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Scientists Warn of a Nearly 400% Increase in Toxic Liver Injuries — One Common Drug Leads the List

Analysis by Dr. Joseph Mercola | November 12, 2026

STORY AT-A-GLANCE

- U.S. poison-center reports associated with liver injury rose nearly fourfold from 2000 through 2024, and more than 80% of reported exposures resulted in inpatient hospitalization
- Acetaminophen alone emerged as the leading substance tied to liver injury, accounting for 33% of reported cases among men and 45% among women
- Acetaminophen-only exposures increased 349% among men and 380% among women, underscoring why reaching for this familiar over-the-counter drug as a default response to everyday discomfort carries real risk
- Alcohol ranked second among substances associated with liver injury, while excess linoleic acid in seed oils adds another avoidable source of liver stress
- Reducing unnecessary medications and alcohol, checking combination-product labels, limiting seed oils and supporting glutathione production give you practical ways to reduce your liver's toxic burden

Liver injuries reported to U.S. poison centers have risen dramatically. From 2000 through 2024, researchers identified 220,160 exposures associated with liver injury, while the population-adjusted rate climbed nearly fourfold, from 10.9 to 52.9 cases per million people.[1] More than 80% of those exposures resulted in inpatient hospitalization.

Those numbers come from a 25-year analysis published in Clinical Gastroenterology and Hepatology. The researchers focused on xenobiotic-induced liver injury, or damage linked to substances foreign to your body. That broad category includes medications, alcohol, supplements, food additives and environmental pollutants.

Your liver acts as one of your body's major processing centers, transforming substances so they can be used or cleared. When an exposure injures liver cells, liver enzymes — specifically ALT and AST, the markers your doctor checks in routine blood work — rise. In this study, researchers defined liver injury as levels above 100 U/L. Such damage doesn't always produce obvious warning signs early on, which makes awareness of what you put into your body especially important.

What changed so dramatically over those 25 years is where the story becomes especially revealing. One everyday medication emerged as the leading substance tied to these reports, while trends involving other products moved sharply in the opposite direction. The study's findings offer a closer look at what's driving the rise and where simple choices could reduce your risk.

Acetaminophen Became the Leading Drug Tied to Liver Injury

The study examined U.S. poison-center reports to determine which medications and other substances were associated with liver injury and how those patterns changed over time. The researchers analyzed exposures among people age 15 and older, then separated cases by factors such as sex, age, substance, reason for exposure, whether the exposure was acute or chronic, level of medical care and outcome.

The results point overwhelmingly toward medications. They accounted for 85% of reported liver-injury exposures among men and 94% among women. **Acetaminophen** alone — rather than a product that combined acetaminophen with another active ingredient — was the most frequently implicated substance.

- **Acetaminophen alone accounted for a striking share of cases —** Among men, 33% of reported xenobiotic-related liver injuries involved acetaminophen alone. Among women, that figure reached 45%. Acetaminophen is readily available without a prescription, making careful attention to dose and product labels particularly important.

- **Acetaminophen-only exposures rose sharply in both sexes —** From 2000 through 2024, reported exposures involving acetaminophen alone increased 349% among men and 380% among women. That long-term rise identifies acetaminophen as what the researchers called a "growing and persistent contributor" to clinically significant liver injury.

- **Combination products moved in the opposite direction —** Acetaminophen is also included in prescription medications that contain other active ingredients. After the U.S. Food and Drug Administration (FDA) limited the amount of acetaminophen allowed in combination prescription medicines in the early 2010s, reported exposures involving these products fell about 60% to 85%.

  The contrast is notable: Acetaminophen-only exposures continued to rise substantially while combination-product exposures declined. Because standalone acetaminophen remains available over the counter at current dose levels, the regulatory action that reduced combination-product injuries did not directly affect the largest category of exposures.

- **Women had higher rates of acetaminophen-associated liver injury —** The researchers found higher rates among women than men, while suspected suicide was the most common reason for acetaminophen exposure in both sexes. That context matters for interpreting the total numbers, but it doesn't diminish the risk of unintentional overuse.

  Acetaminophen's narrow margin between a therapeutic dose and a liver-toxic dose is well established, and the 349% to 380% increase in acetaminophen-only exposures reflects a trend that extends well beyond intentional harm.

- **Alcohol ranked second, but far behind acetaminophen —** Alcohol was the next leading substance associated with reported liver injury and appeared more often in men than women. Alcohol-related cases increased among both sexes during the COVID-19 pandemic. Reports involving stimulants and street drugs, herbal and dietary supplements, and environmental toxins also rose, but remained much less common than those involving acetaminophen and alcohol.

- **The study tracks poison-center reports rather than every U.S. liver injury —** This distinction helps you put the dramatic increases into perspective. The researchers used the National Poison Data System, a surveillance database built from cases reported to poison centers. As a retrospective analysis, the study looked backward at existing records to identify trends; it doesn't establish that one specific factor caused the overall rise in reported liver injury.

  The findings give you a practical reason to treat familiar medications with the same care you'd give a prescription drug. As study author Dr. Christopher P. Holstege, put it, "Medications should always be taken as directed by clinicians and per pharmaceutical label instructions."[2] That advice sounds obvious, but the data show it isn't being followed. Checking labels also helps you identify acetaminophen in different products so you don't unknowingly take it from more than one source.

Reduce the Exposures That Put Your Liver at Risk

Your liver constantly processes substances that enter your body, so protecting it starts with reducing unnecessary exposures rather than trying to repair damage afterward. Medications deserve special attention, but they're only part of the picture. Alcohol, excess linoleic acid (LA), and other substances also add to the burden. Here's how I recommend lowering that load while strengthening your liver's natural defenses.

1. **Avoid unnecessary over-the-counter (OTC) medications whenever possible —** Don't make OTC pain relievers, cold medicines or sleep aids your automatic response to everyday symptoms. If you have a mild headache, sore muscles after exercise,

minor joint stiffness or trouble sleeping, first address what's causing the problem rather than routinely suppressing it with medication. Acetaminophen deserves particular caution given its prominent role in the liver injuries identified in the study.[3]

If you do need an OTC medication, use the lowest amount necessary according to the label and check every active ingredient before combining products. Acetaminophen appears in many cold, flu, pain and nighttime medications, so it's easy to take it from two different products without realizing it.

Combination products create an added risk because you're taking several active ingredients at once, and overlapping products could push your total acetaminophen intake into dangerous territory. Don't assume an OTC product is harmless simply because you don't need a prescription to buy it.

2. **Address the source of everyday pain instead of routinely masking it —** If headaches, muscle soreness or joint discomfort repeatedly send you to the medicine cabinet, look at what's driving them.

   Magnesium supports normal muscle function and relaxation, and some people explore turmeric or curcumin for occasional joint discomfort, though these are not substitutes for identifying and addressing the underlying cause. Talk to a healthcare provider before using herbal approaches for chronic pain.

   If poor sleep is the problem, address your sleep habits rather than relying on nighttime combination medications. A consistent sleep schedule, a dark bedroom and calming options such as chamomile tea support restful sleep without adding unnecessary drugs to your routine. The goal is to resolve what's causing the pain or poor sleep, not to suppress the signal your body is sending while adding a compound your liver has to neutralize.

3. **Eliminate alcohol and cut back on seed oils that may also stress your liver —** Alcohol was the second-leading substance associated with liver injury in the poison-center analysis, behind acetaminophen.[4] I recommend eliminating alcohol

altogether. Your liver has to metabolize alcohol, and doing so generates harmful byproducts and oxidative stress that may damage liver cells over time.

Don't overlook your everyday fat intake either. Excess **LA, a polyunsaturated fat** found in **seed oils** such as soybean, corn, canola, sunflower, safflower and cottonseed oil, also contributes to liver damage. LA promotes oxidative stress and mitochondrial dysfunction and contributes to fat accumulation in the liver.

Keep your LA intake below 5 grams per day, and ideally closer to 2 grams, by avoiding seed oils and processed foods made with them. Instead, choose fats such as grass fed butter, ghee and tallow.

4. **Strengthen your liver's antioxidant defenses with food —** Your liver relies on antioxidant systems to neutralize harmful compounds produced as it processes medications and other substances. Glutathione is particularly important. As your body breaks down acetaminophen, it produces a toxic metabolite that glutathione helps neutralize. If glutathione stores become depleted, that compound accumulates and damages liver cells.

   Give your body the raw materials it needs to maintain this defense system. Garlic, onions and broccoli provide sulfur-containing compounds that support glutathione production. **N-acetylcysteine** (NAC) supplies cysteine, an amino acid your body uses to make glutathione. Just as important, reducing alcohol, unnecessary medications and other avoidable exposures gives your liver fewer harmful compounds to neutralize in the first place.

5. **Know when acetaminophen exposure becomes an emergency —** Taking too much acetaminophen can cause severe liver damage, which is why an accidental overdose requires immediate action.

   NAC is the clinically established antidote for acetaminophen poisoning — administered by medical professionals in emergency and hospital settings — because it restores glutathione and helps the liver neutralize the toxic metabolite

produced during acetaminophen breakdown. This is a supervised medical treatment, not a home remedy or self-directed supplement strategy.

Don't view NAC as a safety net that makes frequent acetaminophen use harmless. If you accidentally exceed the recommended dose or discover that you've taken multiple acetaminophen-containing products and exceeded the labeled total, seek emergency treatment immediately. The safest strategy is prevention: Know what's in every medication you take, minimize unnecessary exposures and give your liver less damage to repair in the first place.

FAQs About Chemical-Related Liver Injuries

Q: What substances are most commonly linked to toxic liver injury?

A: Medications accounted for the large majority of reported liver-injury exposures in the 25-year analysis. Acetaminophen alone ranked first, while alcohol was the second-leading substance. Supplements, stimulants, street drugs and environmental toxins were also represented.

Q: Why is acetaminophen a particular concern for my liver?

A: Your liver converts acetaminophen into several compounds, including a toxic metabolite that glutathione normally neutralizes. If glutathione becomes depleted, that toxic compound builds up and damages liver cells. This is one reason excessive acetaminophen exposure leads to severe liver injury.

Q: How do combination medications increase the risk of taking too much acetaminophen?

A: Acetaminophen is included in numerous pain, cold, flu and nighttime products. If you take several medications without comparing their active ingredients, you could unknowingly consume acetaminophen from multiple sources and exceed the labeled total.

Q: What everyday steps help reduce stress on my liver?

A: Minimize unnecessary OTC medications, eliminate alcohol and reduce your intake of seed oils, which are high in LA. Address recurring pain and sleep problems at their source instead of automatically relying on medication, and support glutathione production with sulfur-rich foods such as garlic, onions, broccoli and pastured eggs.

Q: What should I do if I accidentally take too much acetaminophen?

A: Treat an acetaminophen overdose as an emergency and seek immediate treatment. NAC is the clinically established antidote, administered under medical supervision; it restores glutathione and helps the liver neutralize acetaminophen's toxic breakdown product. Don't rely on NAC as a way to make frequent or excessive acetaminophen use safe, and don't attempt to self-treat an overdose with an NAC supplement instead of seeking emergency care.

This article is for informational purposes only and does not constitute medical advice. Consult a qualified healthcare provider before making changes to your health regimen.

Sources and References

- [1, 3, 4] Clinical Gastroenterology and Hepatology August 13, 2026
- [2] SciTechDaily August 21, 2026