Stomach Acid & Hunger

Introduction

It is not uncommon for individuals to occasionally feel hungry, weak and shaky or develop a 'sour stomach' between meals. Many will interpret this as a sign they need more nutrients because their symptoms seem to improve after they eat a little food. These symptoms can be so intense that it wakes them from their sleep.

In spite of the fact these symptoms can improve with food, they have little to do with our biological need for nutrients or energy. What you are about to learn is that these symptoms are due to an abnormal buildup of stomach acid due to poor functioning of your stomach and intestinal tract.

How Does the Intestinal Tract Normally Function

Throughout the day we constantly produce stomach acid. We produce even more when we eat a meal. Stomach acid is required to assist in digesting food, killing potentially harmful bacterial and is also helpful in activating various digestive enzymes.

Think of your intestinal tract as a conveyor belt that constantly pushes our intestinal contents forward throughout the day. Our esophagus pushes food into the stomach, the stomach pushes stomach acid and partially digested food into the small intestine, the small intestine absorbs ours nutrients and pushes the non-absorbable material (fiber) into the colon and the colon pushes material to the rectum.

This conveyor belt action of the intestinal tract is primarily under the control of neurological network referred to as the Autonomic Nervous System (ANS). The ANS is responsible for the contractions that empty the stomach and propel food along its course through the small and large intestines.

The conveyor belt action of the intestinal tract works 24 hours per day emptying the stomachs contents and passing it further along the way. When we eat food, the stomach is stimulated to produce even greater amounts of stomach acid and to empty even faster. This is an extremely important point because slowed emptying of the stomach triggers the single most common mimic of hunger, an excessive accumulation of stomach acid known as dyspepsia.

What's the Difference Between Dyspepsia and Heartburn?

Heartburn occurs when the esophagus is exposed to stomach acid. The valve between the esophagus and the stomach is designed to allow food and liquid to pass downward from the esophagus into the stomach as well as to prevent the backwash of acid into the esophagus.

Occasionally, the valve relaxes and allows stomach acid to reflux backwards into the esophagus. The acid stimulates nerve endings in the esophagus and causes the symptoms commonly referred to as heartburn or gastroesophageal reflux disease (GERD). GERD can be associated with a burning sensation in the chest, belching, a bitter taste in our mouth, coughing and wheezing.

Dyspepsia is a term reserved for the symptoms we might think of as a sour stomach, slight nausea or an upset stomach. These symptoms don't result from acid splashing back into the esophagus as in

heartburn. The symptoms of dyspepsia are from an abnormal accumulation of acid in the stomach. The acid accumulates because it is not being emptied normally, not because our stomach is producing too much.

To review, the symptoms of GERD are from stomach acid splashing backwards into the esophagus and dyspepsia is from too much acid accumulating in the stomach.

Confusing Dyspepsia with Hunger

We often confuse dyspepsia with hunger because you may feel shaky, slightly nauseated or weak and eating food makes the symptoms disappear. They go away because food stimulates the stomach to empty. The food therefore causes the excess acid to be emptied into the small intestine and your symptoms resolve.

The symptoms would also go away if we took an antacid such as Tums since they are truly the result from excess stomach acid. But since they go away after you eat food, you draw the reasonable conclusion the symptoms were due to low levels of blood sugar or some other nutrient. Consequently we believe the symptoms were a sign of hunger. So the next time we feel similar symptoms, we'll eat food again and the symptoms go away again. After a while it becomes almost second nature.

When the stomach doesn't empty as readily as it should, acid accumulates making us feel uncomfortable, bloated, slightly nauseated or even a little shaky. We eat some food and our symptoms seem to disappear. This happens because eating food stimulates the stomach to empty its acidic contents and this is the reason snacking relieves our symptoms. We only refer to these symptoms as hunger because food helps make us feel better.

But why doesn't the stomach work properly to empty the stomach acid in the first place? To understand why this happens, you'll need learn about a condition called insulin resistance and understand a little about the negative impact carbohydrates have on your body and specifically your autonomic nervous system.

Obesity, Insulin Resistance and Carbohydrates

The increasing rate of obesity in the United States is associated with a growing incidence of insulin resistance. Insulin resistance is the metabolic disturbance that causes a wide variety of medical problems such as type 2 Diabetes, Hypertension, abnormal cholesterol, heart disease and strokes, Sleep Apnea, many forms of cancer and Polycystic Ovarian Disease.

Insulin resistance was originally thought to be consequence of obesity but its cause seems to be more complicated than simply being overweight. Accumulating evidence suggests that insulin resistance is more the consequence of *the type of foods we ate in excess while becoming overweight or obese*than simply eating too many calories. More specifically, insulin resistance is caused mainly by the excess of carbohydrate consumption in our diet and not to simply being overweight.
If carbohydrates are the primary cause of insulin resistance then why does weight loss improve insulin resistance as well as the bloating, heartburn, bloating or a nagging sense of persistent hunger?

The reason weight loss helps with these conditions is because people significantly reduce their carbohydrate intake when reducing their calorie intake when losing weight. In a recent study that showed significant improvement in insulin resistance because of weight loss, the study participants had decreased their carbohydrate intake by about 100-150 grams per day. That's a reduction of the average American's carbohydrate intake by 1/3 to 1/2.

I have many patients who have successfully treated their symptoms from excess acid accumulation by simply reducing their carbohydrate intake. Most didn't lose a significant amount of weight but still had significant improvement in their symptoms with carbohydrate reduction alone. Many were able to stop taking the antacids they had previously been prescribed.

Countless studies demonstrate the ability of weight loss to reverse diabetes, high blood pressure, sleep apnea and the risk of stroke, heart disease and cancer. Again, what these countless studies were seeing was not the sole beneficial effects of weight reduction per say but also the beneficial effects of reduced carbohydrate intake associated with the decreased caloric intake that is necessary for weight loss.

When viewed in this respect, it's easy to understand why some individuals at a normal weight who eat relatively high proportion of carbohydrates still can develop dyspepsia as well as disorders related to insulin resistance such as high blood pressure, diabetes or heart disease.

Remember, it's not really their weight that makes the difference; it's the proportion of carbohydrates they eat, their age (we become more sensitive as we get older) and genetic differences in their sensitivity to the toxic nature of excessive carbohydrates.

How Carbohydrates and Insulin Resistance Lead to Heartburn and Hunger

The intestinal tract is primarily under the control of the parasympathetic branch of the Autonomic Nervous System (ANS). The parasympathetic branch is primarily responsible for the contractions that empty the stomach and propel food along its course through the small and large intestines.

As I have discussed in other articles on my web site, the ANS is a neurological network connecting your brain, spinal column and nerves to every organ in your body. This connectivity allows the ANS helps regulate and coordinate the function of all your body's organs.

For example, the ANS is responsible for maintaining your blood pressure, helping your digestive tract to function correctly, assists in maintaining various hormonal levels in the body, helping our pupils to dilate and constrict, regulating your body temperature with the amount we sweat as well as coordinating bladder function.

The ANS is particularly involved with the control and flow of the acid within our stomachs. The stomach is constantly producing acid throughout the day and acid production is increased when we eat.. When we swallow food, it passes through the esophagus down into the stomach. There is a valve between the esophagus and the stomach meant to prevent acid from splashing backwards into the esophagus when the stomach begins contracting in its effort to begin digesting our food.

While the stomach is contracting, the valve between the esophagus and the stomach needs to remain tightly closed otherwise the acid can splash backwards and cause the symptoms of burning, belching and bitter taste we associated with heartburn or GERD.

Scientific studies show that dysfunction of the parasympathetic branch of the ANS is the cause of poor esophagus-stomach valve function. Throughout your life you've heard multiple medical explanations for heartburn such as hiatal hernia, acidic foods, caffeine, alcohol and being overweight. These reasons have either been proven incorrect (e.g., hiatal hernia), contribute to excessive acid production (e.g., large meals) or have been discovered to contribute to the poor functioning of the autonomic nervous system (e.g., alcohol, caffeine).

How Do Carbohydrates Harm Our Autonomic Nervous System?

The precise mechanism of how excessive carbohydrate intake results in damage to the ANS system is not fully understood. There are many studies demonstrating that weight reduction (read

carbohydrate reduction) improves the medical disorders associated with insulin resistance and insulin resistance is caused by excessive carbohydrate intake.

Likewise, weight and carbohydrate reduction improves many physical symptoms of autonomic dysfunction such as urinary frequency, heartburn, bloating and lightheadedness. Many researchers now believe that the high levels of carbohydrates in the typical American diet are in excess of a threshold that the brain can tolerate.

Another example of a food item that can cause toxic effects when consumed in excess is alcohol. Many studies have shown that drink 1-2 alcoholic beverages such as wine per day is seemingly harmless to our health. But it's common known that drinking 1-2 *bottles of wine per day* more than likely will lead to cirrhosis (permanent loss of liver function) of the liver as well as damage to our heart muscle leading to a condition known as cardiomyopathy.
Also, people falsely believe they needn't worry about eating too many carbohydrates if they exercise regularly. They will simply "burn them off". The toxicity of excessive carbohydrates is not due to the excessive calories they may provide but more due to the toxic effect.

Thinking that exercise can rid one of the toxic effects of carbohydrates is similar to an alcoholic thinking that drinking a bottle of vodka is harmless since they will exercise enough to burn off the calories in the vodka. Exercising more may burn off more calories but will not affect the potential toxic nature of either alcohol or carbohydrates.

The amount of carbohydrates in the American diet over has crossed a toxicity threshold in many individuals. The toxicity excessive carbohydrate consumption is resulting not only in the diseases associated with insulin resistance but is also damaging our autonomic nervous system.

Remember, the autonomic nervous system controls the function of every organ in your body. And when the autonomic system is damaged and not functioning properly, we experience symptoms such as bloating, heart burn, lightheadedness, fatigue, excessive sweating, flushing of our skin, constipation as well as urinary frequency, urgency and incontinence. Reduce your carbohydrate intake and you can eliminate these symptoms.

How Many Carbohydrates Should We Eat?
To answer this question we need to look at the evolution of our Stone Age ancestors and the amount of carbohydrates they consumed. Scientific evidence suggests that our primitive ancestors ate a diet that consisted predominantly of animal tissue (protein and fat) and plants known as browsing foliage (dark green leafy plants).

During the Stone Age, carbohydrates were very uncommon in the wild and consisted of occasional roots, wild fruit or honey. Overall, the availability of carbohydrates was uncommon. Other than being on a tropical island, when was the last time you saw some fruit such as an apple or orange when walking in the woods? These foods do not grow commonly in the wild. They are cultivated plants that became more readily available after the agricultural revolution.

Many Americans consume more carbohydrates per day than our Stone Age ancestors consumed in a year. The amounts of carbohydrates available for human consumption didn't begin to increase until the agricultural revolution (5,000 -10,000 years ago) when man learned to grow grains such as wheat, barley and millet. The domestication of livestock and the consumption of livestock milk became an additional source of carbohydrates (milk sugars) as well.

But 10,000 years is a very small span of time from an evolutionary perspective. Although there may have been a few beneficial evolutionary mutation associated with protection from infectious diseases in the last 10,000 years, science has failed to demonstrate any adaptive genetic mutations that might have changed with the subsequent marked increase in carbohydrates in the human diet.

To put the evolutionary time span into perspective, if the entire span of human evolution is represented by a 100-yard football field, the last 10,000 years would encompass only the final ¼ inch of the entire 100-yard field. As you can see, 10,000 years is not a significant amount of time compared to the millions of years required for human evolution.

The point of this is to help you understand that we were designed through evolution to adapt to eating predominantly animal tissue (protein and fat) and low amounts of carbohydrates. We did not develop the metabolic ability to handle such large quantities of carbohydrates in our diet and our bodies are suffering because of it.

To put it another way, the average American consumes more carbohydrates in a day than our Stone Age ancestors consumed in a year. It's the excessive amount of carbohydrates in our diet that are having a toxic effect on our nervous system.

Carbohydrate Reduction and the Theory of Neuroplasticity

Neuroplasticity is a relatively new scientific concept that our neurological tissues (brains, spine and nerves) has some ability to recover function from at least mild levels of insult or damage. Neuroplasticity means 'nervous tissue' that has the ability to 'regain its function' after being altered just as plastic regains it shape after being bent.

After a stroke, patients have the ability to regain some neurological function. After a nerve or the spinal column is damaged by an injury, remarkable degrees of recovery have been known to occur. The recovery in these cases may not be complete in severe cases but can often be complete with mild injuries to the nervous system.

After the Autonomic Nervous System (ANS) is damaged, it too shows a remarkable ability to recover from the toxic effects of excessive carbohydrates. I have many patients who have completely recovered from the neurological damage that causes heartburn, erectile dysfunction, lightheadedness and urinary disturbances after reducing their carbohydrate intake.

One exception to neuroplasticity of the ANS is in patients with long standing type 2 Diabetes Mellitus. In this circumstance, the nerves have been severely damaged by the toxic effects of excessively high blood sugar and insulin levels as well as the damaging effects of inflammation associated with insulin resistance. Fortunately, most patients who have worked at controlling their diabetes still have a good chance of reversing the their ANS dysfunction.

How Many Carbohydrates Are Too Much?

What should you reduce your total daily carbohydrate intake to? The average American diet now consists of 50-60% of calories from carbohydrates. Scientific studies suggest that you can greatly improved health if you reduce your carbohydrate intake to approximately 20-25% of your total daily caloric intake. This is equal to about 100-125 grams of carbohydrates per day for women and 125-150 grams per day for men.

First start by reducing the larger amounts of carbohydrates from your diet; start with the frequent servings of potatoes, rice and pasta and the sugar containing drinks. Replace these with more protein and low carbohydrate vegetables.

After a week or 2, count the grams of the remaining carbohydrates in your daily diets for a few days. You will quickly realize the high amount of carbohydrates you had been consuming on a regular basis.

Reducing your carbohydrate intake to 20-25% of your total caloric intake has a dramatic improvement in the diseases arising from insulin resistance as well as improving your neurological functioning. Your triglyceride and HDL cholesterol levels improve, your blood pressure will be greatly reduced and your blood sugar levels will normalize as your body's response to insulin to improves.

Carbohydrate reduction has been calculated to have 6-8 times greater power of reducing the risk of cardiovascular disease (strokes and heart attacks) than do the statin medications that are commonly prescribed to lower LDL cholesterol levels. Why treat these conditions with potentially toxic medications when your can prevent and even reverse these conditions by simply reducing your carbohydrate intake.

Summary

If you're experiencing persistent hunger between meals, occasional nausea or episodes that feel like low blood sugar, eliminate these symptoms by simply reducing the carbohydrates in your diet. You'll notice significant improvement in only a few weeks.

If you would like to learn more about how to reduce your carbohydrate intake and lose weight while your doing it, simply go to www.ScienceofHunger.com and download the free Science of Hunger Weight Loss Guide. It's full of more information about protein, carbohydrates, insulin resistance and pointers on changing our diet.

And if you have learned something useful from this article, I urge you to pass it on to 1 or 2 of your friends and encourage them to not only improve their lightheadedness and fatigue but their overall health as well.