



“Reflux is a disease of what we eat and when we eat. Excessive acid and fat in the diet, late-night eating, and consumption of soft drinks and alcohol are the most important and reversible lifestyle-related factors contributing to...reflux. ...Healthy function can be restored, with diet and lifestyle far more important than medication.”

...Dr. Jamie Koufman, Founder, Voice Institute of New York

Winter 2015: Dietary and Lifestyle Strategies for Acid Reflux

Acid reflux? If we immediately think heartburn, indigestion, and Tums, we miss its many complexities. Have patience with the next two paragraphs. If you are one of the 100 million Americans who suffers from acid reflux, this detail is important for understanding reflux and its wide, insidious reach...

Acid reflux results when poor-functioning esophageal sphincters allow stomach acids to backup into the esophagus and the airway. The airway includes the sinuses, voice box, bronchi and lungs, and the throat with its sensitive mucous lining which protects the vagus nerve that lies just underneath. The vagus nerve regulates the airway and digestive tract to control breathing, swallowing, the cough reflex, the vocal chords and esophageal sphincters. Because acid reflux can cause injury not only to the esophagus but also to the airway, its symptoms are not limited to heartburn and indigestion alone. Other conditions may present without heartburn, such as chronic cough, post-nasal drip, throat clearing, hoarseness, an acid taste in the mouth, difficulty swallowing or breathing, and choking episodes.

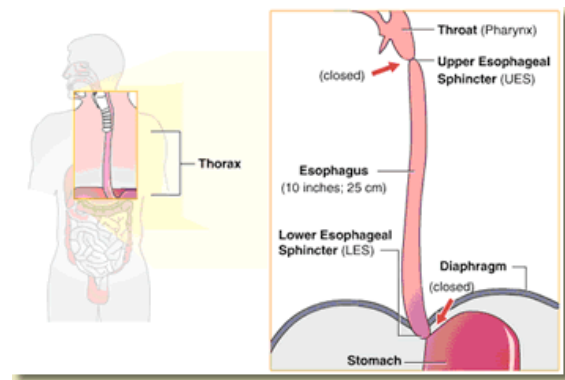
Classic heartburn and indigestion reflux, commonly called GERD (gastro-esophageal reflux disease), results when the lower esophageal sphincter (LES) located at the lower end of the esophagus allows pepsin and stomach contents to backflow into the esophagus, causing pain and burning in the area located close to the heart (see diagram on page 2). In contrast, symptoms higher up in the esophagus that are linked to the upper esophageal sphincter (UES) range from allergy-and asthma-type symptoms, chronic cough and post-nasal drip. These symptoms can be caused when the UES allows stomach acids and its fumes to back up and damage the delicate tissues of the airways and throat/vagal nerve. Because tissues of the airways are readily injured and numbed to pain, they do not send out pain messages to warn of trouble. For this reason, airway/throat reflux, sometimes called “silent reflux,” often goes unrecognized, untreated, and/or misdiagnosed. One in every five Americans suffers from silent reflux and more than one in five from GERD. Compared to a 10% incidence of reflux in 1970, today 40% or 100 million Americans are troubled by acid reflux, with numbers that grow daily.

Acid reflux can be a precursor of Barrett esophagus and esophageal cancer. Esophageal cancer thankfully touches relatively few at present so it grabs less attention than other forms of cancer, but it is lethal and is today the fastest growing type of cancer in America. Also concerning is the fact that acid reflux now affects younger segments of the population: Once thought a problem of the obese and older age groups, reflux currently affects all age groups about equally, with more than one in three young adults aged 20-29 currently suffering from reflux.

The dramatic increase in acid reflux across all adult age groups reflects in part our modern over-worked, over-programmed lifestyle that often discourages home cooking and leads us to surrender to the convenience of commercial foods and beverages. In so doing, our food supply has become more and more acidic with time, because soft drinks and commercially prepared foods are highly acidic.

Most soft drinks have a pH in the range of 2-4, an acidity replicating stomach acid. In view of the 12-fold postwar per capita increase in soft drink consumption by folks aged 12-29, and the popularity of fast foods and convenience snacks, it is not surprising that young adults are increasingly troubled by reflux.

Foods prepared commercially are also a factor bending our dietary profile toward more acids compared to 40 years ago. This is because Congress, in response to an outbreak of food poisoning in the early 1970s, passed a law policed by the FDA demanding food and beverage companies to add acids to canned and prepared foods and bottled drinks. While the goal of the Title 21 legislation was to kill bacteria and extend the shelf life of commercial foods by bringing the pH of commercial products down to equal the acidity of stomach acid, it has also added more and more acidity to our food supply. The long-term effects of this action are unknown and untested, but the current acid reflux experience of young adults offers its own warning. Next time you shop for canned or bottled products, read the list of additives. Can you guess why ingredients like citric acid and vitamin C are added? [You can wash and drain some canned foods like beans to diminish acidity.]



When we consume acidic foods and beverages typical of our modern diet, rather than traditional foods from home kitchens of the past, we dump excessive acids into the stomach, which is already highly acidic. Acid reflux can result, especially if we overeat, drink alcohol or carbonated beverages, wear tight belts or clothing, bend over, lift heavy objects, lie down 2-3 hours after eating, or if we are overweight.

To block excess stomach acids, the drug industry developed over-the-counter histamine-2 receptor antagonists (H2RA) that are sold under such names as Tagamet, Zantac, Pepcid, as well as proton pump inhibitors (PPI's) that are marketed as Nexium, Prevacid, and Prilosec. As a testament to the growing acid reflux problem in America, PPIs have become in recent years extremely popular best sellers, with the 2012 sales of Nexium at almost \$6 billion making it the premier drug of choice.

H2RAs and PPIs provide no long-term answer for reflux. They are best used to suppress stomach acid in the initial stages of reflux recovery to complement dietary and lifestyle changes and are not a long-term reflux solution in themselves: By suppressing symptoms, PPIs can mask tissue damage and lull reflux sufferers who do not also adjust diet and lifestyle into a false sense of well-being. PPI's can also cause abdominal pain, bloating, and digestive problems and often result in a rebound in acidity once they are discontinued. Diet and lifestyle are the only lasting ways to contain acid reflux.

Controlling Pepsin in the Esophagus and Airway by Restricting Acidic Foods and Beverages

Pepsin is the major enzyme in the stomach. It lies dormant and is inactive unless and until it comes in contact with acids. In the stomach's acidic environment, pepsin's job is to digest the proteins we eat. Pepsin's home is the stomach, but when the LES allows pepsin to backflow into the esophagus, it can have corrosive effects on the delicate mucous lining of the esophagus and the tissues of the airway. The role that pepsin plays in acid reflux is important to understand, because it is pepsin activated by acids, not acids per se, that causes reflux-related tissue damage associated with esophageal and throat cancers.

Poor food and beverage choices that cause the esophageal sphincters to relax, as well as overeating, drinking with meals, or bending over or lying down after eating can exert pressure on the LES and lead to a backflow of pepsin into the esophagus. There, pepsin can adhere to the tissues of the esophagus and lie dormant, waiting to be activated by acidic foods and beverages as they slide down the "feed tube" on the way to the stomach. Pepsin is most active in a 1-4 pH environment and becomes progressively less active above a pH of 5-6. So, by limiting acidic foods and by combining acidic foods with those that are alkalizing to raise the pH of any given food combination to or above pH 5-6, we can do a great deal just through diet to assure that pepsin does not get the upper hand.

"What Do You Mean, I Can't Eat Blueberries?" What to Eat for Reflux

I receive more questions from people suffering from acid-reflux than any other health issue. There is a great deal of confusion about what to eat and what not to eat, especially about "healthy" foods like blueberries, plums, onions and garlic that can be triggers for acid reflux.

If I have a major goal in writing this newsletter, it is to try to help eliminate misunderstandings about *acidic* foods, which *do* contribute to acid reflux, and *acid-forming* foods, which *do not*. [For a discussion of how *acid-forming* foods and foods that are alkalizing after digestion and assimilation affect *blood pH* and chronic disease, see May/June 2013 newsletter, "Alkalizing Foods to Prevent Chronic Disease."]

As an example to illustrate the confusion surrounding acidic foods that have an ultimate alkalizing effect on the body, let me mention one of my health-conscious friends who religiously sips a cup of hot water with a slice of lemon after a heavy, late evening meal. Indeed, this is a good "end strategy" for alkalizing the body and supporting the liver, but lemon with its pH of 2, is highly acidic and can initially aggravate reflux by activating pepsin in the esophagus on its way to the stomach. Tables of foods listed by pH can be confusing for anyone with acid reflux since most of these measure the effect foods have on blood pH *after* digestion and assimilation. Lemon juice, apple cider vinegar, fermented foods like sauerkraut may seem like healthy, alkalizing choices, and they can be for people who have no problem with reflux, but they are not good choices for those who do.

The concept of choosing foods with good intentions but that, in fact exacerbate reflux, extends to foods like pineapple and mint: Pineapple contains bromelain, a protein- and carbohydrate-digestive enzyme often thought of as a good supplement to be eaten with meals, but pineapple's pH of 3.5 can lead to reflux trouble. Likewise, with indigestion, we might reach for mints, since mint is known as a carminative that relieves bloating and gas. But peppermint and spearmint contain volatile plant oils that encourage the esophageal sphincters to relax. So, mint tea and after dinner mints are also not good choices for people suffering from reflux. Instead, try chamomile or ginger tea.

Pathways4Health.org Guide for Acid Reflux

Acidic Foods (pH<5) versus Non-Acidic Foods (pH>5/6)



<p><u>Non-Acidic/Acid-Forming Foods</u> Animal meats Fish Eggs Whole grains Dried beans Dried legumes Bread Oatmeal Whole grain porridge Pasta</p>	<p><u>Non-Acidic/Alkalizing Foods</u> Leafy green vegetables Celery, Fennel Mushrooms Most Vegetables (<i>except onions, garlic, tomatoes, peppers</i>) Banana Melons Seaweeds Sea salt</p>
<p><u>Acidic/Acid-Forming Foods</u> Alcohol Soft drinks High Fructose Corn Syrup</p>	<p><u>Acidic/Alkalizing Foods</u> Lemon, limes Grapefruit, citrus Berries...blue, black, etc. Cherries Pears Pickles Sauerkraut Vinegar</p>

Lifestyle Antidotes to Reflux:

- Initially, eat foods with a >pH 6; for maintenance, foods with a >pH 5.
- Avoid alcohol, tobacco, late-night eating, and overeating.
- Allow 3-4 hours between the last meal or snack and bedtime.
- Chew well, and try to eat meals when not on the go and under stress.
- Avoid tight belts and clothing, bending over, lifting, or lying down shortly after eating.
- Avoid large meals, fatty foods, and carbonated beverages, especially at night.
- Eat foods with strong downward energy like carrots and parsnips.
- Consume lean animal meats to increase sphincter pressure; whole grains and high-fiber foods to satisfy hunger; and healthy fats, preferably early in the day, to prevent overeating.
- Try chewing gum (non-mint, additive free) to stimulate saliva, pH 6.5+, to neutralize reflux.

What to eat to counter reflux? In the *initial* stages of healing, it is best to eat only foods above pH 6 and avoid specific vegetables like onions, garlic, tomatoes, and peppers, which can act as triggers. Also avoid selected fruits, particularly all citrus, pineapple, plums, and berries. While both food groups are loaded with vitamins, minerals and micronutrients, for the reflux sufferer, they can aggravate reflux. Later after improvement, limit foods to those above pH 5 or combine a few carefully with high alkaline pH choices.

Perhaps counter-intuitive, foods to emphasize are animal proteins (except most dairy) and whole grain carbohydrates. Although these foods are acid-*forming after they are metabolized*, their pH is in the alkaline range so they do *not* activate pepsin in the esophagus (see Guide, page 4).

If you suffer from acid reflux and would like a reference guide to a food's natural pH, you might want to use the Food and Drug Administration's 2007 guide, "Approximate pH of Foods and Food Products" <http://www.foodscience.caes.uga.edu/extension/documents/fdaapproximatephoffoodsiacf-phs.pdf>. FDA uses these readings to dictate to Big Food the amount of acidity they must add to their products.

Beyond pH, Additional Factors to Consider

Acidity and pH readings are important, but they are not the only issue to consider for acid reflux. Other factors that cause reflux: Esophageal sphincter function is important, something that is affected by how much and which kind of proteins, fats, and carbohydrates we eat. There are also trigger foods/drinks/spices like alcohol, excessive caffeine, most dairy and cinnamon that cause the release of excess stomach acids. In addition, damage to the tissues of the esophagus is partly a function of the volume and acidity of stomach contents that are refluxed and the length of time these are in contact with esophageal tissues so late-night eating, fried or fatty foods that delay digestion, and alcohol soon before bed cause trouble.

Leaving behind our pH lens, let's first think of the three macronutrient food groups:

Proteins: Proteins in the form of lean animal meats, fish, and shellfish help to increase esophageal sphincter pressure, so they are good foods for reflux. The exception is dairy and other foods high in calcium because amino acids and peptides that are produced from digesting the proteins in dairy products and calcium stimulate gastrin, which in turn triggers the release of hydrochloric acid.

Fats: Trans fats and fatty food decrease sphincter pressure; fats also delay digestion, so food takes longer to empty the stomach, putting more pressure on the lower sphincter. This is especially important to remember when eating at night soon before bedtime. (It takes 3-4 hours for the stomach to empty, depending upon what is eaten. Try to consume most fats and heavy proteins early in the day, with lighter fare like vegetable soups and salads for supper.)

Natural fats like extra virgin olive oil, unrefined coconut oil, and butter (salted) from grass-fed animals play a health-supportive role in any program to curb acid reflux because fats satisfy hunger and can help prevent overeating carbohydrates. As mentioned, fats are best consumed earlier in the day with lighter fare at night to allow the stomach to empty before bed.

Carbohydrates: Many carbohydrates like whole grains, oven-roasted potatoes and root vegetables (except onions and garlic) are good choices because they are non-acidic and high in fiber. Fiber, like fats, satisfies hunger and helps the body expel wastes.

Specific Foods to Avoid:

Foods that encourage the body to release acids, particularly those that stimulate the body to release hydrochloric acid: Alcohol, coffee (both caffeinated and decaffeinated), tea (those with methylxanthines), and calcium/most dairy.

Foods that relax the esophageal sphincters: Mint/peppermint, chocolate, and alcohol. Chocolate is a particular offender because it is high in fat and contains caffeine and cocoa.

Foods that aggravate an inflamed esophagus: Citrus fruits and juices (especially on an empty stomach), acidic foods, soft drinks, alcohol, as well as pepper, hot spices, and sometimes clove, nutmeg, cinnamon.

Foods and lifestyle factors that increase pressure on the sphincters: Carbonated beverages, fatty foods including cheese and greasy steaks and burgers. Also lifestyle factors like large meals and overeating, drinking with a meal, tight-fitting clothing, and bending over, lifting, or lying down soon after a meal.

Other foods that can trigger reflux: Any number of idiosyncratic trigger foods that may be particular to you, as well as onions, garlic, tomatoes and peppers that relax the esophageal sphincters.

Antidotes to Reflux (see also Guide, page 4):

- Avoid or limit alcohol, especially at night; lose weight if overweight; avoid tight belts/clothing; bending over, lifting, vigorous exercise, or lying down shortly after eating.
- Allow 3-4 hours between the last meal or snack and bedtime.
- Eat small meals and avoid carbonated beverages, especially with meals.
- Consume lean animal meats to help increase sphincter pressure; whole grains and high-fiber foods to satisfy hunger; and healthy fats, preferably early in the day, for satiety and to prevent overeating.
- Eat “downward energy” foods, those that burrow down through the ground to grow like carrots (pH 7) and parsnips (pH 6.6). [See October 2010 Newsletter, “The Signatures of Foods.”]
- Chew well; consider drinking alkaline water like Evamor. Try ginger (pH 6.5) chewing gum to stimulate the release of saliva; saliva (pH 6.5+) helps neutralize reflux.

Summary and Conclusion

Many experts believe that acid reflux can be eliminated by diet and lifestyle adjustments, and I hope this is true. However, it seems logical to me that sphincter muscles tire under the weight and pressure of time and tend to lose elasticity as we age. I have to wonder whether acid reflux can be totally contained by a cautious diet and lifestyle. But, to me, it really does not matter. What matters most is that we try to do all that we can to help our body perform as best it can with each passing year. I believe the most important idea for someone who attempts to “follow all the rules” and still has some lingering reflux is not to give up and think that health-supportive strategies are not working: Think of how much worse off we would be without such a regimen. Wherever we are on the spectrum of health, our system deserves our support.

Reading Resources

Books:

Gropper, SS, Smith, JL, and Groff, JL, *Advanced Nutrition and Human Metabolism*
Koufman, Jamie, *The Chronic Cough Enigma*

Journal Articles:

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Wright LE, Castell DO, The adverse effect of chocolate on lower esophageal sphincter pressure. *Digestive Disease* 1975; 20: 703-7.