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## On The COVER

### Natural Relief from Heartburn!

By Russell Martin



Anterior view of the top half of the digestive tract. This image uses a semi-transparent male torso to reveal a cross-section of the digestive system from the esophagus into the stomach.

If you have ever wondered why you see so many TV commercials for heartburn medications such as Prilosec®, Tagamet®, and Tums®, it is because a startling 40% of the adult population suffers from a condition known medically as gastro-esophageal reflux disease (GERD).<sup>1</sup>

For some people, heartburn causes minor discomfort after eating, while others experience pain so intense that they rush to an emergency room fearing a heart attack.<sup>2</sup>

A common misconception is that heartburn is caused only by excess stomach acid that regurgitates back up into the esophagus. What few doctors realize is that when the sphincter muscle at the lower end of the esophagus fails to close properly, the result is a reflux of pancreatic enzymes, bile, food, beverages, and acid into the lining of the esophagus.<sup>2</sup> Since esophageal tissues are relatively delicate, they are not able to handle the harsh digestive components from the stomach. The result is that victims experience mild to severe pain commonly referred to as heartburn.

Chronic heartburn predisposes people to higher risks of esophageal and other cancers of the upper digestive tract.<sup>3,4</sup> Esophageal cancer related to heartburn has become epidemic in the modern world. Failure to protect the esophagus against the damaging components of the stomach significantly increases esophageal cancer risk.

The good news is that recent studies demonstrate that a low-cost orange peel extract (one capsule every other day for 20 days) can relieve heartburn symptoms for up to six months at a time.<sup>5</sup>

Statistics show that 60 million Americans experience heartburn once a month or more, while 25 million Americans suffer painful heartburn symptoms every day!<sup>6</sup> Many more Americans suffer from heartburn without experiencing noticeable symptoms.

Heartburn is the lay word used to describe gastro-esophageal reflux disease (GERD), a condition that occurs when digestive juices, food, and liquids regurgitate from the stomach into the esophagus.<sup>2</sup> The cause of GERD is the failure of the sphincter muscle between the stomach and esophagus to close properly. The chronic reflux of harsh digestive juices seen in GERD is an underlying cause of many cancers of the esophagus, larynx, and pharynx.<sup>3,4</sup>

Over the past 15 years, incidences of adenocarcinoma of the esophagus (caused primarily by GERD) have exploded.<sup>7</sup> Prior to this epidemic of esophageal adenocarcinoma, most esophageal cancers were of the squamous cell carcinoma type caused primarily by cigarette smoking and alcohol ingestion.<sup>8</sup>

To relieve heartburn pain and possibly reduce esophageal cancer risk, increasing numbers of heartburn sufferers chronically take proton-pump inhibitor drugs like Prilosec®, Prevacid®, and Nexium®.<sup>2</sup> These drugs shut down almost all normal stomach acid production. While they provide heartburn relief for many, these drugs deprive the body of the acid it needs to support optimal digestion of foods. Another concern with proton-pump inhibitor drugs is that they only suppress acid production. This leaves the esophagus continually vulnerable to the reflux of digestive enzymes, bile, food, and other harsh liquids.



Artwork showing gastro-esophageal reflux (heartburn). The acidic juices (yellow) of the stomach (red) are seen passing abnormally back up the esophagus (at top left). This causes heartburn: inflammation and a sense

### A NATURAL SOLUTION

A chemist from Texas suffered painful symptoms of GERD for years and did not like the idea of taking a proton-pump inhibitor drug on a chronic basis. He looked at d-limonene, an extract from the orange peel, as a long-term approach to controlling GERD symptoms. Based on both anecdotal and as yet unpublished clinical research studies, the intake of just one 1000-mg capsule of this purified d-limonene every other day for 20 days has been shown to reduce or eliminate GERD symptoms in most people for six months or longer.<sup>5</sup>

of pain that can rise to the throat.  
The rest of the digestive system is seen as a blue background.

There is no clearly established mechanism by which d-limonene is so effective. Researchers, however, have speculated that d-limonene works in several ways to eliminate GERD-related pain. Since d-limonene is lighter than water, it floats to the surface of gastric juices in the stomach.

Joe S. Wilkins, the Houston-area scientist who developed this natural approach to heartburn relief, believes that the minor burping that occurs with d-limonene causes this orange peel extract to be directly carried into the esophagus.<sup>13</sup> By coating the esophagus, d-limonene may protect the esophagus against caustic contents that would have otherwise been regurgitated from the stomach. D-limonene may promote quicker movement of food and gastric juices out of the stomach so that these esophageal irritants do not promote as much reflux.

D-limonene may also provide a barrier in the stomach and esophagus against bacterial infection.<sup>13</sup> It is well established that stomach cancer risk is increased in those infected with the *H. pylori* bacteria.<sup>14</sup> Finally, d-limonene may reduce the amount of gastric juices that reflux (regurgitates) back into the esophagus.<sup>13</sup>

All of these mechanisms help explain why so many heartburn sufferers find long-term relief by taking just one 1000-mg capsule of d-limonene every other day for only 20 days.

## Conventional Heartburn Meds Rob the Body of Vital Nutrients



Americans now spend more than \$8 billion annually on the three types of prescription and over-the-counter medications most often used to treat heartburn.

Commonly used antacids such as Tums®, Maalox®, and others neutralize stomach acid with aluminum or magnesium hydroxides, calcium carbonate, or sodium bicarbonate. Antacids sometimes have “rebound” effects that actually worsen symptoms, and they may contain aluminum, a metal that may have adverse effects on the brain.<sup>9</sup>

Drugs such as Tagamet®, Zantac®, and Pepcid® are called H<sub>2</sub> blockers because they inhibit the action of histamine, which stimulates stomach acid secretion. Yet they can also impair the absorption of calcium and vitamin B<sub>2</sub> from food.<sup>10</sup>

The most popular prescription medications for chronic heartburn are proton pump inhibitors such as Prilosec® and Nexium®. These drugs interfere with the secretion of digestive acid by proton pumps in the stomach lining. They often successfully eliminate heartburn symptoms, but they, too, block absorption of calcium and vitamin B<sub>12</sub> as well as beta-carotene, folic acid, thiamin, iron, sodium, and zinc, all of which are critical to the body’s overall health.<sup>11</sup>

Although millions of Americans have taken proton pump inhibitors daily for many years, AstraZeneca, the maker of both Prilosec® and Nexium®, recommends their use only for short periods of time in its package inserts.<sup>6</sup> Successful treatment of the symptoms of heartburn and GERD with proton pump inhibitors is complicated by the fact that 20% of patients report that they do not take their medication as directed by their physicians and 75% must augment that therapy with antacids to get adequate relief, according to a recent survey.<sup>12</sup>

## CLINICAL STUDIES SUPPORT HEARTBURN RELIEF WITH D-LIMONENE

In the first phase of a two-part trial, fully 89% of the participants reported resolution of their heartburn symptoms just two weeks after beginning supplementation with d-limonene. The 19 study participants initially rated their heartburn severity at 8 on a scale of 1 (least severe) to 10 (most severe). Their heartburn frequency was rated at 8.3, with 10 representing significant daily heartburn. After consuming 1000 mg of d-limonene in a single gelcap either daily or every other day, 86% of the daily group reported that the severity of their heartburn had dropped to 1 or 2 on the severity index, while 92% of those who took the supplement every other day had the same result.<sup>5</sup>

In the controlled, double-blind second phase of the study, 22 participants were randomized to take either 1000 mg of d-limonene or a placebo. At day 14, an impressive 83% of those taking the orange peel extract (d-limonene) reported heartburn severity no higher than 2 on the 1-10 scale, compared to just 30% of those taking placebo. At the end of 20 days, 75% of those taking d-

limonene reported relief from heartburn symptoms, compared to only 20% of the participants taking placebo. No one in the study reported any adverse side effects. Those who experienced relief with d-limonene continued to be free of heartburn two weeks after they stopped supplementation, and some experienced heartburn relief lasting up to six months after supplementation.<sup>5</sup>

“The plethora of literature cited over the past 26 years [shows] that purified d-limonene definitely is a beneficial extract . . . and has many medicinal benefits,” noted Roger C. Willette, MD, the study’s lead author. “The six-month follow-up clearly indicated its potential for a long-lasting effect, since 10 of the 20 respondents to the follow-up survey remained free of gastric distress.”<sup>5</sup>

## ORANGE PEEL EXTRACT MAY HAVE OTHER HEALTH BENEFITS

D-limonene’s ability to inhibit the growth of cancer cells has been studied since 1997. In the laboratory, it has been found capable of stopping the growth of liver, colon, pancreatic, and stomach cancers.<sup>15-19</sup> Ongoing research is attempting to determine whether d-limonene can indeed become a significant tool in the fight against cancer.

Wilkins believes that in addition to its promise in fighting cancer, d-limonene may prove to be an important antimicrobial agent that could kill an array of dangerous bacteria and viruses. Studies are under way, he says, to determine whether its ability to coat and protect the linings of the gastro-intestinal tract may also make d-limonene effective in treating Crohn’s disease and other gastrointestinal disorders.<sup>13</sup>

## Lifestyle Strategies for Preventing Heartburn

A number of dietary and lifestyle factors have been shown to exacerbate the symptoms of GERD. People who suffer from this condition—including those taking prescription medications—are encouraged to avoid:

- Smoking
- Chocolate, tomatoes, raw onions, garlic, black pepper, vinegar, peppermint, and fatty or spicy foods
- Caffeinated, carbonated, or alcoholic beverages.
- Lying down within three hours after a meal.<sup>9</sup>



Maintaining a healthy body weight may be another strategy for averting GERD. Health professionals have understood for years that overweight people experience heartburn pain and GERD far more often than those of a healthy weight because abdominal fat increases pressure on the stomach, encouraging stomach acid to reflux into the esophagus.<sup>20</sup> In fact, a study of more than 10,000 American women published in the *New England Journal of Medicine* confirms a close correlation between increases in body weight and exacerbation of GERD symptoms.<sup>21</sup>

Chronic GERD sufferers should elevate the head of their bed with two or more phone books to keep damaging gastric juices out of the esophagus at night.

## CAUTION WITH PREGNANCY, ULCERS

D-limonene should not be taken by pregnant or nursing women, or by people who have or suspect that they have ulcers. Individuals who do not have these health concerns are advised to use products containing d-limonene according to the manufacturer’s instructions.

## ABOUT THE INVENTOR

Joe Wilkins suffered such severe GERD symptoms that he consumed two packages of Tums® a day for many years. After two weeks of taking 1000 mg of d-limonene each day, his chronic pain vanished. In over a decade, he has never experienced heartburn symptoms again. Joe currently maintains his esophageal health by supplementing with just one 1000-mg d-limonene capsule each month.

## CONCLUSION

Derived from orange peel oil, d-limonene offers hope to those with symptoms of gastroesophageal reflux disease. Clinical data suggest that this amazing plant-derived nutrient yields long-lasting effects, with some individuals reporting that a short course of d-limonene therapy provides relief for weeks or even months after they discontinue its use.

D-limonene thus offers a natural alternative to conventional heartburn treatment, without the nutrient-depleting effects associated

with some prescription heartburn drugs.

## Symptoms and Diagnosis of GERD

Gastroesophageal reflux disease (GERD) is a chronic condition caused by the backwash—or reflux—of stomach acid into the esophagus, the tube that transports swallowed foods and liquids from the throat to the stomach.

This reflux occurs when the valve between the lower end of the esophagus and the stomach (the lower esophageal sphincter) fails to close properly. Virtually everyone has experienced the discomfort in the chest or throat, and sour taste in the mouth, caused by this reflux process. Reflux most often is the result of overeating, consuming particular kinds of foods and beverages, and lying down too soon after eating. These symptoms are labeled GERD when they occur two or more times a week and become difficult to control.<sup>22</sup>

Extremely caustic hydrochloric acid is the chief component of stomach acid. Hydrochloric acid is vitally important in supporting the breakdown and absorption of nutrients in food and in preventing bacteria from growing in the stomach. The walls of the stomach itself are protected from the corrosive effects of the acid by a special lining that the fragile esophagus does not have. Over time, refluxed stomach acid (along with bile, enzymes, food, and liquid beverages) can erode or cause ulcerations in the lining of the esophagus. Some GERD sufferers develop scar tissue, which narrows the esophagus and can make swallowing food difficult. People with GERD also are at higher risk of developing Barrett's esophagus, a condition marked by severe damage to the esophagus that is linked to an increased risk of esophageal cancer.<sup>3,4,22</sup>

Studies have shown a relationship between GERD and asthma. GERD appears to worsen asthma symptoms in some patients, and some asthma medications clearly worsen GERD symptoms. Treating GERD, however, often helps relieve the symptoms of asthma. Physicians tend to diagnose GERD as the cause of asthma when it begins in adulthood, when asthma symptoms worsen after a meal or after lying down, and when it does not respond to standard asthma medications.<sup>23</sup>

People who experience significant pain beneath their breastbone or in their throat should consult a physician to ensure that they do not have a potentially dangerous cardiovascular condition.

If physicians determine that GERD is the cause of a patient's symptoms, they often prescribe antacids, H<sub>2</sub> blockers (which block gastric acid secretion), or proton pump inhibitors before performing invasive tests. If the symptoms are reduced or alleviated by these medications, GERD is the normal diagnosis.

In certain cases, doctors perform an endoscopy, a procedure that allows them to visually observe the lining of the esophagus (as well as the stomach) with a thin, flexible, lighted instrument inserted through the mouth. Manometry tests help determine how well muscles in the esophagus move food into the stomach and how tightly the lower esophageal sphincter closes. Tests that monitor pH levels determine how often acid from the stomach gets into the esophagus and how long it stays there. A variety of x-ray procedures can detect other problems that may cause GERD symptoms, such as a hiatal hernia—caused when a portion of the stomach herniates (abnormally protrudes) into an opening in the diaphragm muscle—or a narrowing of the esophagus known as an esophageal stricture.<sup>22</sup>

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