The honest truth about green tea extracts and liver toxicity

I'm a big fan of EGCG (epigallocatechin gallate), a green tea catechin with many applications that I'll enumerate below. I take it myself, and I recommend it to my patients and listeners.

So I was especially dismayed to see that *Consumer Reports* placed green tea extracts on its list of "15 Supplement Ingredients to Always Avoid (These supplement ingredients can cause organ damage, cardiac arrest, and cancer!)"

Is it time to issue an urgent recall notice to my patients and followers? Am I inflicting irrevocable harm on them? I'd be the first one to revise my recommendations if there were a kernel of truth to the allegations.

The potential for liver damage is the biggest knock on EGCG, so I did a deep dive on the subject. Here's my analysis:

- Consider the source. *Consumer Reports* has conducted a virtual *jihad* against supplements for years. In lurid articles, they have continually bashed supplements with blanket statements like "Dietary supplements are not regulated the same way as medications. This lack of oversight puts consumers' health at risk." Their "experts" are uniformly inveterate supplement critics; never does *Consumer Reports* offer journalistic balance by giving a fair shake to responsible supplement advocates to tell their side of the story. To stack the deck against supplements, they include absurd ingredients like pennyroyal—a long-abandoned illicit abortifacient—in their "don't take" list. No responsible natural health professional would recommend it, and no retailer would stock it. The last time I heard it referenced was in the famous Nirvana song "Pennyroyal Tea" (B-Side: "I Hate Myself and Want to Die").
- There have been reports of liver toxicity with green tea extracts—but these are exceedingly rare. It's unclear why some people are susceptible. Could they have underlying liver disease? Might they concurrently have been taking medications notorious for causing liver stress, like Tylenol, statins, psych drugs, even birth control pills? Were they drinking inordinate amounts of alcohol? Were the supplements they took—often weight loss products—laced with other harmful ingredients? None of the research I reviewed provides definitive answers.
- Concerned over sporadic reports of toxicity, the European Food Safety Authority (EFSA) conducted an assessment. They concluded that "there was no indication of liver injury for doses below 800 mg/day from green tea supplements". A quick check of the green tea supplement I take and recommend to my patients shows it contains 700 mg per daily dose of two capsules, under the threshold.
- A review by the *US Pharmacopeia* found 34 reports concerning liver damage

associated with green tea extract use. Twenty-seven reports pertaining to liver damage were categorized as “possible causality” and a mere seven as “probable causality.” This out of literally thousands of toxicity reports. The review committee concluded that they were “unaware of significant safety issues that would prohibit monograph development.” By way of caution they stated “consumption of green tea concentrated extracts on an empty stomach is more likely to lead to adverse effects than consumption in the fed state.”

- Studies actually show that EGCG may be *beneficial* for fatty liver, the leading cause of liver problems among Americans. In one study, patients with non-alcoholic fatty liver disease were given concentrated green tea powder extracts. At the end of 90 days, they were found to have improvements in their liver function tests. Another animal study showed that EGCG supplementation reduced fatty liver changes in mice fed a high-calorie diet.
- EGCG has been shown to be safe and effective for gestational diabetes. In one study, 404 women with gestational diabetes took 500 mg of EGCG per day or a placebo from the beginning of the third trimester until full term. Blood sugar and insulin sensitivity improved, rates of low-birth weight were reduced, and even the babies’ Apgar scores were better. I don’t advise green tea supplements for pregnant ladies because I’m extremely cautious about the use of botanicals when a baby’s well-being is at risk, but this study should offer reassurance about the safety of EGCG supplementation.

A list of EGCG’s additional proven benefits include:

1. Chemoprevention against many cancers, including cancer of the liver
2. Blood pressure reduction
3. Prevention of heart attacks and strokes
4. Neuroprotection (vs. Parkinson’s, multiple sclerosis, and Alzheimer’s)
5. Fat loss via thermogenesis and appetite suppression
6. Anti-HPV effects
7. Enhanced bone health
8. Combats glaucoma

So what are we to make of *Consumer Reports’* alarmist warnings about green tea supplements? I would urge patients to continue supplementing EGCG under responsible management by nutritionally-oriented healthcare practitioners, but with the following caveats:

- Be attuned to unforeseen rises in liver function tests, unexplained nausea or loss of appetite, or dark urine or jaundice while taking green tea supplements. If this happens, discontinue, and retest.
- Avoid weight loss supplements that contain green tea, not as a solo ingredient, but when combined with other unfamiliar or suspect botanicals.
- Don’t mega-dose with EGCG unless your health professional recommends it, say, for a serious cancer condition, and then only with frequent monitoring of your liver function.
- Avoid EGCG if you have an underlying liver condition—except when undertaking a supervised trial of EGCG for non-alcoholic fatty liver disease as described above.
- Avoid excess alcohol, Tylenol or acetaminophen-containing products, or other drugs that have hepatic toxicity while taking EGCG.

- Take EGCG with food and not on an empty stomach.
- EGCG may be helpful for blood sugar control in pregnancy, but moms-to-be would do better to drink up to two cups of green tea per day in lieu of supplements. The amount of caffeine that amount of tea would deliver has not been shown to harm the developing fetus.

And, finally, don’t turn to *Consumer Reports* for unbiased, science-based advice about nutritional supplements. Washing machines, electric tooth brushes, vacuum cleaners…maybe.