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Zantac: Avoid This Brand Name Heartburn Medication

Analysis by Dr. Joseph Mercola | December 02, 2023

STORY AT-A-GLANCE

- Ranitidine heartburn medications, including those commonly known by the brand name Zantac, may contain a cancer-causing chemical called N-nitrosodimethylamine (NDMA)
- NDMA is a nitrosamine chemical that was formerly used to make rocket fuel and lubricants
- The International Agency for Research on Cancer (IARC) classifies NDMA as a probable human carcinogen
- Past research revealed that exposure to NDMA led to abnormal growths called neoplasms and liver abnormalities in rats, even at low doses
- Ranitidine is an H2 (histamine-2) blocker, which is used to prevent and relieve heartburn by decreasing the amount of acid in your stomach, but more often than not, heartburn is the result of insufficient amounts of acid
- Eating real food and infusing your gut microbiome with beneficial bacteria from traditionally fermented foods may help resolve heartburn naturally

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Some ranitidine heartburn medications, including those commonly known by the brand name Zantac, may contain a cancer-causing chemical called N-nitrosodimethylamine (NDMA).[1] NDMA is a nitrosamine chemical that was formerly used to make rocket fuel and lubricants,[2] but it's now only used for research purposes.

The International Agency for Research on Cancer (IARC) classifies NDMA as a probable human carcinogen.[3] In an alert released by the U.S. FDA, the NDMA in heartburn drugs is said to be at "low levels," and the agency is evaluating whether this poses a risk to people taking the drugs.[4]

It's the latest medication found to contain the carcinogenic impurity, but no recalls have been issued for Zantac. For now, the medication remains on the market.

Is NDMA in Zantac Dangerous?

According to the FDA, "Although NDMA may cause harm in large amounts, the levels the FDA is finding in ranitidine from preliminary tests barely exceed amounts you might expect to find in common foods."[5] However, research from 1991 revealed that exposure to NDMA led to abnormal growths called neoplasms and liver abnormalities in rats, even at low doses. Researchers wrote in the journal Cancer Research:[6]

> *"The linear relationship observed at low dose rates (below 1 ppm [part per million]) suggests that under these experimental conditions, among rats allowed to liver their natural life span, a dose of 1 ppm of NDEA or NDMA in the drinking water will cause about 25% to develop a liver neoplasm, a dose of 0.1 ppm will cause about 2.5% to do so, and a dose of 0.01 ppm will cause about 0.25% to do so, etc., with no indication of any "threshold."*
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> *… In addition, even quite low dose rates of the test agents caused a variety of nonneoplastic liver abnormalities (e.g., hyperplastic nodules, or shrinkage of hepatocytes) at a frequency roughly proportional to the dose rate."*

In 2018, the FDA also issued a voluntary recall for the **high blood pressure** medication valsartan after it was found to contain NDMA (22 other countries had already issued recalls before the FDA took action).[7] An expedited assessment of cancer risk associated with exposure to NDMA through contaminated valsartan products was published that year, in which a cohort of 5,150 people was followed for a median of 4.6 years.[8]

The results did not show a significant increase in short-term cancer risk among people using NDMA-contaminated valsartan, but cancer often takes longer than four or five years to develop. The true extent of the risk may not be known for 10 or 20 years. Even the researchers acknowledged, "uncertainty persists about single cancer outcomes, and studies with longer follow-up are needed to assess long term cancer risk."[9]

Blood Pressure Drugs Recalled for NDMA Contamination

Zantac is only the latest drug found to contain NDMA. Angiotensin II Receptor Blockers (ARBs), which include valsartan and others, to treat high blood pressure have also been affected, with recalls occurring in 2018 and 2019.

In a statement released in March 2019, the FDA stated, "the nitrosamines found in ARBs may be generated when specific chemicals and reaction conditions are present in the manufacturing process of the drug's API, and may also result from the reuse of materials, such as solvents."[10]

As for the extent of the risks involved for people taking ARBs, FDA scientists estimated that if 8,000 people took the highest daily dose (320 milligrams) of NDMA-contaminated valsartan for four years (which is how long the contaminated medications remained on the market), there may be one additional case of cancer.[11] However, in an update released in August 2019, the FDA stated:[12]

> *"In reality, the vast majority of patients exposed to NDMA through ARBs received much smaller amounts of the impurity than this worst-case scenario, and, since not all ARBs are affected, it's very likely that a patient taking an ARB for four years would not have always received one of the affected products."*

As for the NDMA contamination in Zantac, it's unknown where it's come from, but in August the FDA sanctioned an Indian manufacturing plant that makes some of the drug's ingredients. It's estimated that "80% of ingredients used in U.S. drugs are manufactured abroad, primarily in India and China."[13]

Avoid Zantac for Heartburn

While the FDA has not advised patients to stop taking ranitidines like Zantac, they said those taking prescription ranitidine could talk to their health care provider about an alternative, while those taking over-the-counter (OTC) ranitidine could switch to other OTC options.

"There are multiple drugs on the market that are approved for the same or similar uses as ranitidine," the FDA noted,[14] which may reduce your NDMA exposure, provided the alternative drugs aren't also contaminated with NDMA or something else.

Ranitidine is an H2 (histamine-2) blocker, which is used to prevent and relieve heartburn by decreasing the amount of acid in your stomach. OTC ranitidine is approved to treat heartburn linked to acid indigestion and sour stomach, while the prescription version is prescribed to treat ulcers and gastroesophageal reflux disease.[15]

More often than not, heartburn is the result of insufficient amounts of acid. Your body is naturally designed to achieve balance and it needs acid to digest food. If you have low stomach acid and your digestion is impaired, you not only will absorb fewer nutrients from your food, but also will open the door for potential bacterial infections.

Hydrochloric acid (and pepsin) are necessary to break down protein in your intestinal tract, which means reducing acid can lead to inadequate protein breakdown, which increases your risk of dysbiosis, an imbalance between harmful and friendly bacteria in your gut microbiome.

As these undigested protein molecules ferment in your intestines, they become food for pathogens such as H. pylori, C. difficile and Candida. An overgrowth of these bacteria may also lead to leaky gut and associated health problems.

In fact, in a study of 564,969 adults, community-dwelling participants taking certain heartburn drugs had a 1.7 to 3.7 times increased risk of developing C. difficile and Campylobacter bacterial infections, likely due to the suppression of stomach-acid production.[16]

Other common heartburn drugs known as proton pump inhibitors (PPIs) are also problematic because they inhibit the proton pump in your body that produces hydrochloric acid. Further, long-term use of PPIs may significantly increase your risk of stomach cancer along with a number of other health problems, including bone fracture, C. difficile infection, pneumonia, heart attack and stroke.[17]

What Causes Heartburn?

Heartburn, the most common symptom of gastroesophageal reflux disease (GERD), is extremely common with 44% of U.S. adults experiencing it at least once a month. About 14% have heartburn weekly while 7% experience it daily.[18] Heartburn, which typically feels like a burning sensation in your chest, occurs when stomach acid backs up into your esophagus.

One risk factor for heartburn is being overweight or obese. Extra pounds can place pressure on your stomach, causing more acid to forcefully move into your esophagus. Overeating or eating a large meal can also cause it, as excessive food in the stomach causes the lower esophageal sphincter (LES) to open, which may allow stomach acid to flow into your esophagus.

Smoking is another risk factor, as the LES relaxes and opens up when you smoke, causing acid to reflux. It may also affect stomach acid production. Certain foods may also trigger acid reflux. Common culprits include:[19]

Spicy foods	Onions
Citrus	Tomato products
Fried foods	Chocolate
Alcohol	Coffee or other caffeinated beverages
Carbonated beverages	Peppermint

Alternatives to Drugs for Heartburn

If you need to use an ulcer drug the safest to use would be Pepcid (generic is famotidine). It is the safest of all the H2 blockers and far preferred to Zantac discussed earlier. In many cases though you can begin to restore your body's proper gastric balance and function simply by avoiding processed foods and sugar.

By eating real food and infusing your gut microbiome with beneficial bacteria from traditionally fermented foods or a high-quality probiotic supplement you can rebalance your digestive system and eliminate the need for PPIs and H2 blockers.

Quitting cold turkey isn't an option for heartburn medications, however, as your body can become dependent on the drugs. If you stop suddenly, it can lead to severe rebound effects known as rebound acid hypersecretion. To avoid it, you must wean yourself off the PPI gradually. Start by lowering the dose you're taking while simultaneously implementing the recommended lifestyle modifications suggested.

Once you get down to the lowest dose of the PPI, you can start substituting with an OTC H2 blocker similar to Zantac. The FDA has a list of drugs that may be contaminated with NDMA as well as those in which NDMA was not detected; consult this list before choosing an OTC option.[20]

Then, gradually wean off the H2 blocker over the next several weeks. In one study of 184 people, those who changed their diet to one focused on healthy fats, lean meats, nuts and vegetables reported a similar lessening of reflux symptoms as those who used PPI medications, with the diet group indicating a slightly higher level of improvement.[21]

For times when you need occasional relief from heartburn symptoms, the 10 remedies that follow can help, reducing the need to rely on drug solutions even further:

Aloe juice — The juice of the aloe plant naturally helps reduce inflammation, which may ease symptoms of acid reflux. Drink about one-half cup of aloe juice before meals. To avoid its laxative effect, look for a brand in which the laxative component has been removed.

Apple cider vinegar (raw, unfiltered) — Acid reflux typically results from having too little acid in your stomach. You can easily improve the acid content of your stomach by consuming 1 tablespoon of raw unfiltered apple cider vinegar in a large glass of water.

Astaxanthin — When compared to a placebo, this potent antioxidant was found to reduce symptoms of acid reflux, especially for individuals with pronounced H. pylori infection.[22] Researchers concluded a daily dose of 40 mg of **astaxanthin** was effective for reflux reduction.

Baking soda — One-half to 1 teaspoon of baking soda (sodium bicarbonate) in an 8-ounce glass of water will help neutralize your stomach acid and ease the burn of acid reflux. While I do not advise this as an ongoing remedy, it is effective on an "emergency" basis when you are in excruciating pain.

Deglycyrrhizinated licorice root — Deglycyrrhizinated licorice (DGL) may also be helpful because it helps block inflammatory prostaglandins. Licorice must be approached cautiously, however, because it contains the active metabolite glycyrrhiza, which at high doses can affect your adrenal glands, cause muscle weakness or numbness and raise your blood pressure.

Licorice is contraindicated if you're on diuretics or stimulant laxatives. Women on hormone therapy, who have estrogen-dependent cancers or reproductive conditions like endometriosis, should also avoid it.

Ginger root — Ginger has been found to have a gastroprotective effect by suppressing H. pylori. Add two or three slices of fresh ginger root to 2 cups of hot water and let it steep for several minutes. Drink it about 20 minutes prior to eating a meal.

Glutamine — The amino acid glutamine has been shown to address gastrointestinal damage caused by H. pylori. Glutamine is found in many foods, including beef, chicken, dairy products, eggs, fish and selected fruits and vegetables. L-glutamine is widely available as a supplement.

Papaya/papain supplement or pineapple/bromelain supplement — Papaya contains papain, an enzyme useful for breaking down both protein and carbohydrates. Bromelain is a proteolytic enzyme found in pineapple and, like papain, helps digest proteins. Bromelain also promotes anti-inflammatory activity and helps you maintain regular bowel movements.

Slippery elm — Slippery elm coats and soothes your mouth, throat, stomach and intestines, and contains antioxidants that may help address inflammatory bowel conditions. Because it stimulates nerve endings in your gastrointestinal tract, it is useful for increasing mucus secretion, which has a protective effect against ulcers and excess acidity.

Vitamin D — Vitamin D is critically important for your gut health. Once your vitamin D levels are optimized, you will benefit from your body's production of about 200 antimicrobial peptides that will help eradicate gut infections.

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