

Effects of Caffeine and Coffee on Heartburn, Acid Reflux, Ulcers & GERD

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More than 95 million Americans suffer from digestive problems of the upper GI tract including acid reflux or acid indigestion (heartburn), GERD (gastroesophageal reflux disease) and ulcers. Hyperacidity in the stomach and upper digestive tract can be painful and debilitating, but dietary adjustments can significantly affect disorders in the upper GI tract. Some of the foods associated with aggravating these conditions include acidic substances such as coffee, citrus fruits and tomatoes, as well as dietary fat, spicy food, onions, chocolate and caffeine.

Not everyone affected by these foods is diagnosed with a chronic disease; more than 60 million Americans experience episodes of acid indigestion as often as once each month and some studies suggest that as many as 15 million experience episodes of acid indigestion daily. Many people self-medicate with antacids when they could adjust their diet including reducing coffee and caffeine consumption in order to find relief. These conditions are serious: at least 10 million people are hospitalized each year for gastrointestinal disorders and the annual total of health care costs associated with these exceeds \$40 billion.¹

Heartburn, Acid Reflux & GERD

Heartburn, or pain behind the breastbone, is a condition in which there is reflux of acid from the stomach into the sensitive esophagus, often caused by a relaxation or weakening of the lower esophageal sphincter, the ring of muscle between the esophagus and the stomach. Foods, including dietary fat, chocolate, mints, coffee, onions, citrus fruit, and tomatoes, have been associated with increased incidence of acid reflux in susceptible persons.²

When symptoms are recurrent or esophageal tissue is damaged, GERD develops. GERD affects 5-7% of the global population.^{3,4} When untreated, it can cause complications such as chest pain, bleeding, esophageal stricture (narrowing or obstruction of the esophagus) or Barrett's esophagus (a pre-malignant condition). Symptoms that indicate damage to the esophagus has occurred include: pain, dysphagia (difficulty swallowing), bleeding and choking. Some risk factors of these more serious conditions are alcohol use, pregnancy, weight gain and coffee consumption.⁵

Ulcers

Ulcers are another common problem, afflicting approximately 20 million Americans, according to the American College of Gastroenterology. Ulcers can occur in the stomach or duodenum, and are regions where the lining has been destroyed by stomach acids or digestive juices. Even small areas of damage can cause intense pain. The presence of the bacteria *Helicobacter pylori* is also implicated as a predisposing factor in ulcer development, but not everyone infected with *H. pylori* develops ulcers. It is unknown why this is the case, although a strong immune system provides protection against the bacteria's ability to colonize damaged areas of the stomach lining. Increased levels of cortisol and other stress hormones stimulated by caffeine consumption and coffee drinking suppress the activity of the immune system and raise stress levels which are associated with ulcer formation. Other predisposing factors include: being male, family history, prolonged stress, skipping meals, cigarette smoking and coffee ingestion.⁶

Of all the dietary habits that people find difficult to change, coffee drinking is one of the most challenging because it is so entrenched in cultural habits and caffeine addiction.⁷ Withdrawal symptoms can involve painful headaches, nausea, vomiting, and loose stools.⁸ People whose health problems would be ameliorated if they gave up coffee can improve their chance for successfully quitting coffee if they have both a satisfying alternative and a method to slowly decrease their caffeine intake to reduce withdrawal symptoms.

The following characteristics of coffee have an adverse effect on the upper GI tract:

▪ **Coffee Decreases Pressure in the Lower Esophageal Sphincter**

- Coffee has been shown to decrease pressure in the lower esophageal sphincter, contributing to gastroesophageal reflux. This suggests that coffee can either cause or exacerbate heartburn in susceptible individuals.^{9,10,11}
- The type of coffee bean roasting method used does not reduce the tendency of coffee to produce gastroesophageal reflux. Sensitive individuals, even when consuming coffee produced through different roasting processes, while fasting or after a meal, experienced heartburn, regurgitation and dyspepsia.¹²
- Coffee consumption has been associated with greater incidence of heartburn than drinking other fluids such as water.¹³
- Both caffeinated and decaffeinated coffee exacerbate gastroesophageal reflux, and coffee creates more reflux than caffeine added to water, suggesting that other components of coffee contribute to its aggravating effect.¹⁴

▪ **The Acidity of Coffee Irritates the Stomach**

- Coffee is highly acidic and it can stimulate the hypersecretion of gastric acids. Decaffeinated coffee has been shown to increase acidity to a greater degree than either regular coffee or caffeine alone.¹⁵ Both caffeine and coffee stimulate gastric acid secretion and decaffeinated coffee raises serum gastrin levels.^{16,17} A study comparing the effect of decaffeinated coffee on gastric acid secretion and gastrin levels to high protein meals, which normally stimulate high acid production, found that decaffeinated coffee was a more powerful stimulant of acid secretion and gastrin release than the meals.¹⁸
- Coffee tends to speed up the process of gastric emptying, which may result in highly acidic stomach contents passing into the small intestine more rapidly than normal. This may lead to injury of the intestinal tissue.¹⁹
- There is a clear relationship between reduction of stomach acid and heartburn relief.²⁰

▪ **Coffee Is a Risk Factor Associated with Ulcer Susceptibility**

- Coffee is linked to ulcer susceptibility. Both caffeinated and decaffeinated coffees have an acid-stimulating effect, and therefore it is recommended that people with ulcers restrict not only caffeinated but also decaffeinated coffee intake.²¹

▪ **Coffee Elevates Stress Hormones**

- Caffeine in coffee elevates the stress hormones cortisol, epinephrine (also known as adrenaline) and norepinephrine.^{22,23,24,25} These hormones are responsible for increased heart rate, increased blood pressure, and a sense of “emergency alert”. Blood is diverted from the digestive system which can cause indigestion. The circulation of oxygen to the brain and extremities is decreased and the immune system is suppressed.
- The purpose of the body's "fight or flight" response initiated by the release of cortisol, epinephrine and norepinephrine is to provide the body with a temporary energy boost for

intense physical activity. With today's sedentary lifestyle, the continual state of increased stress resulting from caffeine consumption may affect symptoms of heartburn and GERD. Although the relationship between stress and symptoms of gastroesophageal reflux is still unclear, evidence suggests that anxiety, along with exhaustion resulting from sustained stress, are both associated with exacerbation of heartburn and esophageal reflux.²⁹

- **Coffee Suppresses Immune System Function**
 - Immune system suppression caused by chronic increased levels of stress hormones induced by caffeine intake can create a situation in which the bacteria *Helicobacter pylori* can thrive in the stomach. Infection by *H. pylori* is implicated in ulcers.

- **Caffeine Interferes with GABA Metabolism**
 - GABA (Gamma-aminobutyric acid) is a neurotransmitter naturally produced in the brain and nervous system as well as the GI tract. It plays an important role in mood and stress management and exerts a calming effect on the GI tract.
 - Caffeine has been found to interfere with binding of GABA to GABA receptors, preventing it from performing its calming function.²⁶ Studies suggest that stimulation of GABA receptors may be beneficial for people with reflux arising from low lower esophageal sphincter pressure.^{27,28} In addition to its direct effect on the GI tract, GABA's role in stress management is also compromised in the presence of caffeine. This is significant as psychological stress has been shown to be an exacerbating factor in heartburn and ulcers.²⁹

Recommendation:

Individuals who suffer from or are susceptible to problems with the upper gastrointestinal tract, would do well to avoid coffee as it has been demonstrated to be a contributing factor associated with increased incidence of gastritis, ulcers, acid reflux and GERD. Dietary changes that include weaning off of coffee and all other sources of caffeine can help relieve symptoms of these disorders.³⁰ Nutrition professionals can support gastrointestinal patients by guiding them through the process of substituting a non-caffeinated, alkaline herbal coffee that brews and tastes just like coffee.

Kicking the Caffeine Habit:

The social prevalence of coffee drinking and the addictive side effects of caffeine can cause problems with patient compliance. Caffeine-free herbal coffee marketed under the brand name of Teecino[®] helps coffee drinkers replace their regular or decaf coffee with a satisfying alternative. Coffee drinkers need a dark, full-bodied, robust brew to help satisfy their coffee craving. Teecino satisfies the 4 needs coffee drinkers require in a coffee alternative:

- 1) Teecino brews just like coffee, allowing coffee drinkers to keep their same brewing ritual.
- 2) It has a delicious, deep roasted flavor that is very coffee-like.
- 3) It wafts an enticing aroma.
- 4) People experience a natural energy boost from nutritious Teecino.

Teecino offers the following health benefits to people suffering from upper GI tract disorders:

<u>Beneficial Features of Teecino</u>	<u>Teecino Ingredients</u> . ^{32,33,34,35,36,37}
<ul style="list-style-type: none"> ▪ Inulin fiber from chicory <ul style="list-style-type: none"> • Unlike coffee, Teecino has nutritional value, including inulin, a soluble fiber that helps support a healthy population of beneficial microflora • Inulin improves mineral absorption ▪ Naturally Caffeine-free <ul style="list-style-type: none"> • No chemical processing like decaf coffee ▪ 65 mg of Potassium <ul style="list-style-type: none"> • Teecino is a source of potassium, an electrolyte mineral that is important in the healthy functioning of stomach acid production. • Potassium in liquid form is easily absorbed to help relieve muscle, mental and nervous fatigue. ▪ Alkaline – helps reduce acidity <ul style="list-style-type: none"> • As opposed to acidic coffee, Teecino is alkaline, which reduces stomach acidity. Current treatments for reflux focus on reducing acidity. ▪ Gluten Free <ul style="list-style-type: none"> • Gluten does not extract into boiling water. Tests show Teecino is gluten free although it contains barley. 	<ul style="list-style-type: none"> ▪ Carob <ul style="list-style-type: none"> • An herb that has long been used for various diarrhea disorders due to its anti-diarrheal properties. ▪ Barley <ul style="list-style-type: none"> • Has a soothing effect on the GI tract and has been used to treat gastritis as well as diarrhea and inflammatory bowel conditions. ▪ Chicory root <ul style="list-style-type: none"> • Used to treat abdominal cramps, vomiting, and diarrhea. • Contains inulin fiber which has been shown to improve mineral absorption in experimental models. ▪ Almond <ul style="list-style-type: none"> • Useful for treating gastric complaints and gastritis. ▪ Figs <ul style="list-style-type: none"> • Mucilages and pectin within the fruit provide a soothing effect on inflamed gastric or intestinal mucosa. A good source of potassium. ▪ Dates <ul style="list-style-type: none"> • In Indian medicine, traditionally used for relief of gastric complaints. • Contains potassium.

The Pain-free Way to Wean off of Coffee:

Start by mixing normal coffee 3/4 to 1/4 Teecino Herbal Coffee. Gradually reduce the percentage of coffee over a two to three week period until only 100% Teecino Herbal Coffee is brewed. Gradual reduction of caffeine is recommended.³¹ Side effects such as headaches, fatigue, and brain fogginess can be avoided as the body gradually adjusts to less reliance on stimulants.

Example: Use the following proportions if you make a 10-cup pot of coffee daily:

DAY	Regular Coffee	Teecino
Day 1-3:	4 tablespoons	1 tablespoon
Day 4-6:	3 tablespoons	2 tablespoons
Day 7-9:	2 tablespoons	3 tablespoons
Day 10:	1 1/2 tablespoons	3 1/2 tablespoons
Day 11:	1 tablespoon	4 tablespoons
Day 12-13:	1/2 tablespoon	4 1/2 tablespoons

Day 14:	0	5 tablespoons
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