrase Michael Pollan, the Knight Professor of Science and Environmental Journalism at UC Berkeley: “Do not buy anything your grandmother would not have recognized as food 50 years ago.” This quickly eliminates convenience foods and the lowest quality products. The rule of thumb is that the closer the food is to its original state, the more likely it is to have health-promoting properties. Meta-analyses have found that organically produced ingredients contain significantly more antioxidants and less heavy metals and pesticides than non-organic ingredients. In this chapter, we give guidelines for better, more nutrient-rich choices for individual ingredients. Low-quality ingredients should be eliminated for better, more healthy eating.
Herb garden

Extensive spice rack

Titanium frying pan

Berries and game in the freezer

Water filter

Powerful blender

SousVide-cooker

Coffee grinder

Boiler

Induction cooker

Energy-efficient refrigerator

Plenty of vegetables in the refrigerator

Sold to Fred Block Block (#GJ57MBGL)
In the Mediterranean countries, salt was once considered as valuable as gold. Soldiers of the Roman legion were paid in salt, which is referred to as *salarium argentum* in Latin, meaning “salt money.” This is also where the English term “salary” originates from. The Latin word *sal* is also thought to be the origin of the Arabic word *salaam,* meaning “peace.”

The global average salt intake in 2010 was around 10 grams per person per day. Around 80% of total salt intake is so-called hidden salt that can be found in several processed foods (such as grain and meat products). For example, bread can have as much salt as potato chips.

Cutting the consumption of table salt and hidden salt is generally recommended, as is using mineral salt which is rich in potassium and magnesium. Favoring mineral salt makes it possible to lower blood pressure without cutting salt intake, as is associated with the English term *salyer,* originating from the Latin word *salum argentum,* “salt money.” This is also where the region where partially paid in salt was referred to as considered as valuable as gold. Soldiers of the Roman legion were partially paid in salt, it was referred to as the Mediterranean countries, salt was once valued as gold.
although excessive intake of salt is strongly associated with high blood pressure, insufficient salt intake is a even more serious health risk. High quality salt enhances flavors, preserves food and maintains the fluid balance of the body. Sodium is essential to the body for carrying nerve impulses, maintaining the fluid balance of the body, and for many bacterial and viral enzymes. This is why "salt" is used to flavor food. Excessive salt intake can lead to high blood pressure, heart disease, and stroke.

Several countries add iodine to table salt to address the iodine deficiency problem. However, salt is not the best source of iodine. For example, one teaspoon of kelp provides as much iodine as one pound of iodine-enriched sea salt. Salt is also a good source of chloride, which is needed for maintaining muscle function and regulating fluid balance and blood pressure. Chloride is needed for maintaining muscle function and regulating fluid balance and blood pressure.

Avoid:

- Refined salt
- Table salt
- Seasoned salt (with monosodium glutamate, MSG)

Favor:

- Purity-tested, unrefined sea salts
- Mineral salts
- Pink salts sold under various names (Himalayan salt, Black salt, rock salt, halite)
- Rose salt, pink salt
- Herbamare seasoning
- Black salts
- Rose salt, rock salt, halite
- Mineral salts
- Purity-tested, unrefined sea salts

Mix together several different types of salt and dried herbs (such as rosemary, basil and mint) if desired. This increases the nutritional density and aroma of the salt used.
In the United States, the average person consumes more than 126 grams of sugar per day. That is more than twice the recommendation for daily intake by the World Health Organisation. Around 70–80% of this sugar is so-called hidden sugar. It is plentiful in many processed foods such as yogurt, juice, soda, cold cuts, pizza, soy sauce, mayonnaise and many convenience foods. Studies have found that sugar causes physical dependence. Furthermore, it is well-known that sugar and fructose strain the liver. What is worse, studies have found that sugar causes physical dependence.

Sugar

Honey

Favors:
- Unheated and unfiltered
- Unprocessed local honey, produced in an unpolluted area and collected from a single farm
- Varietal honey (for example buckwheat, manuka, tualang)
- The darker the color, the better
- Manuka (Leptospermum scoparium)

Compared to cane sugar, white refined sugar contains no trace elements or minerals. White refined sugar can interfere with the absorption of calcium, magnesium, zinc and iron. It also consumes the body’s supplies of trace elements, and so-called hidden sugar is responsible for the development of numerous metabolic disorders such as type 2 diabetes and metabolic syndrome. It is strongly associated with numerous metabolic disorders such as type 2 diabetes and metabolic syndrome. It is strongly associated with disrupted fat metabolism and systemic inflammation, cardiometabolic diseases and multiple organ failure.

We recommend replacing white sugar with alternatives that contain trace elements, and avoiding sources of hidden sugar such as flavored yogurt, juice, soda and many convenience foods. The excessive use of white sugar is associated with numerous metabolic disorders such as type 2 diabetes and metabolic syndrome.
The lower age limit for honey consumption is generally 12 months because of the higher risk of infants developing botulism caused by Clostridium botulinum due to underdeveloped intestinal flora. Honey has yielded good results in the treatment of acute coughing in children as well as in allergy desensitization.

Crystallized sugars

Favor:
- Coconut sugar
- Whole cane sugar (unrefined and processed as little as possible, often sold under more unusual names such as muscovado, kohaku or mascobado)
- Brown sugar (partially bleached raw cane sugar, also sold under more unusual names such as Indian, rapadura, kokuto or mascobado)
- Herbs honey

Avoid:
- Baking sugar (including icing sugar, soft brown sugar, demerara or molasses sugar)
- Fructose
- Brown sugar (partially bleached raw cane sugar, also sold under more unusual names such as Indian, rapadura, kokuto or mascobado)
- Baking sugar (including icing sugar, soft brown sugar, demerara or molasses sugar)
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High intensity sweeteners

Favor:
- Birch-based xylitol
- Green stevia (leaves of the whole plant)
- Luo han guo (monk fruit)

Avoid:
- GMO xylitol
- Erythritol
- Sorbitol
- Steviol glycoside extracts (white stevia)
- Aspartame
- Acesulfame K
- Fructose-glucose syrup (corn syrup)
- Sucrose and flavor syrups
- Spruce tip syrup
- Kiwi palm (Carissa macrocarpa) syrup
- Yacon syrup
- Coconut syrup
- Maple syrup

Licorice root
Inulin
Nopal cactus (prickly pear)
Lucuma

Use as sweetener when needed:

Other

Syrups

+ FAVOR:
- Agave, sugar syrup, flavor syrups
- Fructose-glucose syrup (corn syrup)

- AVOID:
- Fructose-glucose syrup (corn syrup)
- Agave, sugar syrup, flavor syrups
- Yacon syrup
- Coconut syrup
- Maple syrup

Other

Green stevia (leaves of the whole plant)
- Birch-based xylitol

High intensity sweeteners

and sugar alcohols
Spices are used to add flavor and preserve food. Spices can be strongly flavored or aromatic plant parts, components extracted from plants, or minerals. Many spices and herbs have both health-promoting and illness-preventing qualities. Several spices also stimulate the function of digestive system. Spices can be strongly flavored or aromatic plant parts. Spices are used to add flavor and preserve food.

**Avoid:**
- Highly irradiated spices
- Expired spice shakers that have been constantly exposed to light, heat and moisture

**Flavor:**
- Wild vegetables and wild spices
- Fresh ginger and turmeric
- Chili, cayenne and black pepper
- Garlic and onions
- Fresh parsley and dill
- Rosemary, oregano, thyme, dill, tarragon, coriander, bay leaves
- Ceylon cinnamon, cardamom, caraway, fennel and turmeric
- Wild vegetables and wild spices

Whole spices keep for approximately two years whereas ground spices keep for six months or so. Whole spices gradually lose their flavor and any medicinal effects. Therefore, ground spices vaporizing plant parts. Therefore, ground spices Flavor and scent are sourced from the oxidizing and preserving plant parts. The flavor of spices may suffer much sooner. However, the flavor may suffer much sooner:

- Purchasing organic spices whole (not ground)
- Maintaining your own miniature herb garden near a window or on a balcony
- Wild vegetables and wild spices
- Fresh ginger and turmeric
- Chili, cayenne and black pepper
- Garlic and onions
- Fresh parsley and dill
- Rosemary, oregano, thyme, dill, tarragon, coriander, bay leaves
- Ceylon cinnamon, cardamom, caraway, fennel and turmeric
- Wild vegetables and wild spices
Many spices such as peppers can easily go moldy if
 handled directly over the cooktop.

Coumarin is an aromatic compound found naturally
in many plants. Its main source in food is cinnamon.

Coumarin is toxic to the liver (hepatotoxic), although to
reach the toxicity level one would have to regularly
consume more than two tablespoons daily. In 2004
the European Food Safety Authority (EFSA) set a
tolerable daily intake for coumarin at 0.1 mg per
body weight per day. The regular liberal
use of cinnamon is not recommended.

The rare, more expensive Ceylon cinnamon
(cinnamomum zeylanicum) contains very little coumarin.
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ANIMAL PRODUCTS

When consuming animal products, favor quality over quantity. Eat a wide variety of animals and their parts. Using the entire animal for food by “eating from nose to tail” provides a wide variety of nutrients, for instance in the form of bone broth and offal. Favour intelligent preparation methods that enhance flavor and nutrient absorption as well as reduce the amount of harmful compounds.

Meat

The consumption of meat is a divisive topic. The consumption of intensively farmed meat has been linked to various illnesses in numerous studies. On the other hand, high-quality animal products can be one of the most nutrient dense ingredients in a diet. The higher the animal’s genetics, environment, diet, freedom of movement, quality of drinking water, veterinary medicines used and many other factors have a significant impact on the fatty acid composition of the meat, the amount of nutrients or possible harmful substances. The demographic group that consumes the most processed meat products has a higher mortality rate than the group that consumes the least. The risks vary depending on the animal species. For instance, gilthead sea bream contains the least risk of bowel cancer, type 2 diabetes, stroke, esophageal cancer and gastric cancer. In addition, the meat from grass-fed animals has a better fatty acid composition and contains more antioxidants than intensively farmed meat. Meat products have different health impacts depending on the amino acids they contain. For instance, compared to beef, pork meat can cause an amino acid imbalance in the body which can lead, among other things, to joint pain.

When consuming animal products, favor quality over quantity.
collagen-rich animal parts. These include connective tissue, bone marrow and skin. Some connective tissue containing glycine can also be found in minced meat. The harmfulness of methionine may well be related to the lack of glycine in our diets. In animal tests, glycine has been found to have lifespan-extending qualities and similar effects are probable in humans.

When consuming meat, add spices that support digestion and absorption (such as herbs, peppers, ginger and turmeric), and foods that support digestion and absorption (such as pineapples, pears and sauerkraut). When consuming meat, eat a variety of animal parts (including bones, liver, heart and tongue), connective tissue and offal (bone marrow).

The preparation method used for the meat is of utmost importance: In addition to harmful AGE and PAH compounds (see the section titled "Cooking and harmful compounds") on heating and promotes the formation of cancer-causing nitro-samine compounds, slow cooking and boiling at low temperatures (i.e., long cooking times at low temperatures) avoids high temperatures, leaching, grilling and deep-frying. Avoid high temperatures, leaching, grilling and deep-frying. Avoid long cooking times at low temperatures, cold cuts, canned meat, sausages and cold cuts. Avoid intensively farmed meat, sausages and cold cuts.

When using meat, favor the following principles:

- Eat a wide variety of animal parts (including bones, liver, heart and tongue), connective tissue and offal (bone marrow).
- Eat various types of animals.
- Favor grass-fed animals, game and indigenous breeds (e.g., Friesian cattle, Highland cattle, bison and sheep).
- Favor various types of animals such as liver and heart.
- Hunt your own meat or arrange for a direct connection (e.g., with friends, family, local farmers).
- Eat from various types of animals such as liver and heart.
According to general dietary guidelines fish is recommended for nutrition and should be consumed at least twice per week. Fish is rich in healthy fatty acids, trace elements, vitamins and amino acids. Numerous studies have indicated that fish is an excellent source of omega-3 fatty acids and vitamin D. The consumption of fish is associated with a lower risk of cardiovascular disease, lung cancer and type 2 diabetes. The benefits of eating fish exceed any disadvantages involved. Liberal fish consumption may reduce the risk of developing coronary heart disease and some types of cancer. Environmental toxins such as dioxins and PCBs are concentrated in fish fat. The fattier the fish, the higher the level of toxins. The highest levels of mercury can generally be found in sharks, swordfish and bigeye tuna. Mercury levels of fish will fall within decades. The convention also limits mercury emissions of new mercury mining sites. It has been estimated that as a result of the Minamata convention, the mercury levels of fish will fall within decades. The convention also limits mercury emissions. For example, by prohibiting the export of mercury-containing products. The Minamata convention in Japan prohibits the import and processing of mercury-containing products. The Minamata convention in Japan, more than 90 countries signed the convention in 2013.
When using fish, favor the following principles:

- Eat the whole fish and use the nutritionally valuable guts for fish stock
- Eat various types of fish that contain few chemicals and heavy metals (see the image on the following page)
- Favor wild fish and supplement your diet with organically farmed fish
- Catch your own fish or arrange for a direct connection to the origin of the fish
- Avoid intensively farmed fish, processed fish products, and deep fried fish products
- Favor long cooking times at low temperatures, i.e. slow cooking and boiling
- Avoid high temperatures, i.e. frying, grilling and deep frying
- Avoid antibiotics, hormones, PCB, neurotoxins, pesticides
- Wild fish contains fewer poor quality fat compounds
- Wild fish has a higher level of omega-3 and more trace elements and vitamins
- Wild fish may contain more mercury than farmed fish
- Antibiotics, hormones, PCB, neurotoxins, pesticides
- Antibiotics, hormones, PCB, neurotoxins, pesticides

The health impact of wild fish compared to farmed fish:

- Wild fish has a higher level of omega-3 and more trace elements and vitamins
- You can alleviate any impact of the heavy metals by adding seaweed, dill, coriander, turmeric, and ginger.
- When consuming fish, add spices that support digestion and absorption (such as herbs, peppers).
- When frying fish, avoid high temperatures, i.e. frying, grilling and boiling.
See the WWF or the Seafoodwatch lists of seafood species to avoid (overfishing etc). Favor MSC certified fish.

Mercury levels in seafood

- Very high: swordfish, bigeye tuna, skipjack
- High: Atlantic halibut, Atlantic salmon, burbot
- Moderate: perch, trout, mussels, clams, and oysters, common sole, salmon (farmed), shrimp, cod, herring, whitefish, seabass, monkfish
- Low: cod, trout, mussels, clams, herring, whitefish, seabass, monkfish

Flounder, perch, trout, mussels, clams are safe to eat 2-3 times per week.

Perch, trout, mussels, clams are safe to eat 1-2 times per month.

Atlantic salmon, burbot, perch are safe to eat approx.

Tuna (canned), albacore, yellowfin tuna are safe to eat 1-2 times per week.

Bigeye tuna, skipjack are avoid.

Atlantic halibut, Atlantic salmon, burbot, perch, trout, mussels, clams are safe to eat approx.

Atlantic halibut, Atlantic salmon, burbot, perch, trout, mussels, clams are safe to eat approx.
Crustaceans and molluscs

Two warring New Guinea tribes agree on a cease-fire to do trade: the coastal tribe offers crustaceans and in return receives root vegetables from the tribe inhabiting the highlands. The nutritional value of crustaceans and molluscs has been well known historically. For instance, oysters have been used as aphrodisiacs.

Crustaceans usually include crabs, lobsters, and crayfish. Shellfish includes clams, oysters, snails, and cuttlefish. Some examples in the Mediterranean:

- Shrimp
- Oysters
- Clams
- Mussels
- Scallops
- Lobster, crab, and crayfish

Other nutritious species include clams, mussels, and oysters.

Avoid:
- Shrimp

Other nutritious species include clams, mussels, and oysters.

Crustaceans and molluscs

Five of the richest of the crustaceans is shrimp, which provide 33 mg of zinc, an enormous amount to their weight. For instance, four medium-sized oysters contain the most zinc in proportion to their weight. For instance, four medium-sized oysters contain the most zinc in proportion to their weight.

Molluscs:
- Oysters
- Clams
- Mussels
- Scallops
- Lobster, crab, and crayfish

Favor:
- Shrimp
- Oysters
- Clams
- Mussels
- Scallops
- Lobster, crab, and crayfish

Other nutritious species include clams, mussels, and oysters.

Avoid:
- Shrimp

Crustaceans and molluscs

Sold to Fred Block Block (#GJ57MBGL)
EGGS

As is the case for most containers of a new life, an egg is close to perfect food. Eggs are rich in protein, vitamins, minerals and other beneficial nutrients (including phospholipids, lutein, zeaxanthin and choline). Eggs are a good source of xanthophylls which are essential to the eye health of the elderly in particular. They increase the carotenoid levels of the blood serum as well as eye tissue. Lutein and zeaxanthin reduce the risk for macular degeneration and cataracts. Macular degeneration most commonly occurs in people over the age of fifty. In the United States, it is the most common cause of vision loss within this age group.

Many people continue to avoid the regular consumption of eggs even though the link to increased risk of coronary artery disease has been refuted in all recent studies and meta-analyses. Studies conducted have found no evidence of a link between egg consumption and high cholesterol levels. Indeed, studies have found that individuals who consume more eggs have a 25% lower risk of having a hemorrhagic stroke.

Eggs do not increase the risk of cardiovascular diseases or stroke, even when consumed daily.

However, eggs are not suitable for everyone. Some people are allergic to eggs, some suffer from hereditary dysfunctions in fatty-acid metabolism, and some people (around 20% of the population in the US) have the ApoE4-allele (genetic variant) which might cause dysregulation of cholesterol metabolism. These individuals as well as diabetics, for example, should limit their egg consumption.

There is a more realistic risk of developing a hypersensitivity to egg proteins as a result of regular egg consumption. Due to this, everyone who consumes eggs should take regular breaks in egg consumption.

In Australia and the European Union, eggs are graded by the hen farming method (free range, battery caged, etc). The US Department of Agriculture grades eggs by the interior quality of the egg and the appearance and condition of the egg shell. Only about 4% of the eggs are produced organically. The color of the shell has
When selecting eggs, note the following criteria:

- Do not eat eggs that are old, have a broken shell or a watery egg white.
- Refrigerated eggs will keep for approx. 30-45 days.
- Keep eggs in room temperature and use within 7-10 days.
- The egg structure and difference in the cooking water temperature changes in terms of flavor and consistency, even a small change.
- The egg should be eaten raw or slightly cooked.
- The egg white should be cooked.
- The egg yolk should be eaten raw or slightly cooked.
- Conalbumin interacts with iron absorption and hindrances the absorption of the vitamin B complex.
- Avoid eating just the egg white.
- The main egg white protein consists of albumin and conalbumin.
- The flavor and nutrient density as well as possible.
- Eggs should be prepared in a way that maintains the flavor and nutrient density as well as possible.

Eggs should be prepared in a way that maintains

- The main egg white protein consisting of albumin and conalbumin.
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Cooking the perfect egg

Option 1

Place the eggs in water and raise the water temperature. When the water is boiling, remove from heat and leave to sit under a lid for 6 minutes. The internal temperature of the eggs will keep for 5–10 minutes before peeling. This method produces an egg that is perfectly al dente. Place the eggs on a plate, cut in half and add unrefined sea salt, pepper and herbs. By blowing the egg out from the shell, it can be peeled in an impressive way. An egg that has been completely detached from cold water detaches the egg white from the shell. Leave 1 tsp of baking soda in the raised pH of the water. Pour the hot water out and replace with cold water. An egg that has been completely detached from the shell can be peeled in an impressive way by blowing the egg out.

Option 2

Set the sous-vide temperature to 64.7 °C (148.5 °F) and cook for a minimum of 50 minutes. Remove the eggs and place in cold water for two minutes before peeling. This method produces an egg that is perfectly al dente. Place the eggs on a plate, cut in half and add unrefined sea salt, pepper and herbs. Likley to crack when removed from heat: several minutes, whereas the shells are much less likely to crack. When the water is boiling, remove from heat and leave to sit under a lid for 6 minutes. Place the eggs in water and raise the water temperature.
MILK PRODUCTS

Finns consume the most dairy products in the world (over 300 kg per person/year). The global average is about 180 kg per person/year. The consumption of milk and fat-free milk products in particular may be linked to deaths caused by heart disease. For some individuals, giving up milk entirely may help individuals and may worsen the symptoms of asthma. Several studies have indicated that milk consumption is one of the main factors in the prevention of coronary artery disease.

Excessive milk consumption stimulates mucous production, particularly in asthmatic patients in the respiratory tract via the β-casomorphin-7 peptide of which there is plenty in milk. This peptide is also due to CLA, vitamin K2 and butyric acid. High calcium intake causes the risk of a heart attack and a significant increase in coronary artery disease. Studies have indicated that these are associated with the development of hypertension. A study conducted on a group of menopausal women found that milk consumption increases the risk of breast cancer. It is commonly believed that milk is a good source of calcium. However, care should be taken with liberal milk consumption as it is common belief. Recent studies have indicated that milk hypersensitivity may be linked to deaths caused by heart disease.

Excessive milk consumption stimulates mucous production particularly in asthmatic individuals and may worsen the symptoms of asthma. Studies have indicated that milk consumption is one of the main factors in the prevention of coronary artery disease.

According to studies, it seems as though it is the milk fat (trans-palmitoleic acid) that prevents obesity and the development of type 2 diabetes. The positive effects of the milk fat may also be due to CLA, vitamin K2 and butyric acid. High calcium intake causes the risk of a heart attack and a significant increase in coronary artery disease. Studies have indicated that these are associated with the development of hypertension. A study conducted on a group of menopausal women found that milk consumption increases the risk of breast cancer. It is commonly believed that milk is a good source of calcium. However, care should be taken with liberal milk consumption as it is common belief. Recent studies have indicated that milk hypersensitivity may be linked to deaths caused by heart disease.

Excessive milk consumption stimulates mucous production particularly in asthmatic individuals and may worsen the symptoms of asthma. Studies have indicated that milk consumption is one of the main factors in the prevention of coronary artery disease.
Finnish males showed that large amounts of calcium in the drinking water is linked to coronary heart disease and coronary thrombosis.

A comprehensive Swedish study published in the esteemed British Medical Journal found that liberal consumption of milk (more than three glasses per day) may be associated with premature death. The same demographic study also found that milk consumption does not prevent the development of osteoporosis. In fact, it even increases the risk of bone fractures in women. The liberal consumption of milk also appears to contribute to low-grade inflammation and oxidative stress of the body.

Milk products made from the milk of goats, sheep, Scottish Highland, Limousin, Piedmontese or other indigenous breeds of dairy cattle are used. The distinction is made according to differences in milk proteins between cattle breeds. A2 milk produced by indigenous cattle breeds cause significantly fewer health problems. Conversely, A1 milk, produced by non-indigenous cattle breeds, contains significantly more omega-3 fatty acids. It is directly proportional to the nutritional value of the milk. In addition, the proportion of grass in the cattle diet is enormous. For example, the milk of grass-fed cows contains more omega-3 fatty acids and CLA, compared to more omega-3 fatty acids and CLA contained in butter produced. A2 milk is also associated with higher nutritional value of the milk products as compared to conventional milk products.
CEREALS

The global consumption of grains is mainly divided into three different grains: wheat (Europe, Middle-East, North Africa and Australia), corn (North and South America, Southern Africa) and rice (Asia). The global per capita wheat consumption is around 67 kg. 70% of the cereals eaten are refined. Refining significantly undermines the nutritional value of cereals (vitamin B complex, zinc, magnesium, phytoestrogens and selenium are removed with the husk).

Consuming whole grains has been linked to better health by epidemiological population studies. The health benefit is likely to be due to the overall better health habits of people who consume wholegrain cereals, as well as the reduced consumption of processed cereals, rather than the increased consumption of whole-grain cereals by themselves. Wholegrain cereals by themselves do not lower the levels of inflammatory makers or improve insulin sensitivity. More so than cereals, there is significantly more positive evidence for the consumption of vegetables preventing many illnesses. When a celiac individual eats gluten, the production of zonulin, a large-scale protein molecule that consists of the zonulin protein in autoimmune diseases such as celiac disease, modulates the tight junctions between intestinal cells. The more permeable the gut, the more zonulin there is, the more permeable the gut.

Gluten, celiac disease and gluten hypersensitivity

Gluten is a large-scale protein molecule that consists of numerous peptides. At least fifty of these have been found in gluten. Dr. Alessio Fasano, a pioneer in celiac disease research, found in his research that there is increased occurrence of autoimmune diseases such as celiac disease and leaky gut syndrome. A zonulin protein is produced by the immune function and causes leaky gut syndrome. A gluten is a large-scale protein molecule that consists of numerous peptides. At least fifty of these have been found in gluten. When a celiac individual eats gluten, the production of zonulin proteins increases immediately. This in turn stimulates the secretion of inflammatory cytokines. The production of zonulin proteins increases immediately. This in turn stimulates the secretion of inflammatory cytokines. Cereals sold to Fred Block Block (#GJ57MBGL)
entirely prevented by avoiding gluten in the diet. Over time, the amount of zonulin is reduced and the epithelial cells and tight junctions of the intestine are repaired.

Gluten hypersensitivity is many times more common in humans than celiac disease. Testing for celiac disease with laboratory tests does not rule out gluten hypersensitivity, as the latter cannot currently be reliably tested in a laboratory. Increased gut permeability has not been found in individuals with gluten hypersensitivity. As a result, it is not considered an autoimmune disease. From irritated bowel syndrome, celiac disease or other autoimmune diseases or certain psychiatric illnesses.

Many people consider gluten to be the culprit of intestinal symptoms. In addition to gluten, the cause may be FODMAP carbohydrates or certain psychiatric illnesses.

Many individuals who have experimented with a grain-free diet report experiencing health benefits. Typically a grain-free diet is attempted when an individual suffers from irritated bowel syndrome, celiac disease or other autoimmune diseases or certain psychiatric illnesses. Specifically, increased gut permeability has not been found in individuals with gluten hypersensitivity.

Gluten hypersensitivity and celiac disease are entirely distinct. Gluten hypersensitivity is many times more common in humans than celiac disease. Testing for celiac disease is reduced and the epithelial cells and tight junctions of the intestine are repaired. The amount of zonulin is reduced and the epithelial cells and tight junctions of the intestine are repaired.

We recommend relying on vegetables and root crops for dietary carbohydrate needs and adding gluten-free products such as oat, quinoa and buckwheat as needed. Favor indigenous varieties of cereals over highly processed ones. For example, indigenous wheat alleviates the inflammation and symptoms of IBS patients, whereas modern wheat varieties worsen symptoms. Avoid classes such as emmer and einkorn and other varieties that contain gluten.

+ Favor:
- Avoid:

- Amaranth
- Teff
- Buckwheat
- Quinoa
- Canihua
- Canihua
- Oat
- Millet

Favors:

- Teff
- Buckwheat
- Quinoa
- Canihua
- Oat
- Millet
- Amaranth
- Canihua
- Oat
- Millet

Avoid:

- Wheat and other wheat varieties that contain gluten (spelt, einkorn and emmer wheat)
- Barley
- Rye
- Maize
Rice

Rice is a type of grass. According to some estimates, more than 90% of the world's rice is grown in Asia. Rice is one of the main sources of nutrition for up to one half of the world's population.

Rice is typically categorized into long, medium and short grain varieties. Long grain varieties are rich in amylose. Short-chain and some long grain rice varieties are rich in amylopectin, for example in Thai sticky rice. Due to the function of digestive enzymes amylopectin may raise the blood sugar level more rapidly than amylose. Short-chain and some long grain rice varieties are rich in amylopectin. For example in Thai sticky rice, white rice mainly consists of starch, some protein and liver enzymes that promote glucose for the nervous system.

Wholegrain rice is more nutrient rich than white rice. However, it contains antinutrients that interfere with nutrient absorption (see the section titled "Antinutrients"). Antinutrients include arsenic, antitoxins and other toxins such as soil-based arsenic. The nutritional value of wholegrain rice decreases significantly upon cooking. White rice is a type of grass. According to some estimates, more than 90% of the world's rice is grown in Asia. Rice

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Favor:
• Basmati rice
• Jasmine rice
• Other types of long grain rice

Avoid:
• Instant rice
• Porridge rice
• Short grain rice
• Wholegrain rice
• Brown rice

Sold to Fred Block Block (#GJ57MBGL)
Maize (corn) is a member of the grass family. It is an old staple crop with an estimated cultivation history dating as far back as 9000 years ago in Mexico. Today maize is the most widely grown grain in the world. As much as 40% of all maize is produced in the United States, of which, up to 86% is genetically manipulated. In 2011, 32% of the maize produced in the world was genetically manipulated.

In the United States, 40% of the maize grown is used for the production of ethanol. 

Maize is frequently turned into high fructose corn syrup which is used as a sweetener in many foods. 

Maize is frequently used in tortillas, polenta, popcorn and com. sweet corn, flour corn, flint corn, pop corn, and pod corn. Maize is a key role in Mexican cuisine in particular, holds maize in tortillas, polenta, popcorn and com. 

Maize is one of the most significant sources of starch on a global scale. 

Maize is frequently turned into high fructose corn syrup which is used as a sweetener in many foods.

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For human consumption, maize is traditionally used.
The consumption of foods containing high fructose corn syrup has also been found to have a dose-response relationship to the onset of coronary artery disease – the higher the consumption of high fructose corn syrup, the higher the risk of the disease.

Maize is also used to make corn oil, of which the fatty acid composition is unfavorable for humans. Corn oil contains high levels of polyunsaturated omega-6 fatty acids (54%) that oxidize readily and, when consumed excessively, predispose the body to silent inflammation. In the United States, corn oil in particular is likely to be one of the main reasons for the extremely poor ratio of omega-6 and omega-3 fatty acids in the population (up to 20:1).

For humans, which the fatty acid composition is unfavorable for the risk of the disease. Maize is also used to make corn oil, of high fructose corn syrup, the higher the risk of the artery disease – the higher the consumption of corn syrup has also been found to have a dose-response relationship to the onset of coronary artery disease.
ROOT VEGETABLES AND TUBERS

Root vegetables refer to the underground parts of a plant that are used for food. Root vegetables include the roots, shoots and bulbs of many seed plants. Root vegetables are very common all over the world. There are more than 50 types of storage roots, which are categorised in bulbs, rhizomes and tubers. The most common ones are carrots, beetroots, cassava, rutabaga, turnips, yams, sweet potatoes, radishes and celeriac. Root vegetables are nutritionally valuable due to the fiber, vitamin C, vitamin B complex and calcium contained by them. Carrots contain particularly high levels of beta-carotene and other carotenoids.

Potato

The potato was slowly adopted into Europe in as late as the 19th century, but it soon after became an important staple food. Potatoes at that time were used to prevent scurvy because of their vitamin C content.

Contrary to common belief, the potato is not a root vegetable but a nightshade. Other similar nightshades are eggplants, tomatoes and peppers.

Potatoes are fairly rich in nutrients such as potassium, vitamin B complex and vitamin C. The potato is also one of the prime foods to promote the feeling of satiety.

Potatoes contain some glycoalkaloids (alpha-solanine and beta-chaconine) which are toxic to humans. However, their levels in cultivated potato varieties are low. The solanine level of a potato may be significantly increased if it is exposed to sunlight during the growing season. Toxic potatoes can be identified based on their green color or sprouting. Early crop potatoes contain the most solanine. Glycoalkaloids may cause symptoms such as headache, diarrhea, restlessness and nausea.
Glycoalkaloids are present particularly in potato skins. As a result, peeling the potatoes significantly reduces their solanine content. Unpeeled potatoes fried in oil are especially problematic as glycoalkaloids are oil-soluble. Potatoes cooked in high temperatures also produce toxic compounds such as acrylamide and acrolein. Sweet potato consumption of sweet potatoes contains more beta-carotene, resistant starch

Sweet potato

The consumption of sweet potatoes increased in popularity after Christopher Columbus introduced it in Europe. Sweet potatoes are often used as a replacement for white potatoes. They are more nutritious than the conventional potato. For instance, sweet potatoes contain more beta-carotene, vitamin C and fiber. It also raises the blood sugar level more slowly compared to potatoes.

On the other hand, potatoes contain more resistant starch that may be helpful in the maintenance of the bacterial strain of the intestine (see the section titled “Prebiotics”). Potato chips and deep-fried potatoes are especially problematic as their solanine content is higher than peeled potatoes. As a result, peeling the potatoes significantly reduces glycoalkaloids.

We recommend that potatoes and sweet potatoes be consumed especially after strenuous exercise to supplement the depleted glycogen reserves in the muscles.

Favor:
- A wide variety of seasonal root vegetables
- Organic potatoes
- Boiling and steaming potatoes
- Large-sized potatoes (less glycoalkaloids)
- Seasonally grown local potatoes

Avoid:
- Potatoes deep fried in oil
- Potato chips
- Other heavily processed potato products
- Green and damaged potatoes
- So-called almond potatoes (mostly grown in Finland, which have high levels of glycoalkaloids)
- Eating potato peels

Prebiotics

Favor:
- A wide variety of seasonal root vegetables
- Organic potatoes
- Boiling and steaming potatoes

Avoid:
- Potatoes deep fried in oil
- Potato chips
- Other heavily processed potato products
- Eating potato peels
- Green and damaged potatoes
- Very small-sized tubers (more glycoalkaloids)
- Large-sized potatoes (less glycoalkaloids)
- Seasonally grown local potatoes

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It is generally recommended to eat 5–9 portions (around 400 grams) of fruits, vegetables and berries daily. Only about 10% of people meet these recommendations. A study conducted in Finland showed that 75% of Finns report eating only two servings of fruits and berries per day. It is generally recommended to eat 5–9 portions of fruits, vegetables and berries.

Comprehensive meta-analyses have found that the liberal consumption of vegetables, berries and fruits is linked to a lowered risk of death, particularly in relation to cardiovascular diseases.

There is significant variability in the absorption of many vegetables, fruits and berries depending on the preparation method. The same compound may also be absorbed differently from different ingredients. For example, the beta-carotene and lycopene contained by papaya are more readily absorbed compared to those in carrots.

sold to Fred Block Block (#GJ57MBGL)
It is recommended to acquire nutrients from vegetables and berries by consuming them with fat to improve absorption. Fruits and root vegetables may be used to supplement the diet, particularly after exercise or in the evening to encourage sleep.

**Fruits**

Some fruits can be used strategically for specific health benefits. For instance, kiwi fruit has been found to promote the growth of probiotic bacteria in the intestine, and help in the treatment of irritable bowel syndrome. The polyphenols in kiwi fruit act as antioxidants and protect the body from oxidative stress. Kiwi fruit also contains five times more vitamin C than oranges, for example.

Kiwi fruit also contains five times more vitamin C than oranges, for example.

**TIP**

When buying fruit it is worthwhile to invest in organic produce to minimize the amount of harmful toxins. 90% of pesticide residues come from intensively farmed, imported fruit.

Ripening avocados

In nature, avocados only ripen once they fall off the tree. You can ripen avocados by keeping them in room temperature. To speed up the ripening process, place the avocados together with bananas in a small bag (for example a biowaste bag) overnight. Bananas are treated with ethylene, a plant hormone gas used to speed up the ripening process. This compound also accelerates the ripening of avocados.
Favor:
• Locally grown, seasonal fruit (for example apples)
• Organic fruit
• Fatty fruits (such as avocado, olive)
• Low-sugar fruits (lemon, lime, grapefruit, kiwi fruit)
• Nutritious fruits that contain slightly more sugar (papaya, nectarines, peaches, watermelon)

Use sparingly:
• Varieties cultivated for extreme sweetness
  - Mango, fig, banana and dried fruits such as dates,
  - Varieties cultivated for sweetness
  - Mandarin, orange, pear, plum and pineapple

Avoid:
• Commercial fruit juices and concentrated juice
• Artificially added fructose

Lemon water
Get hydrated first thing in the morning
Lemon water

Tip
1. Lemon water
   Get hydrated first thing in the morning

   In the early hours of the morning, cortisol levels are at their highest, which prevents the adrenals from releasing cortisol at an optimal time. To help with this, a glass of lemon water provides extra hydration and helps the digestive system and aids in having a healthy diet. A teaspoon of high-quality salt in lemon juice supports the digestive system and aids in removing waste products from the body, increasing the need to urinate and thus remove waste. Lemon juice supports the digestive system and acts as a diuretic, increasing the need to urinate and helping to remove waste products.

   Optimal time of consumption is after exercise or in the evening when the body is ready for rest.

   Salt helps the adrenals produce cortisol, which is essential for waking up.

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<table>
<thead>
<tr>
<th>Fruit</th>
<th>Sugar</th>
<th>Main nutrients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lemon (de-stoned)</td>
<td></td>
<td>Vitamin C (51 mg / 100 g), vitamin B6, iron.</td>
</tr>
<tr>
<td>Kiwi (peeled)</td>
<td></td>
<td>Vitamin C (100 mg / 100 g), panthenolic acid, vitamin E.</td>
</tr>
<tr>
<td>Apricot (peeled)</td>
<td></td>
<td>Citrus fruit oil has antimicrobial properties.</td>
</tr>
<tr>
<td>Avocado</td>
<td></td>
<td>Quercetin, epicatechin, flavonoids (2.4%).</td>
</tr>
<tr>
<td>Banana (peeled)</td>
<td></td>
<td>Vitamin K, vitamin B1, B2 and B6.</td>
</tr>
<tr>
<td>Date (dried)</td>
<td></td>
<td>Potassium, magnesium, phosphorus, vitamin K.</td>
</tr>
<tr>
<td>Grape (peeled)</td>
<td></td>
<td>Potassium, magnesium, phosphorus, carotenoids, vitamin K.</td>
</tr>
<tr>
<td>Grapefruit</td>
<td></td>
<td>Potassium (687 mg / 100 g), magnesium, phosphorus, vitamin B complex.</td>
</tr>
<tr>
<td>Fig (fresh)</td>
<td></td>
<td>Potassium, thiamin, magnesium, manganese, vitamin B6.</td>
</tr>
<tr>
<td>Figs (fresh)</td>
<td></td>
<td>Potassium, magnesium, phosphorus, carotenoids, vitamin K.</td>
</tr>
<tr>
<td>Grapefruit (peeled)</td>
<td></td>
<td>Pectin, quercetin, epicatechin, flavonoids (2.4%).</td>
</tr>
<tr>
<td>Kiwi (peeled)</td>
<td></td>
<td>Quercetin, epicatechin, flavonoids (2.4%).</td>
</tr>
<tr>
<td>Apple (peeled)</td>
<td></td>
<td>Monounsaturated fatty acids, linoleic acid and alpha-linoleic acid, sterols.</td>
</tr>
<tr>
<td>Raspberry (peeled)</td>
<td></td>
<td>Carotenoids, potassium, manganese, vitamin A.</td>
</tr>
</tbody>
</table>

Source: Fineli (National Food Composition Database in Finland), 2015.
<table>
<thead>
<tr>
<th>Fruit</th>
<th>Sugar</th>
<th>Main nutrients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watermelon (peeled)</td>
<td>7.1%</td>
<td>Carotenoids, vitamin C, citrulline.</td>
</tr>
<tr>
<td>Pomegranate</td>
<td>13.7%</td>
<td>Linalool acid, ellagitannin, anthocyranin, vitamin B complex.</td>
</tr>
<tr>
<td>Plum (de-stoned)</td>
<td>8.2%</td>
<td>Potassium, carotenoids, vitamin K.</td>
</tr>
<tr>
<td>Pineapple (peeled)</td>
<td>11.2%</td>
<td>Potassium, vitamin B complex, vitamin C, carotenoids, bromelain enzyme.</td>
</tr>
<tr>
<td>Pear (peeled)</td>
<td>8.0%</td>
<td>Vitamin C, potassium, thiamin.</td>
</tr>
<tr>
<td>Peach (peeled, de-stoned)</td>
<td>7.8%</td>
<td>Potassium, niacin, phenols.</td>
</tr>
<tr>
<td>Papaya</td>
<td>10.7%</td>
<td>Vitamin C, carotenoids, potassium.</td>
</tr>
<tr>
<td>Orange (peeled)</td>
<td>8.9%</td>
<td>Vitamin C, potassium, calcium.</td>
</tr>
<tr>
<td>Olive (de-stoned)</td>
<td>0%</td>
<td>Monounsaturated fatty acids, vitamin E, sodium.</td>
</tr>
<tr>
<td>Mango (peeled)</td>
<td>13.7%</td>
<td>Folate, vitamin C, carotenoids, potassium.</td>
</tr>
<tr>
<td>Mandarin (peeled)</td>
<td>8.2%</td>
<td>Vitamin C, carotenoids, potassium.</td>
</tr>
<tr>
<td>Lime (peeled)</td>
<td>1.7%</td>
<td>Vitamin C, some vitamin B complex, calcium and iron.</td>
</tr>
</tbody>
</table>

Sold to Fred Block, Block (#GJ57MBGL)
Berries

If there is one dietary recommendation that all experts agree on, it is the health benefits of berries.

Regardless of the diet type, nearly all dietary guidelines recommend the daily consumption of 150–200 g (5–7 oz) of berries.

In general, berries are rich in vitamins, flavonoids, which contain high levels of pesticides, such as non-organic strawberries.

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Be careful when buying imported frozen berries. There have been many cases of outbreaks in which frozen berries have been contaminated with the norovirus, hepatitis A virus, or campylobacter. Boil your frozen berries for at least two minutes, or cook at 90 °C / 194 °F to avoid food poisoning.

Exotic berries such as goji, inca and mulberry have been trendy in the past few years. The nutritional values of these berries are indeed good, however they may contain pesticide residues and sulfur dioxide used as a preservative. For five minutes to avoid food poisoning. Be careful when buying imported frozen berries. There have been many cases of outbreaks in which frozen berries have been contaminated with the norovirus, hepatitis A virus, or campylobacter. Boil your frozen berries for at least two minutes, or cook at 90 °C / 194 °F to avoid food poisoning.

Favor:
• Wild berries: bilberries, lingonberries, cranberries, blackcurrant, sea buckthorn, cloudberries, chokeberries, aronia, arctic raspberries, crowberries, rowanberries, wild raspberries and wild strawberries
• Berry powders
• Berry powder mix

Tip:

Imported frozen berries
• Avoid:
  - mulberries and goji berries
  - imported organic berries (such as inca berries)
  - berry powders
  - locally grown cultivated berries

Berry powder mix

Berries contain important building blocks for eyes. Mix berry powders of different color in equal measure, for example:
• Blue: bilberry and black currant
• Red: cranberry and lingonberry
• Yellow: sea buckthorn and cloudberry

In your breakfast each morning, for example:
Mix one tablespoon of the powder in your breakfast each morning. For comparison, 1 teaspoon of high quality berry powder is equivalent to a half a cup of berries.
Vegetables mainly refer to cultivated plants of which the juicy parts growing above ground are used for food. The top five vegetables in the US, based on how much households spend on them, have remained almost the same for the past 20 years: tomatoes, potatoes, mushrooms, lettuce, and carrots. The most popular vegetable is tomato, which is not a bad choice. Lycopene in tomatoes has been found to protect from cancers, stroke and cardiovascular disease. Numerous studies done on vegetables advocate phytonutrients such as flavonoids and polyphenols as particularly beneficial. Vegetables are rich in their consumption. Eating plenty of green vegetables is particularly beneficial. The most popular vegetables in the US, based on how much households spend on them, have remained almost the same for the past 20 years: tomatoes, potatoes, mushrooms, lettuce, and carrots. The most popular vegetable is tomato, which is not a bad choice. Lycopene in tomatoes has been found to protect from cancers, stroke and cardiovascular disease. Numerous studies done on vegetables advocate phytonutrients such as flavonoids and polyphenols as particularly beneficial. Vegetables are rich in their consumption. Eating plenty of green vegetables is particularly beneficial.
well as trace elements and vitamins. The darker the color, the more likely the vegetable is to contain plenty of these protective nutrients that reduce silent inflammation and prevent various kinds of cancer.

Intensely colored vegetables also have properties that protect from type 2 diabetes, which was not evident for example in relation to fruits.

The liberal consumption of vegetables also lowers the risk of coronary artery disease and stroke. Eating cruciferous vegetables such as broccoli lowers the risk of stomach and lung cancer. Broccoli contains sulforaphane which has been found in several studies to have breast cancer preventive effects.

For men, four servings of broccoli per week may prevent prostate cancer.

Eating broccoli regularly helps the liver remove various toxins from the system, prevents endocrine function and maintains the function of the system.

- **Flavonoids**:
  - Soybeans, Legumes
  - Parsley, thyme, celery, hot peppers
  - Berries, tea
  - Spinach, onions, cabbage, broccoli, apples, Capers, yellow onions, Lovage, dill, Leeks
  - Citrus fruit (such as oranges, grapefruit)

- **Flavanols** (such as:
  - Berries, red grapes, red wine
  - Flavonol subcategory: chocolate, apples, tea
  - Theaflavins and thearubigins: Tea, chocolate, grapes, berries, apples
  - Catechins: Tea (particularly green and white)

- **Anthocyanins**:
  - Purple grapes, red wine

- **Subcategory of typical food sources**:
  - Soybeans, Legumes
  - Parsley, thyme, celery, hot peppers
  - Berries, tea
  - Spinach, onions, cabbage, broccoli, apples, Capers, yellow onions, Lovage, dill, Leeks
  - Citrus fruit (such as oranges, grapefruit)
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  - Theaflavins and thearubigins: Tea, chocolate, grapes, berries, apples
  - Catechins: Tea (particularly green and white)

Source: Linus Pauling Institute
Wild greens are harvested when compared to

Many wild greens are superior when compared to
to minimize pollution caused by traffic, etc.

Wild greens are harder than traditional cultivated

Wild greens are healthier than traditional cultivated

Wild greens are harder than traditional cultivated

Wild greens are healthier than traditional cultivated

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FATS AND OILS

All butter sold in the United States must be composed of at least 80% milk fat. In Europe, the EU legislation dictates that butter cannot have any additional ingredients, such as vegetable oils added to it. Butter made from fermented cream is known as cultured butter, whereas butter made from pasteurized fresh cream is called sweet cream butter. Throughout Europe, sweet cream butter is more prevalent in the United States, France ranks first in per capita butter consumption with over 8 kg (17 pounds) per person per year.

Cold-pressed virgin coconut oil should not be confused with coconut shortening. Virgin coconut oil is heated to up to 260 °C (500 °F), whereas coconut shortening is reined cold-pressed. Virgin coconut oil contains plant sterols, chlorophyll, flavonoids, and polyphenols acting as antioxidants, lignans, and other fat-soluble active substances. The refinement and impurity removing process also removes plant sterols, chlorophyll, flavonoids, and polyphenols acting as antioxidants, lignans, lecithin, and other fat-soluble active substances. Virgin coconut oil is not confused with coconut shortening.

Coconut oil

According to folklore, saturated fats (i.e., hard fats) cause cardiovascular disease. However, research preceding this study also showed that there is no causality between saturated fat and cardiovascular disease. A comprehensive meta-analysis from 2014 does not support this hypothesis. The health benefits of fats and oils are often seen only from the viewpoint of fatty acids and fat metabolism. The health benefits of fats and oils are often seen only from the viewpoint of fatty acids and fat metabolism. Polyphenols acting as antioxidants, lignans, and other fat-soluble active substances.

Adding fats, such as vegetable oils added to butter, may also improve the absorption of beneficial compounds such as polyphenols. However, many oils also contain other health benefits. The processing method used in the oil has a crucial impact on its health benefits. If the oil is reined instead of cold-pressed, the quality and properties are significantly compromised. Cold-pressed virgin coconut oil should not be confused with coconut shortening.

 FileNotFoundError

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Virgin coconut oil has been shown to have a better antioxidant effect than highly processed coconut oil. The polyphenols of virgin coconut oil have been found to calm inflammation.

In animal tests, virgin coconut oil was found to improve fat metabolism and lower the risk of coronary artery disease. Saturated fat and in particular the fatty acids present well as the level of nutrients in the soil.

Butter and ghee

Butter contains many nutrients such as CLA and vitamins A, D and K. High quality butter also contains trace amounts of omega-3 fatty acids. The quality and healthiness of the butter depends on the proportion of grass in the producing cow’s diet. The cows eat grasses as well as the level of nutrients in the soil.

Saturated fat and in particular the fatty acids present well as the level of nutrients in the soil.

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Making a high quality spread

Use a blender to mix in equal amounts:

- As high quality butter as possible
- Cold-pressed organic virgin olive oil (grass-fed, unsalted butter)
- Spring water

For example, combine 100 g (1 stick) of butter, 1 dl (half a cup) of olive oil and 1 dl (half a cup) of water. Blend the ingredients and season with high quality salt and, for example, garlic or basil.
The traditional Indian method of making clarified butter (ghee) removes the milk proteins from the butter, making the resulting product lactose-free. Because ghee contains no milk protein, it can withstand high temperatures. This makes it a very good oil for cooking. Ghee does not contain harmful trans fats that can cause heart disease and other serious health problems.

Ghee and butter contain butyric acid which is found in many vegetable oils, but they mostly contain fatty acids (EPA and DHA). Omega-3 fats can be found in fish and other seafood containing long-chain omega-3. Olive oil has also been shown to lower the risk of cardiovascular disease.

Olive oil has been shown to have similar inflammation-reducing effects as anti-inflammatory drugs. High-quality olive oil has been shown to have similar antioxidants of the olives.

Fish oil and fish liver oil

Improved with the regular use of virgin olive oil.

In addition, brain health and performance may be improved with the regular use of virgin olive oil.

Fish oil and fish liver oil are recommended for individuals who do not eat enough fatty fish. General guidelines recommend eating fatty fish twice per week.

Fish oil and fish liver oil are sold in various forms. When using omega-3 capsules it is important to take them with a meal rich in fat to improve absorption.

Fish oil and fish liver oil are sold in various formats. The regular use of virgin olive oil is associated with anti-inflammatory properties.

The Mediterranean diet, rich in virgin olive oil, has been assessed for its primary component of the that virgin olive oil is the primary component of the Mediterranean diet in treating chronic illnesses, due to its anti-inflammatory properties.

The traditional Indian method of making clarified butter (ghee) removes the milk proteins from the butter.
The intake of omega-3 fatty acids improves mood, increases attentiveness and generally improves cognitive functions. According to a study report, the intake of omega-3 fatty acids (particularly EPA) is beneficial especially in the treatment of depression.

Docosahexaenoic acid (DHA) has been shown to reduce the silent inflammatory condition of the system which is often a contributing factor to many chronic illnesses. Some vegetable oils are not beneficial due to their high levels of omega-6 fatty acids. Processed vegetable oils also have a high level of omega-6 fatty acids. However, high quality vegetable oil blends may help in achieving a good balance of fatty acids in the system. Vegetable oils reduce the risk of stroke. In women, the use of omega-3 appears to lower blood pressure and DHA also improves blood lipid levels. Omega-3 fatty acids do lower cognitive function. According to a study report, the intake of omega-3 fatty acids improves mood.

The ratio of omega-6 and omega-3 in the system for that reason alone is highly oxidizing and may increase inflammation. Some vegetable oils are not beneficial due to their high level of omega-6 fatty acids. Processed vegetable oils also have a high level of omega-6 fatty acids. However, high quality vegetable oil blends may help in achieving a good balance of fatty acids in the system. Vegetable oils reduce the risk of stroke. In women, the use of omega-3 appears to lower blood pressure and DHA also improves blood lipid levels. Omega-3 fatty acids do lower cognitive function. According to a study report, the intake of omega-3 fatty acids improves mood.

Vegetable oils are also highly oxidizing and may increase inflammation in the system. Processed vegetable oils are not beneficial due to their high level of omega-6 fatty acids. Processed vegetable oils are not beneficial due to their high level of omega-6 fatty acids. Processed vegetable oils are not beneficial due to their high level of omega-6 fatty acids. Processed vegetable oils are not beneficial due to their high level of omega-6 fatty acids. Processed vegetable oils are not beneficial due to their high level of omega-6 fatty acids.
<table>
<thead>
<tr>
<th>Oil</th>
<th>Omega-3 (%)</th>
<th>Omega-6 (%)</th>
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</thead>
<tbody>
<tr>
<td>Walnut</td>
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<td>52</td>
</tr>
<tr>
<td>Sunflower</td>
<td>0</td>
<td>65</td>
</tr>
<tr>
<td>Soy</td>
<td>0</td>
<td>51</td>
</tr>
<tr>
<td>Rapeseed</td>
<td>0</td>
<td>20</td>
</tr>
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<td>Peanut</td>
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<td>32</td>
</tr>
<tr>
<td>Maize</td>
<td>0</td>
<td>54</td>
</tr>
<tr>
<td>Macadamia</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Linseed</td>
<td>57</td>
<td>14</td>
</tr>
<tr>
<td>Hemp</td>
<td>22</td>
<td>55</td>
</tr>
<tr>
<td>Canola</td>
<td>9</td>
<td>20</td>
</tr>
</tbody>
</table>

Avoid:
- Hydrogenated vegetable fats
- Vegetable oils rich in omega-6 fatty acids
- Oxidized oils, oils exposed to light and heat
- Oils stored in plastic bottles
- Dietary supplements of cold-pressed linseed oil
- High quality cold-pressed vegetable oil blends
- Light and heat

Vegetable oil levels (omega-6 and omega-3):
- Canola
- Sunflower
- Hemp
- Rapeseed
- Soy
- Maize
- Peanut
- Sunflower
- Canola
- Rapeseed
- Hemp
- Soy
- Maize
- Peanut

Favor:
- Organic fats and oils rich in omega-3 fatty acids
- Greek and butter
- Fish liver oil and krill oil
- Cold-pressed virgin olive and coconut oils
- Cold-pressed avocado, macadamia and hemp oils
- Fish liver oil and krill oil
- Greek and butter
- Organic fats and oils rich in omega-3 fatty acids
- Oxidized oils, oils exposed to light and heat
- Oils stored in plastic bottles
- Hydrogenated vegetable fats
- Vegetable oils rich in omega-6 fatty acids

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MatchaGyver Ice Cream

This heavenly ice cream combines the nutrient-rich properties of egg yolk, fats, green tea polyphenols, trace elements and vitamins B, C and E. Instead of causing sluggishness, the ice cream increases mental agility and improves cognitive performance due to the combined effect of fats, xylitol and caffeine and theanine from the green tea. If MacGyver were to start his day with ice cream, this would be it.

Ingredients:
- 4 whole organic or grass-fed eggs
- 4 tsp organic or grass-fed butter
- 1 tsp organic or grass-fed bourbon vanilla
- 50 g (¼ cup) MCT oil
- 100 g (½ cup) virgin coconut oil
- 100 g (½ cup) spring water or coconut water
- 1 tsp apple cider vinegar
- 2 tsp amla extract
- 120 g (1/4 cup) virgin coconut oil
- 2 tsp matcha powder
- 1 tsp organic or grass-fed butter
- 1 stick organic or grass-fed butter
- Juice from half a lemon
- 1 tsp pure maple syrup

Method:
1. Melt butter and virgin coconut oil in a water bath.
2. Mix all ingredients in a blender and pour into a dish. Freeze overnight in a freezer or prepare in an ice cream maker.
3. Garnish with bee pollen, coconut shavings or sea buckthorn berries.
Nuts are extremely nutrient dense and rich in protein, good fatty acids, minerals, fiber, and vitamin E and B complex. The flavor, consistency, and convenience of nuts has made many people increase the amount of various nuts in their diet.

Brazil nuts contain the most selenium out of all nuts. Compared to other nuts, pistachios are rich in beta-carotene and lutein. The regular consumption of nuts has been found to have a positive effect on the antioxidant capacity of blood. Eating two Brazil nuts per day may raise the selenium level of the body as much as 100 mcg.

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Walnuts are exceptionally rich in short-chain omega-3 fatty acids (ALA) and may improve blood cholesterol levels. 

Almonds make an excellent snack that reduces hunger and maintains a constant blood sugar level. In addition, almonds may improve insulin sensitivity and blood sugar regulation when eaten with carbohydrates. They may also lower the risk of coronary artery disease.

Pecan nuts improve the antioxidant capacity of the body and inhibit the oxidation of LDL cholesterol.

Approximately 2% of the population suffers from a nut allergy. Interestingly, it is the most common cause of food allergy. Approximately, 2% of the population suffers from a nut allergy.

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Taken concurrently prevents the negative effect of inhibiting iron absorption.

Nuts sold at the supermarket vary greatly in quality.

Favor:
- Walnuts
- Brazil nuts
- Macadamia nuts
- Almonds
- Pistachios
- Pecan nuts
- Cashew nuts
- Macadamia nuts
- Brazil nuts
- Walnuts

Avoid:
- Peanuts (in spite of the name, they are in fact legumes, rich in antinutrients)
- Hazelnuts (readily cause allergy)
- Peanuts (in spite of the name, they are in fact legumes, rich in antinutrients)

Making nut milk

4 dl (1 ½ cups) spring water
1 dl (½ cup) nuts (soaked)

Mix the ingredients in a blender until a milky white liquid forms. Strain using a metal sieve or for example a nylon fruit mesh bag. If desired, you can flavor the liquid with a teaspoonful of domestic honey or genuine vanilla. Fresh nut milk can be used as a beverage base or milk substitute.

RECIPE

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Seeds are extremely nutrient dense. However, they are plant parts rich in compounds with which the plants attempt to protect the seeds from damage. Due to this, preprocessing seeds by soaking and sprouting is fairly important for the absorption of nutrients and the removal of harmful substances (antinutrients; see the section titled “Antinutrients”). Pumkkin seeds are rich in zinc, magnesium, iron, and monounsaturated fatty acids. Pumpkin seeds are a good source of protein and antioxidants and monounsaturated fatty acids. Pumpkin seeds resemble linseeds in terms of nutritional content. They are rich in manganese, magnesium and calcium. Linseeds counterbalance the spike in blood sugar after a meal. They may also alleviate constipation. Soaked chia seeds may improve performance in endurance sports.

Various seeds may be used to supplement the diet depending on individual needs:

- Hemp seeds (particularly the Finish Finka variety)
- Chia seeds
- Linseeds
- Pumpkin seeds (particularly the Austrian Styrian variety)
- Sesame seeds
- Sunflower seeds

Use sparingly:
- Cumin seeds (antibacterial effect)
- Pumpkinseeds (antioxidative effect, weight reducing and antihypertensive properties)
- Flaxseeds (liver detoxifying and fat-reducing effect)
- Pine nuts (may increase the feeling of satiety)

Additionally, many seeds have therapeutic value:

Favor:
- Hemp seeds (particularly the Finnish Finka variety)
- Chia seeds
- Linseeds
- Pumpkin seeds (particularly the Austrian Styrian variety)
- Chia seeds
<table>
<thead>
<tr>
<th>Seed/Bean</th>
<th>Soak Time</th>
<th>Sprout Time</th>
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</thead>
<tbody>
<tr>
<td>Quinoa</td>
<td>Over night</td>
<td>1-2 days</td>
</tr>
<tr>
<td>Millet</td>
<td>Over night</td>
<td>3-5 days</td>
</tr>
<tr>
<td>Wheat</td>
<td>Over night</td>
<td>1-3 days</td>
</tr>
<tr>
<td>Barley</td>
<td>Over night</td>
<td>2-3 days</td>
</tr>
<tr>
<td>Sunflower Seed</td>
<td>Over night</td>
<td>1-2 days</td>
</tr>
<tr>
<td>Flax Seed</td>
<td>Over night</td>
<td>3 days</td>
</tr>
<tr>
<td>Sesame Seed</td>
<td>Over night</td>
<td>1 day</td>
</tr>
<tr>
<td>Almonds</td>
<td>Over night</td>
<td>2-3 days</td>
</tr>
<tr>
<td>Cashews</td>
<td>Over night</td>
<td>2-3 days</td>
</tr>
<tr>
<td>Pecans</td>
<td>Over night</td>
<td>1 day</td>
</tr>
<tr>
<td>Macadamia</td>
<td>Over night</td>
<td>1-3 days</td>
</tr>
<tr>
<td>Oats</td>
<td>Over night</td>
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</tr>
<tr>
<td>Buckwheat</td>
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<tr>
<td>Buckwheat+Rye</td>
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</tr>
<tr>
<td>Hemp Seed</td>
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<td>Peanuts</td>
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</tr>
<tr>
<td>Pecan</td>
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</tr>
<tr>
<td>Pistachio</td>
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<tr>
<td>Pine Nut</td>
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<tr>
<td>Macadamia</td>
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<td>1-3 days</td>
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</table>

Soaking and sprouting inhibit the function of these agents. Seeds, nuts, grains and beans contain agents that interfere with nutrient absorption or may otherwise cause health problems. Soaking and sprouting inhibit the function of these agents.
The fruit produced by legumes are called pods. The term legume generally includes various pea plants and cultivated legumes (leguminous plants). The most commonly used legumes include soybeans, peas, beans, lentils, chickpeas, mung beans, string beans and various soy products such as tofu. The protein structure of legumes is similar to that of animal proteins in terms of their amino acid composition, the protein typically causes gastrointestinal symptoms. Ingesting legumes also reduces their level of galactan. Soaking legumes also reduces their level of galactan.

- Peanuts, soybeans, green beans, kidney beans, pinto beans, and black beans, are members of the genus *Phaseolus*, which is the largest genus of legumes. Legumes are quite rich in agents intended for the protection of their seeds, i.e., antinutrients. These include myo-inositol, inositol-phosphates, and phytic acid (particularly in red kidney beans). For this reason, legumes should always be soaked and cooked thoroughly.

- The most commonly used legumes are cultivated legumes (leguminous plants). The most commonly used legumes include soybeans, peas, beans, lentils, chickpeas, mung beans, string beans and various soy products such as tofu.
The health impacts of legumes

Despite the antinutrients, legumes also have health benefits. Population-based epidemiological studies have yielded results of legumes reducing the risk of intestinal cancer. Hypotheses for the cause include the effects of isoflavones, lignans and various antioxidants in the intestine. Another interesting finding is the effect of legumes (with the exception of soybeans) in reducing silent inflammation (lower high-sensitivity CRP) and to cause silent inflammation of the intestine. PHA has been found to be particularly in the intestine. PHA has been found to be particularly in the intestine.

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The regular use of these legumes may also lower blood pressure and cholesterol levels. Soy and the saponins of soy protein in particular may cause inflammation in the intestine and promote the development of breast cancer in women. Men may also develop inflammation in the intestine and promote the development of breast cancer in women. Men may also develop inflammation in the intestine

Many bean lectins, particularly PHA (phytohemagglutinin), permeate the intestinal wall and, based on animal tests, may present a predisposing factor for atherosclerosis. As much as 94% of American soy and more than half of soy worldwide is genetically modified (GMO).}

Reasons to avoid soy products:

• Soy is rich in phytoestrogens that inhibit the absorption of proteins and may interfere with normal levels of female hormonal activity, leading to infertility.

• Trypsin inhibitors in soy may impair the absorption of nutrients in the intestine.

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• Soy is rich in phytoestrogens that inhibit the absorption of proteins and may interfere with normal levels of female hormonal activity, leading to infertility.

• As much as 94% of American soy and more than half of soy worldwide is genetically modified (GMO).
Prepare beans/lentils as follows:

• Soak the beans overnight (12 hours minimum)
  – Tip: boost the lectin removal process by adding baking soda to the soaking water
• Rinse the beans thoroughly
• Cook in boiling water for a minimum of 30 minutes (some beans require significantly longer)

Other useful methods for preparing beans:

• Sprouting (for example, mung bean sprouts)
  – Significantly reduces the lectin and saponin content of beans
• Fermenting (for example, tempeh made from soy)
  – Does not remove all lectins however see the section titled “Antinutrients”

Favor:

  Soy protein and other soy products
  Beans (particularly kidney beans)
  Sofas and tofu

Avoid:

  Green peas and broad beans, boiled and peeled
  Fermented tempeh and natto (non-GMO)
  Mung beans, soaked and sprouted
  Lentils (particularly beluga lentils and red lentils)

Prepares beans/lentils as follows:

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FUNGI

Fungi have been used for medicinal purposes for thousands of years, particularly in Asia. More than 2000 years ago the Great Physician Dioscorides described in his classic work De Materia Medica the use of agarikon (Fomitopsis officinalis) in the treatment of tuberculosis. It is only in recent decades that the medicinal use of fungi has significantly increased in the Western world. There are known to be approximately 140,000 fungal species in the world, only 10% of which have been scientifically studied.

Generally speaking fungi are rich in fiber, vitamins B1, B2, B3, and D2, selenium, antioxidants and protein. Many fungi contain compounds that have been shown to have antinecrotic, anti-viral, anti-fungal, anti-inflammatory, pain relieving and cancer cell destroying properties. Amino acids such as ergothioneine, 448 a glycoprotein and ergothioneine were used for medicinal purposes. Numerous important medicinal compounds have been isolated from fungi, and many fungalcontaining compounds have been shown to have antinecrotic, anti-viral, anti-fungal, anti-inflammatory, and anti-cancer properties. In his book Fungal Pharmacy (2011) fungus expert Robert Rogers states that fungi have been shown to have at least 126 distinct medicinal properties. In nature fungi compete with various microbes, which is why they specialize in producing antibiotics and in mate fungi complete with various microbes, which have at least 126 distinct medicinal properties.

In addition, many fungalcontaining compounds have been shown to have antinecrotic, anti-viral, anti-fungal, anti-inflammatory, pain relieving and cancer cell destroying properties. Most well-known medicinal fungi are shiitake (Lentinula edodes), lingzi mushrooms (Ganoderma lucidum), turkey tail (Trametes versicolor), celeriaccia, mushrooms (Agaricus blazei), matsutake (Tricholoma matsutake), and many more. The medicinal properties of fungi are usually polysaccharides or triterpenes. In addition to these, the glycoside derivatives of triterpenes, sterols, and certain metabolic products (such as antibiotics) of fungi are utilized for medicinal purposes. Numerous important medicinal compounds have been isolated from fungi, and many fungal-containing compounds have been shown to have antinecrotic, anti-viral, anti-fungal, anti-inflammatory, and anti-cancer properties.
It is important to pick fungi from an unpolluted site. Fungi collect heavy metals and radioactive cesium from the environment. There are also deadly poisonous varieties such as the European destroying angel, the livid entoloma, lethal webcaps and the funeral bell mushroom.

To minimize toxins and cesium, many fungi (such as the morel) should be boiled twice and then rinsed in cold water. If you don’t recognize a fungus (such as the morel), it should be boiled twice and minced. Use it in soups, rice cooking, stews for stews, soups and other dishes. Fungi collect heavy metals and radioactive cesium from the environment. There are also deadly poisonous fungi such as the European destroying angel, the livid entoloma, lethal webcaps and the funeral bell mushroom.

Favor:
- Yellowfoot
- Tea of smoothies
- Extract powders mixed with chocolate, coffee, water and a coffee base
- Utilizing chaga tea in soup
- Rice cooking
- Shitake and oyster mushrooms are well
- Properties in cooking
- Using mushrooms with medicinal
- Extracted (medicinal mushroom powders
- Double extracted (water and alcohol
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Powder Powder
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Avoid:

• The excessive daily consumption of fungi (many edible mushrooms such as the yellow knight, penny bun, russula, mushrooms chanterelle and sheep’s bells, and many others)

• Fungi that irritate the digestive tract when uncooked (always cook the orange birch bolete, rough-russula, clouded agaric and tangy milkcaps and shaggy sternum bolete, honey fungus, shiitake, shaggy sternum bolete, rough-russula)

• Poisonous fungi

• Consuming the common ink cap or club-footed clitocybe with alcohol

• Clitocybe with alcohol

• Fungi that have collected a lot of heavy metals or radioactive cesium

Vitamin D from mushrooms

In addition, 1000 µg vitamin D2 is contained in the sun for 12 hours of fresh mushrooms after having been dry mushrooms in sunlight to multiply their vitamin D content. Studies conducted on shiitake mushrooms indicate that 100 g (3.5 oz) of fresh mushrooms, after having been placed in the sun for 12 hours, contained an additional 1000 µg vitamin D2.
On average, human beings are 65% water. Dehydration at only a few percentage points significantly impairs our general ability to function. Fluid balance regulation is one of our most important regulatory mechanisms. Water is essential for life. The importance of clean drinking water cannot be overemphasized. Fresh water is currently a diminishing natural resource due to intensive farming among other things. As much as 70% of the world’s water resources, including groundwater, is used in agriculture. If the raw water (groundwater) contains organic matter, impurities remain in the water even after disinfection. When the disinfection method used is the most common one – chlorination – various chlorinated compounds form as chlorine and organic matter react. The advantages of chlorination outweigh the disadvantages, however, the advantages of chlorination may increase the risk of cancer. \[ 456 \]

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Official guidelines recommend drinking a minimum of 1–1.5 litres (35–50 fl oz), preferably 2–3 litres (70–100 fl oz) of water per day. The water requirement increases with rising temperatures. The elderly should also drink more fluids due to the impaired ability of their kidneys with rising temperatures. The elderly should also drink 1–1.5 litres (35–50 fl oz) preferably 2–3 litres (70–100 fl oz) per day. The World Health Organization recommends drinking a minimum of 1.5–2 litres (52–70 fl oz) per day. The elderly should drink even more, as the elderly may have a decreased ability to adjust to changes in their fluid balance.

Filter attached to tap:
- Purified tap water (separate filtering device or drilled well water and well water)
- Tap water
- Soft, coconut water

Liquid contained by plants (freshly squeezed juice, tests)
- Naturally flowing spring water (microbiologically tested)

Favor:
- Naturally flowing spring water (microbiologically tested)
- Water packaged in plastic bottles
- Drinking water (tap water)
- Carbonated water
- Vitamin-enriched water
- Tap water
- Water packaged in plastic bottles

Avoid:
- Glass bottles (such as Pellegrino)
- High quality spring water or mineral water sold in ion exchange
- Reverse osmosis (RO), activated carbon filtering
- High quality spring water or mineral water sold in ion exchange
COFFEE

Finns drink the most coffee in the world, 12 kg (26 pounds) per capita. The other Nordic countries are also frequent coffee drinkers. US consumes a little over 4 kg (9 pounds). Besides oil, coffee is the world's most actively traded commodity. Due to this, large quantities of various pesticides are used to maximize production. High quality coffee has a well-rounded flavor in that its aromas need not be covered up with sugar, milk or cream. In terms of ethics, coffee's beneficial active agents and in terms of ethics, in mind containing fewer harmful substances and more of coffee that has been grown and processed with quality coffee experience.

A great many people enjoy coffee daily due to its caffeine, which may have a different effect on different individuals. The effects of caffeine depend on one's genetic makeup. For example, the CYP1A2 gene affects the body's ability to remove caffeine from the system, and the VDR gene is associated with caffeine's negative effects on bone health. For these reasons, the same amount of caffeine may have a different effect on different individuals.

For most people, reasonable coffee consumption (3–4 cups per day) is compatible with a healthy, balanced diet and an active lifestyle. According to a comprehensive meta-analysis, reasonable coffee consumption (3–4 cups per day) may extend the life span, lower the risk of developing type 2 diabetes and cardiovascular diseases, and prevent premature death from these illnesses. The health benefits of coffee are most likely due to the anti-oxidants it contains, such as polyphenols. Indeed, more than 1,000 anti-oxidant compounds have been found in coffee, even more than in green tea and cocoa. Indeed, caffeine is a well-rounded flavor in that its aromas need not be covered up with sugar, milk or cream.

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The primary risk factors in terms of harmful substances affecting the quality of coffee are pesticides and mycotoxins. Water washing significantly reduces the level of mycotoxins and when washed properly, the ochratoxin A (OTA) level of green coffee beans is reduced by 90% in addition to this, roasting destroys 69–96% of the remaining OTA. According to a report published by the Finnish Customs in 2012, 12% of the tested instant coffees, roasted coffees and hot chocolate drinks were contaminated by mycotoxins (OTA, aflatoxins). Coffee producers have been actively involved in initiatives to guide farmers in implementing the best farming practices to minimize the risk of mold growth.

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RECIPE

Biohacker Coffee

- 16 g (½ oz) high quality coffee beans (grown in volcanic soil at high altitude, Central American)
- 250 ml (1 cup) nearly boiling spring water or filtered tap water (91 °C / 196°F)
- 1 tbsp grass-fed butter
- 1 tbsp MCT oil or cold pressed coconut oil
- Add flavor with a pinch of genuine vanilla and/or chaga extract

First grind the beans into a fine powder. Bring the filtered water to a nearly boiling temperature 91 °C. Preheat the blender, glass, thermos, and other accessories with hot water. Place the ground coffee and flavorings (vanilla, chaga extract) into a suitable preparation device (Aeropress, Chemex, French press, dripper) and pour one half of the water in. Press the coffee through the filter. Add the butter, MCT oil and other ingredients into the blender. Mix for 10 seconds and add the remaining water. Brew for 1–4 minutes. Remove hot water from the blender. Add the coffee into the blender and mix at full speed for 15–20 seconds. Repeat if necessary. Pour the foamy coffee into a glass or a thermos. Sip slowly. The fats in the coffee provide a constant source of energy and improve cognitive functions. Also try adding theanine (200 mg).
Tea is the world's second most popular drink after water. Tea is typically prepared by infusing the leaves of the tea bush (Camellia sinensis). The history of tea begins during the Shang dynasty of China (1766–1050 BCE) when it was used predominantly for medicinal purposes. In the Himalayan region of India, tea has been used for medicinal purposes for nearly as long. Tea only arrived in Europe at the turn of the 17th century and later became an extremely popular beverage in England.

Tea is the world's second most popular drink after coffee. Countries like Ireland and the United Kingdom. These countries also prefer tea over coffee. Turkish people drink the most tea in the world, over 7 kg (15 pounds) per capita. Other big tea drinking countries are Turkey, Japan, and China.

Teas are typically divided into various categories depending on the processing method. The six most common ones are green tea, yellow tea, white tea, oolong tea, black tea and post-fermented tea. Teas are sometimes made from leaves other than tea leaves and are called herbal teas. The medical use of tea beverages is extensive particularly in oriental cultures. Tea quality depends on several factors. Aside from processing methods, the primary factor is the age of the tea leaves. The most valuable tea leaves are grown near the blooms of the tea bush (Camellia sinensis). The history of tea begins during the Shang dynasty of China (1766–1050 CE) when it was used predominantly for medicinal purposes. In the Himalayan region of India, tea has been used for medicinal purposes for nearly as long. Tea quality depends on several factors. Aside from processing methods, the primary factor is the age of the tea leaves. The most valuable tea leaves are grown near the blooms of the tea bush (Camellia sinensis). The history of tea begins during the Shang dynasty of China (1766–1050 CE) when it was used predominantly for medicinal purposes. In the Himalayan region of India, tea has been used for medicinal purposes for nearly as long. Tartaric acid, caffeine, flavor, and health benefits of the tea, we encourage you to consult expert tea traders regarding the preparation method.

Each tea variety has a specific brewing time and temperature. Theanine, flavonoids, theophylline, epigallocatechin-3-gallate, and other catechins are present. The tea leaves are rich in polyphenols such as flavonoids, tea polyphenols are called herbal teas. The most valuable tea leaves are the new leaves growing near the blooms. Tea quality depends on several factors. Aside from processing methods, the primary factor is the age of the tea leaves. Tea leaves are rich in polyphenols such as flavonoids, tea polyphenols are called herbal teas. The medical use of tea beverages is extensive particularly in oriental cultures. Tartaric acid, caffeine, flavor, and health benefits of the tea, we encourage you to consult expert tea traders regarding the preparation method. Each tea variety has a specific brewing time and temperature. Theanine, flavonoids, theophylline, epigallocatechin-3-gallate, and other catechins are present. The tea leaves are rich in polyphenols such as flavonoids, tea polyphenols are called herbal teas. The medical use of tea beverages is extensive particularly in oriental cultures. Tartaric acid, caffeine, flavor, and health benefits of the tea, we encourage you to consult expert tea traders regarding the preparation method. Each tea variety has a specific brewing time and temperature.
Green tea is probably one of the most studied tea varieties for its health benefits. Green tea contains 30–40% of water-soluble polyphenols, whereas black tea contains only 3–10%. Green tea is also suitable for individuals sensitive to caffeine due to its theanine content. Theanine reduces the unpleasant side effects of caffeine.

Comprehensive meta-analysis studies reveal that the consumption of green tea lowers blood pressure, the levels of total cholesterol and LDL cholesterol, as well as the levels of fasting glucose and long-term glucose. Green tea may also slow down the deterioration of memory. The optimal health benefits are achieved by drinking 5–7 cups per day.

An alternative to drinking abundant amounts of tea is to take green tea extract with a meal. Extracts may also have a slimming effect.

Yerba mate is a beverage prepared by steeping the leaves and new shoots of the mate tree. Yerba mate, or mate, is a herbal tea prepared by steeping yerba mate (mate) leaves used in very similar manner. Traditionally, mate has been used in an empowering drink among the indigenous people of South America.

Pu-erh tea is black tea originating from the Yunnan province in China. The fermenting method used to prepare pu-erh tea makes it significantly healthier than black tea. The longer pu-erh tea is fermented and matured, the more valuable and healthy it is. Some pu-erh tea cakes may keep for nearly a hundred years.

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on fat metabolism and body weight. Very little pu-erh tea research has been conducted on humans.

In terms of oxidation level, oolong tea is placed between green tea (little oxidation) and black tea (great oxidation). The same leaves can be used for steeping several times. Like green tea, oolong tea is rich in antioxidants such as various catechins and polyphenols.

A comprehensive Chinese demographic study showed that the long-term use of oolong tea was associated with improved blood lipid values. Unlike other tea varieties, oolong tea also has a strong effect on the GABA-A receptors (calming neurotransmitter).

White tea

White tea comes from China, particularly the Fujian province. It is a lightly oxidized, fine tea prepared from the young buds and leaves of the tea bush. White tea contains significantly more rare than the other tea varieties.

White tea contains slightly more caffeine and is significantly more rare than the other tea varieties.

The consumption of white tea may reduce the risk of stroke and based on animal tests, also prevent atherosclerosis. Used topically, white and green tea may protect the skin from the harmful UV rays of the sun.

Favor:

- Pu-erh tea after a high-fat meal (85–95 °C / 185–203 °F, 2–3 minutes)
- Green tea with meals (60–80 °C / 140–176 °F, 12 seconds to 2 minutes)
- White tea (60–70 °C / 140–158 °F, 1–2 minutes)
- Black teas
- Prepared ice teas
- Bagged tea

Avoid:

- Pu-erh tea after a high-fat meal (85–95 °C / 185–203 °F, 2–3 minutes)
- Prepared ice teas
- Black teas
- Using milk with tea (inhibits the health benefits)
- Caffeine-free herbal tea in the evening

White tea

Unlike other tea varieties, white tea also has a strong effect on the GABA-A receptors (calming neurotransmitter).

The consumption of white tea may reduce the risk of stroke and based on animal tests, also prevent atherosclerosis. The same leaves can be used for steeping several times. Like green tea, oolong tea is placed in terms of oxidation level. Oolong tea is placed between green tea (little oxidation) and black tea.

Favor:

- Oolong tea when you need to concentrate (80–85 °C / 176–185 °F, 2–3 minutes)
- White tea (60–70 °C / 140–158 °F, 1–2 minutes)
- Yerba maté when working (60–70 °C / 140–158 °F, 3–5 minutes)
- Green tea with meals (60–80 °C / 140–176 °F, 12 seconds to 2 minutes)
- Pu-erh tea after a high-fat meal (85–95 °C / 185–203 °F, 2–3 minutes)
- Prepared ice teas
- Prepared ice teas
- Black teas
- Using milk with tea (inhibits the health benefits)
- Caffeine-free herbal tea in the evening

Avoid:

- Pu-erh tea after a high-fat meal (85–95 °C / 185–203 °F, 2–3 minutes)
- Prepared ice teas
- Black teas
- Using milk with tea (inhibits the health benefits)
<table>
<thead>
<tr>
<th>Stage</th>
<th>Tea Processing</th>
<th>Fermentation</th>
<th>Aging</th>
<th>Draining</th>
<th>Rolling</th>
<th>Steaming</th>
<th>Oxidation</th>
<th>Withersing</th>
<th>Wilting</th>
<th>Tea Leaves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flavored</td>
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<tr>
<td>Green tea</td>
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<tr>
<td>Pu-erh</td>
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</tbody>
</table>

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The highest consumption rates of alcohol seem to be concentrated in Europe. The highest rates can be seen in countries like Estonia, Belarus, Lithuania, the Czech Republic, Austria, and Ireland, with each around 11–14 liters (3–6 gallons) per capita. Drinking per se and high-volume drinking are consistently more prevalent among men than women. Alcohol-related causes of death are the single most significant factor in 15–64 year old men, ahead of alcohol-related causes of death are the single most significant number of accidents. Alcohol plays a role in a significant number of illnesses: alcohol dependency, alcoholic liver diseases, alcoholism, neurologic and psychiatric illnesses, alcohol-poisoning, alcoholic liver diseases and pancreatitis.

According to the World Health Organization, the use of alcohol is associated with at least 60 different illnesses. Alcohol is associated with at least 60 different illnesses.

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**Hangover Cure**

Blind the ingredients in a blender:

- Sea salt and fenugreek, to taste
- 1 tbsp chlorella
- 2 egg yolks
- Coconut of broccoli buds
- Juice from half a lemon
- 1 avocado
- 3 dl (1 1/4 cups) coconut water

**RECIPE**

**ALCOHOL**
Hangover symptoms are caused by acetaldehyde poisoning. The breakdown of acetaldehyde into harmless acetic acid requires glutathione tripeptide (glutamic acid, cysteine, and glycine).

### The Breakdown of Alcohol in the System

<table>
<thead>
<tr>
<th>Ethanol (C₂H₅O)</th>
<th>Acetaldehyde</th>
<th>Acetic acid (C₂H₅O₂)</th>
<th>Water (H₂O)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>←</td>
<td>←</td>
<td>+</td>
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</tbody>
</table>

**Favor:**
- Russian Standard Platinum
- Russian Standard Imperia
- Clear liquor packaged in glass bottles (potato-based)
- Champagne
- Biodynamic red wines (low tannin, no added sulfites)
- Natural wines
- Classic herbal beers (Healing Herbal Beers, DHner)
- Champagne
- Biodynamic red wines (low tannin, no added sulfites)

**Avoid:**
- Lagers
- Colored liquors
- Alcoholic ciders sweetened with sugar
- Colored liquors
- Lagers

Drinks that reduce the risk of dementia and impaired cognitive function include:

- gin, tequila, and whiskey
- champagne
- homemade tinctures
- homemade herbal beers and alcoholic cider
- homemade herbal beers
- natural wines
- biodynamic red wines
- clear liquor packaged in glass bottles (potato-based)
- champagne
- homemade tinctures

Total abstinence or consuming small amounts irregularly in good company.
Beating a Hangover

The suggestions are based on supporting natural glutathione levels, removing toxic substances and restoring nutrients depleted by alcohol consumption.

**Before use:**
- Fresh ginger (2–3 cm / 1-inch piece)
- Broccoli (sulforaphane eliminates toxic water)
- Electrolytes (unrefined sea salt and coconut water)
- Vitamin B complex

**After:**
- A glass of water with each alcoholic drink
- 100 mg glutathione (preferably in a liposomal form)
- 5–10 g (0.17–0.35 oz) chlorella
- Fresh ginger (2–3 cm / 1-inch piece)

**During:**
- 300 mg glutathione levels, removing toxic substances and
- 50 mg vitamin C and 200 mg N-acetylcysteine

**Before bed:**
- 1–2 g (0.03–0.07 oz) activated carbon
- 5–10 g (0.17–0.35 oz) chlorella
- Vitamin B1 and alpha lipoic acid
- Milk thistle (silymarin) and fenugreek

**During:**
- 500 mg vitamin C and 200 mg N-acetylcysteine

**TIP:**
- Eat meat (particularly turkey) with turmeric and egg yolks (amino acids)
- 5–10 g (0.17–0.35 oz) chlorella
- Unrefined sea salt and coconut water
- Vitamin B complex

- A glass of water with each alcoholic drink


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Yamagishi, S. et al. (2012). Role of advanced glycation end products (AGEs) and oxidative stress in vascular complications in diabetes. *Biochimica et Biophysica Acta* 1820 (5): 663–671.


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Teemu Arina, Jaakko Halmetoja & Olli Sovijärvi

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