

# Healthy Internal Organs

A stylized illustration of a cafe setting. In the center is a round, dark blue table with a thin metal stand. Above the table is a large, light beige patio umbrella. Two light blue plastic chairs are positioned on either side of the table. The entire scene is set against a solid light purple background.

Know about and strengthen your  
vital organs better than your  
doctor does

Arvy Ramanan

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*To my family*

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## **0 (Not really an) Introduction**

Our internal organs do not need any introduction. Nor do we need to be reminded how important they are for our daily functioning. Let's take a dive into the world of organs that help digest your food and that are keeping you healthy. We also explore how these organs work and briefly look at the foods that are best (and not so good) for these organs.

In this information age, we don't lack information on any topic of our choosing. But some of us are naive when it comes to using information for our well-being. We have plenty of advice—with the arrival of smartphones and other digital phenomena—at our fingertips, literally. What we don't have is motivation. Eating healthy foods and leading a healthy life sure need a lot of motivation. This little book is just a small step toward the path to healthy life.

Whenever you are into bad eating habits, keep this book within your reach. By appreciating the wonderful things the organs discussed in the book do for you, you will sure bounce back into leading a healthy way of life.

# 1 The first team

In sports, we have top players selected for the first team and the next best ones for the reserve team. Both are equally important and can be the match-winners of the day. In the game of life, we have major organs that contribute to our well-being, and that make it to the first team.

But these organs depend on the daily supply of nutrient-rich food. And the focus of these organs is proper digestion of food. Together they help build our body, increase our vitality, and strengthen us from inside.

Between the first meal of the day and you feeling a bowel movement, there is roughly a 24-hour gap. For some it may even be as long as 72 hours. What exactly happens to the food we eat during this period? That's where all the organs of the digestive system come to the picture.

Throughout the rest of this book, let's map the journey of the food from the moment it enters your mouth to the time you want to dump your truck. Down the lane we meet various organs and discuss the food they love so that we can be sure these organs work at their best to keep us at our best.

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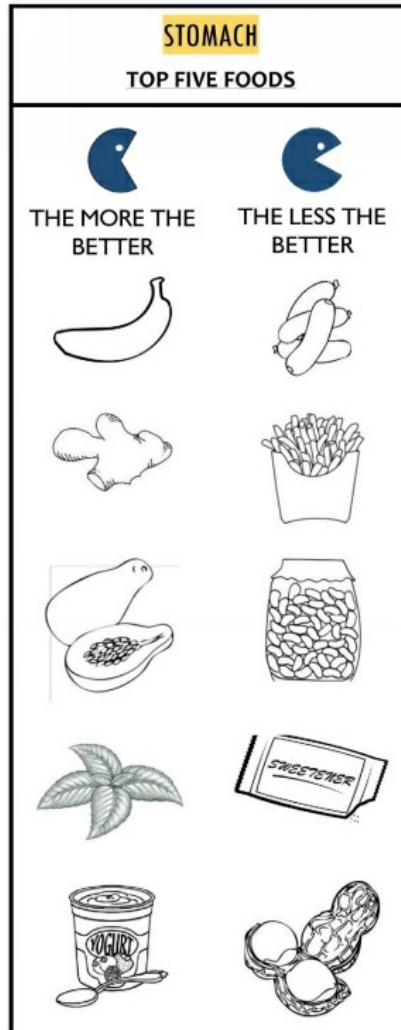
## FOOD, BOLUS, CHYME, FECES

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Nutrients from food are extracted right from the moment it's put in our mouth. Saliva breaks down the food and then chops off complex sugars into simple ones. Food mixed with saliva now becomes what we call bolus. This bolus reaches the stomach through the long food pipe, or esophagus.

Once your **stomach** is filled with bolus, it starts digesting protein, fat, and other micronutrients. In the stomach, this partially digested food becomes a mass of semifluid called chyme. The chyme then enters the **small intestine**, and this is where real digestion happens. Here the food is further broken down into the basic units of proteins, fats, and sugars.

In digesting these nutrients, the small intestine isn't alone. It is connected to its teammates—**pancreas**, **liver**, and **gallbladder**. While pancreas is a master digester of sugars, liver and gallbladder are experts on degrading fats and proteins. Liver also helps digest fat-soluble vitamins.



Small intestine sponges up 80 percent of the water from the food we eat. The nutrients and water enter the bloodstream and reach all parts of the body. The remaining water and waste products go to the **large intestine**. Here's where any water and minerals that are not absorbed by small intestine are reabsorbed. The remaining waste products or those undigested parts are excreted from the large intestine as feces.

## 2 A stomach or a hummock?

Before having a bite of something, remember that the contents of your stomach make you the real you. Your stomach acts as the warehouse for whatever you push through your maw. It only partially digests your food, leaving the enormous task of nutrient absorption to the small intestines and other organs of the digestive system. The lighter and healthier your meal plan is, the better your stomach extracts nutrients from your food. So don't forget to review your plate each day and follow a stomach-friendly diet.

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### AND THE SWEET PANG . . .

Stomach contracts and relaxes without rest. And these waves of movements increase in intensity once it receives the food. The hard word for this movement is “peristalsis.” Peristalsis continues even after the contents of the stomach are emptied. And that's when you feel the hunger pangs, which often hurt a lot, making you to hit the kitchen (or the fridge, or wherever you find food). A lower level of blood sugar also triggers these hunger pangs.

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### CHEWING OVER YOUR DIET

You can take half the burden of digesting food from the stomach by—you know it—chewing. And chewing nicely. If you have heard of Horace Fletcher, you know what chewing nicely means. About a century and two decades ago, American dietitian Fletcher found the secret to endurance. He recommended chewing “each mouthful of food 32 times or, ideally, until the food liquefies.”<sup>[1]</sup> If a man of sixty could turn himself twenty years younger by a simple formula of masticating food, why couldn't we?

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### STAND-OUT FEATURES

Your stomach acid is your first line of defense against bad bacteria and viruses. These microbes get killed by the strong hydrochloric acid before they reach the small intestine. The acid is so strong that it can even bore through any metal.

But like the lining of the stomach wall that resists the acid, there are many notorious microbial villains that escape the acid effect and thrive in the colon, tying us to the bed and forcing us for sick leave. So it is always best to avoid junk foods and opt for cleaner and healthier ones.



LIVER

TOP FIVE FOODS



THE MORE THE  
BETTER



THE LESS THE  
BETTER



### **3 Liver and his “gallfriend”**

Arguably the largest gland and the second largest organ in your body, liver is an acclaimed multi-tasking guy (everyone calls him “the father of all organs”). The first place goes to, well, your skin—the favorite subject of dermatologists.

A well-functioning liver is key to good health. An average-sized adult has this three-pounder fulfill several duties day in and day out. From metabolizing proteins, carbs, and fats, to being a storehouse for vitamins and energy-rich sugars, to wiping out toxic substances, to destroying worn red blood cells, there is more on this organ’s agenda.

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#### **IT’S A FATTY BUSINESS**

Liver specializes in digesting fats from your food. Every day, it squeezes out about one liter of bile salts, a digestive fluid that acts on fats. This bile also carries metabolic waste products and other toxic substances for excretion. The excess bile is stored in a closely attached organ called gallbladder. In case you had an extra cheeseburger, the gallbladder comes to the rescue, spilling out the stored bile into the duodenum, the junction where the stomach ends and the small intestine starts.

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#### **THE HARD WORKER**

The air you breathe, the fluid you drink, and the food you eat, everything is filtered by liver. It sorts out the good from the bad, retaining only the good in your body. This organ is always at war with harmful substances and disease-causing germs. For all the hard work the liver does, it is constantly exposed to the dangers of diseases and disorders.

So for a happy liver, we need to follow a clean and healthy lifestyle and, most importantly, a healthy diet. And that’s where we move next.

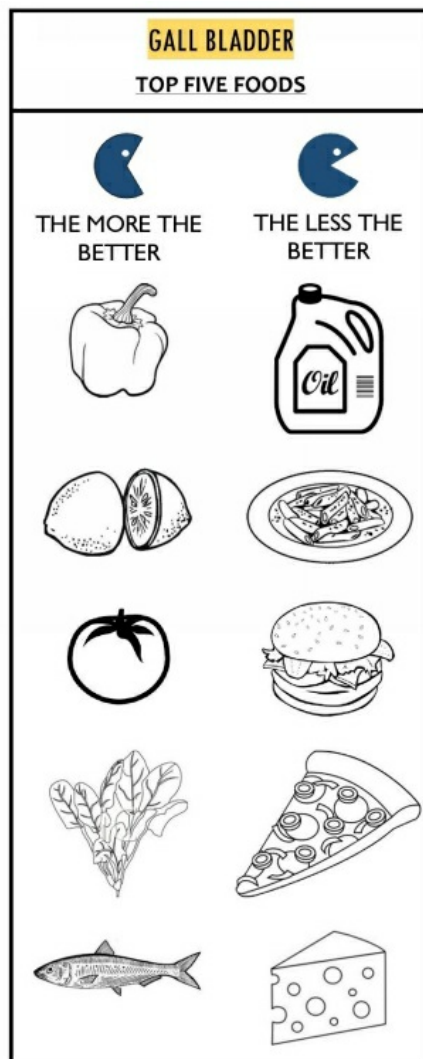
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#### **HAPPILY LIVER AFTER**

Maintaining liver health is the easiest thing you can do. Aim to

- 1 – eat a balanced diet,
- 2 – avoid alcohol, or drink in moderation,
- 3 – not overdo over-the-counter medications, and

4 – be away from breathing in or touching harmful substances. (Did I say your liver monitors even the things that your skin absorbs?)



Your liver is a lover of fiber. So don't forget to include a lot of fruits, vegetables, and whole grains in your diet. A healthier choice of oil for cooking can be olive, canola, corn, or sunflower oil. Foods having a lot of sugar or salt and processed foods are your liver's enemies. Keep yourself away from them!

When it comes to alcohol, your liver doesn't do well. In trying to break down alcohol, liver releases a lot of toxic by-products. And these toxic substances seriously injure your liver. So it's best to avoid alcohol for one's health.

Frequent use of over-the-counter medications or taking medicines

improperly also harms your liver. Do take your doctor's advice and follow a proper drug regimen.

Since everything that your skin absorbs goes through the liver for processing, touching or inhaling harmful chemicals does a lot of damage to you. Follow safety precautions to minimize the load of such chemicals.

## 4 Gland to meet you

From the mouth down to the intestines, glands are all over the digestive system to help in the digestion, absorption, and utilization of food nutrients.

### IN THE MOUTH, IN THE STOMACH, IN THE INTESTINE

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The mouth has salivary glands that release saliva, which moistens your food and breaks down complex sugars into simple sugars, or their fundamental units.

In the stomach, we have gastric glands that release strong acids and digestive enzymes. While the acid breaks down the food into smaller units, specialized enzymes degrade proteins from the food.

Food continues to be digested in the small intestine. Along the walls of the small intestine, various glands work to degrade sugars and proteins further into their building blocks, which are then passed into the bloodstream for the growth and functioning of all organs. Until the food reaches the colon, or large intestine, the digestion process never stops. This ensures full absorption and utilization of nutrients from the food we eat.

Attached to the small intestine is another major gland called **pancreas**. It's a factory for producing enzymes that maximally digest sugars, proteins, and fats.



It also secretes into the bloodstream two hormones called insulin and glucagon that regulate blood sugar level. Proper blood sugar level is important for proper functioning of major organs such as brain, liver, and kidneys.

## 5 Expecto excretum

Proper digestion and excretion is a gift to human health. The main organ fulfilling this purpose is the intestine. It is that coiled organ shaped like a chain of hot dogs and is connected to the stomach, ending at the rectum.

The intestine does more than just digesting food and excreting waste. It sends message to various parts of the body by producing substances for fighting bad microbes. It also helps maintain the body's water balance.

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### A LONG JOURNEY

The food in the small intestine is pushed along the organ's several twists and turns and gets digested. Nutrients are absorbed and get mixed into the bloodstream while the solid waste products travel a tortuous ten to twenty feet distance, the average length of the small intestine, and another three to five feet, the average length of the large intestine, before being pushed out of the human body.

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### I AM STUFFED

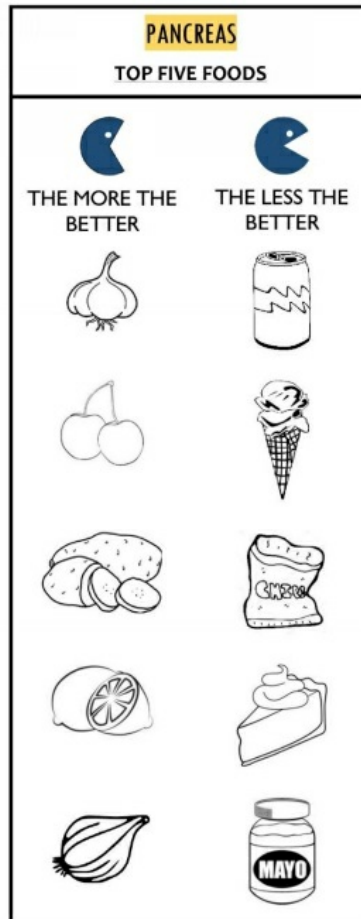
The small intestine has a host of glands along the walls. These glands produce hormones that signal the release of bile and pancreatic juice. Besides these duties, they help release water into the intestine. Ever wondered why you feel full after some time eating your food? Now you know why.

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### WHAT A WASTE

Remember peristalsis? That wavy motion along the esophagus and stomach? This movement continues throughout the length of the intestines, pushing the waste toward the rectum. That's when the toilet rush sets in. When you are caught up in a place where you can't excuse yourself, this rectum would save the day. It acts as a temporary reservoir of the waste.

A fiber-rich food facilitates easy passing of stool. In other words, you can free yourself from bathroom grunts. So do love your veggies and fruits.



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### **TAKING IN SALT WATER**

Apart from its main duty of excreting waste, large intestine helps in the absorption of water and mineral salts from the digested food. It is also the living place of different good bacteria that help break down proteins into their building blocks, the amino acids. A portion of your daily supply of vitamins, especially B and K, comes too from these bacteria.

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### **A PAIR OF KIDNEYS AND A FULL BLADDER**

Intestines are the primary organs for excreting solid waste. So what happens to the liquid waste? Your kidneys are right there for you. Kidneys help maintain acid, water, and salt balance in your body fluids. The remaining waste products and fluids are what we call urine. Urine forms in the kidney through a series of complex processes. The urine then reaches another organ called bladder, where it is stored for expulsion.

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### **THE ALL-IMPORTANT KIDNEYS**



Every day, the kidneys filter and circulate about 180 liters of fluid, and approximately two liters of urine is formed from this filtration and reabsorption. Your bladder can store the urine between one and eight hours.

Kidneys do many functions besides removing waste body fluids. They also release hormones to regulate blood pressure, make vitamin D, and signal the production of red blood cells.

## **6 Your search for a healthy lifestyle begins**

Through ages, humanity's common goal has been to keep oneself healthy and happy. Keeping the organs of the digestive system in top form will definitely help realize that dream. This book is the first step toward that healthy path. Here's a list of web resources that help in your journey to lifelong healthy lifestyle. Enjoy your life and stay healthy.

20 Foods That Are Bad For Your Health (Avoid Them!). Available at:  
<https://www.healthline.com/nutrition/20-foods-to-avoid-like-the-plague>

50 Seemingly Healthy Foods that are Bad for You. Available at:  
<https://www.shape.com/healthy-eating/diet-tips/50-seemingly-healthy-foods-are-bad-you>

Dietary Fats: What's Good and What's Bad. Available at:  
<https://familydoctor.org/dietary-fats-whats-good-and-whats-bad/>

75 Unhealthiest Foods On the Planet. Available at:  
<http://www.eatthis.com/unhealthiest-foods-on-the-planet/>

'Bad' Foods That Are Really Good. Available at:  
<https://www.webmd.com/food-recipes/features/bad-foods-that-are-really-good#1>

15 Surprisingly Healthy Foods. Available at:  
<https://www.webmd.com/food-recipes/ss/slideshow-surprisingly-healthy-foods>

Bad Foods You Should Be Eating. Available at:  
<http://www.eatingwell.com/article/15849/bad-foods-you-should-be-eating/>

It's Time to Stop Judging Foods as Good or Bad. Available at:  
<http://blog.myfitnesspal.com/time-stop-judging-foods-good-bad/>

Are There Good Foods And Bad Foods?. Available at:  
<https://www.acsh.org/news/2004/02/26/are-there-good-foods-and-bad-foods>

7 Bad Foods That Are Actually Good for You. Available at:  
<http://www.goodhousekeeping.com/health/diet-nutrition/g1662/healthy->

[unhealthy-foods/](#)

## 7 Acknowledgments

This book is a product of knowledge derived from the work of scientists and doctors. Numerous sources helped me shape this book. I acknowledge them all.

I owe my gratitude to two humans.

My friend Pradeep, who motivated me to finish this book. Thank you for breathing life into the book. I like all the picture works.

I thank my mom, for serving me with delicious and nutritious foods and being patient with me while I was pounding the keyboard all day and all night.

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<sup>[1]</sup> <https://www.merriam-webster.com/medical/Fletcherism>