Dietary Supplements Linked to More Cases of Severe Liver Damage

Some people needed liver transplants after taking weight loss and bodybuilding supplements, warn Australian researchers.

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Herbal and dietary supplements advertised to build muscle or melt away fat were linked to a growing number of cases of severe liver damage in Australia, report researchers who examined hospital records from 2009 to 2020.

In some cases, the damage was bad enough to require liver transplants. And in those instances, the researchers found that the patients were less likely to survive compared with similar patients who had liver transplants not related to the use of supplements.

Liver health is important to everyone—the organ is the body's filtration system—but it's especially vital to people already dealing with liver conditions, such as hepatitis, non-alcoholic steatohepatitis (NASH) and alcoholic liver disease. In many respects, the health risks supplements pose to the liver aren't well understood, in part because supplements are not strictly regulated—neither in Australia nor the United States—and can be purchased over the counter and online.

"I was starting to see injury in patients admitted with liver injury after using bodybuilding supplements for males or weight loss supplements in females," Ken Liu, MBBS, FRACP, a liver transplant specialist and coauthor of the research published last month in the Medical Journal of Australia, told The Guardian. "I just decided I better do a study on it to see if my hunch that more of these substances were causing these injuries was true."

Liu and his coauthor, Emily Nash, MBBS, MPH, looked at the number of adults admitted to the Gastroenterology and Liver Centre at the Royal Prince Alfred Hospital in Sydney for drug-induced liver injury.

Liver injury can be caused by numerous drugs, most commonly cancer and tuberculosis medications, antibiotics and paracetamol overdose. Paracetamol is better known as acetaminophen in the United States; the active ingredient in Tylenol, it's used to treat headaches, pain and fever.

For the study, researchers focused on drug-induced liver injury involving herbal and dietary

supplements and compared them to the overall number of drug-induced liver injury cases during the same period. They found an increase in cases linked to supplements. Specifically, 13 patients were hospitalized with drug-induced liver injury between 2009 and 2011; of those, two (15%) were linked to supplements. That proportion rose between 2009 and 2011. Of the 19 patients hospitalized for drug-induced liver damage, nine (47%) were linked to supplements.

The doctors published their findings in a paper titled "Drug-induced liver injury in Australia 2009–2020: the increasing proportion of non-paracetamol cases linked with herbal and dietary supplements."

The researchers also noted that 90-day transplant survival was worse for those with supplement-related drug-induced liver injury. What's more, the data showed that nearly half the people with this type of liver damage were non-European, leading the scientists to call for culturally appropriate education about the risks of taking supplements.

Because the research focused only on extreme cases of drug-induced liver damage—their data included only people who were hospitalized—it is possible that supplements may be responsible for many more less extreme cases, said Ken Harvey, a public health physician, in the Guardian's story about the research.

Noting that "drug-induced liver injury is the most frequent cause of acute liver failure in Western countries" and that the "proportion of cases caused by herbal and dietary supplements has increased overseas," the paper's authors urge for more oversight of supplements and for efforts to better educate the public about their risks.

Of course, medications and supplements aren't the only cause of liver damage. Liver disease can result from hepatitis (inflammation of the liver), non-alcoholic fatty liver disease (NAFLD), non-alcoholic steatohepatitis (NASH), alcoholic liver disease, autoimmune hepatitis and primary biliary cholangitis (PBC).

Need a primer on the liver? As Hep's Introduction to Hepatitis explains:

> The liver is the largest organ inside the human body. About the size of a football, it is located in the upper right part of the abdomen.
>
> We can't live without a functioning liver. It's the body's filter and warehouse. Almost all cells and tissues in the body depend on the liver. When something goes wrong with the liver, it can have a serious effect on almost every other organ in the body.
>
> A little more than 1.5 quarts of blood pump through the liver every minute, allowing the liver to quickly and effectively remove toxins and waste products from the bloodstream. At the same time, the liver stores important nutrients such as vitamins, minerals and iron. The liver also plays a role in managing levels of certain substances in the body, such as cholesterol, hormones and sugars, which are all necessary for survival and are potentially harmful when out of balance. The liver also has a key role in digesting food because if produces bile. In

addition, the liver controls blood-clotting factors, which prevent excessive bleeding.

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